



Independent Evaluation of Comprehensive Primary Care Plus (CPC+):

**Second Annual Report
Appendices to the Supplemental Volume**

July 2020

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Independent Evaluation of Comprehensive Primary Care Plus (CPC+)

Second Annual Report, Appendices to the Supplemental Volume

July 2020

Lead authors:

Arkadipta Ghosh
Sean Orzol
Stacy Dale
Jessica Laird
Ning Fu
Pragya Singh
Min-Young Kim

Amanda Markovitz
Kaylyn Swankoski
Nancy Duda
Rachel Machta
Carol Urato
Mariel Finucane

Lauren Vollmer
Constance Delannoy
Lee-Lee Ellis
Grace Oh
Brianna Sullivan
Dana Jean-Baptiste

Ann O'Malley
Rosalind Keith
Randall Brown
Grace Anglin
Deborah Peikes

Contributing authors (in alphabetical order):

Priya Bajaj
Swaati Bangalore
Jonathan Brown
Tom Bell
Laura Blue
Miriam Chappelka
Christine Cheu
Jared Coopersmith
David DesRoches
Sera Gearhart
Jonathan Gellar
Gillian Giudice

Sabitha Gopalsamy
Mary Harrington
Elizabeth Holland
Tessa Huffman
Neetu Jain
Matthew Kalish
Charlene Kemmerer
Keith Kranker
Mike Lightner
Erin Lipman
Marlena Luhr
Peter Mariani

Nancy McCall
Andrew McGuirk
Nikkilyn Morrison Hensleigh
David O'Connor
Maya Palakal
Ann Ponti
Sabrina Rahman
Carol Razafindrakoto
Lauryn Ringwood
Michelle Roozeboom-Baker
Mike Rudacille

Alexandra Saunders
John Schurrer
Robert Sheaff
Nikki Sigalo
Xiaofan Sun
Matt Urato
Aimee Valenzuela
Beny Wu

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Submitted by:

Mathematica
P.O. Box 2393
Princeton, NJ 08543-2393
Telephone: (609) 799-3535
Facsimile: (609) 799-0005
Project Director and Principal Investigator:
Deborah Peikes
Deputy Project Director and
Co-Principal Investigator: Grace Anglin
Co-Principal Investigators: Stacy Dale,
Ann O'Malley, Randall Brown, Janice Genevro
Reference Number: 50319

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ACRONYMS

AAAHC	Accreditation Association for Ambulatory Health Care
ACO	Accountable Care Organization
AHC	Accountable Health Community
BHI	behavioral health integration
BI	business intelligence
BPCI	Bundled Payment for Care Improvement
CAH	Critical Access Hospital
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CBT	cognitive behavioral therapy
CCM	chronic care management
CCW	Chronic Conditions Warehouse
CEHRT	Certified Electronic Health Record Technology
CFA	confirmatory factor analysis
CMA	Certified Medical Assistant
CMF	care management fee
CMM	comprehensive medication management
CMMI	Center for Medicare & Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
CNA	Certified Nursing Assistant
CNS	Clinical Nurse Specialist
CPC+	Comprehensive Primary Care Plus
CPCP	Comprehensive Primary Care Payment
CPT	Current Procedural Terminology

DME	durable medical equipment
DO	Doctor of Osteopathic Medicine
eCQM	electronic clinical quality measure
ED	emergency department
EDB	Medicare Enrollment Database
EHR	electronic health record
E&M	evaluation and management
ESRD	end-stage renal disease
FFS	fee-for-service
FQHC	Federally Qualified Health Center
HCC	hierarchical condition category
HCPCS	Health Care Common Procedure Coding System
HIE	Health Information Exchange
HMO	health maintenance organization
HRR	hospital referral region
IOM	Institute of Medicine
IT	information technology
LCSW	Licensed Clinical Social Worker
LPN	Licensed Practical Nurse
LTI	long-term institutionalization
MA	Medical Assistant
MAPCP	Multi-payer Advanced Primary Care Practice
MBSF	Master Beneficiary Summary File
MD	Doctor of Medicine
MDM	master data management system

MOU	memorandum of understanding
NAM	National Academy of Medicine
NCQA	National Committee for Quality Assurance
NLC	National Learning Community
NP	Nurse Practitioner
NPI	National Provider Identifier
NPPES	National Plan and Provider Enumeration System
NQF	National Quality Forum
PA	Physician Assistant
PBIP	Performance-based Incentive Payment
PBPM	per beneficiary per month
PCMH	patient-centered medical home
PCP	primary care practitioner
PFAC	Patient and Family Advisory Council
PMPM	per member per month
PST	problem-solving therapy
PY	Program Year
QI	quality improvement
QPP	Quality Payment Program
RHC	Rural Health Clinic
RING	Regional Implementation Networking Group
RN	Registered Nurse
SBIRT	Screening, Brief Intervention, and Referral to Treatment
SNAP	Supplemental Nutrition Assistance Program
SNF	Skilled Nursing Facility

SSP	Medicare Shared Savings Program
TANF	Temporary Assistance for Needy Families
TCPI	Transforming Clinical Practice Initiative
TIN	Tax Identification Number
TJC	The Joint Commission
URAC	Utilization Review Accreditation Commission

CHAPTER 2 APPENDIX

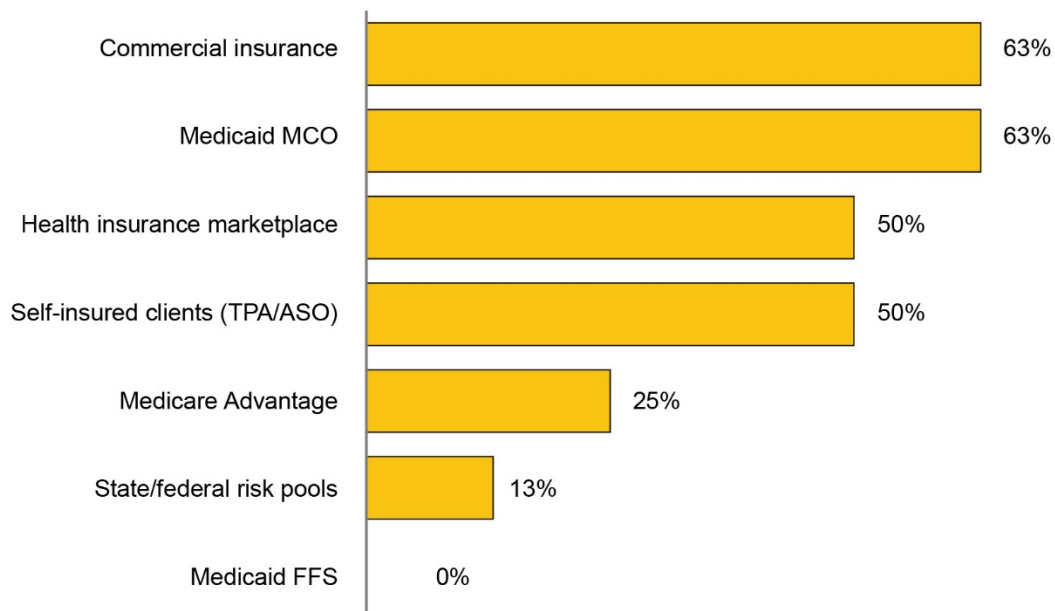
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This Appendix describes the numbers and characteristics of payer partners and practices in CPC+ in the 2018 regions and provides an analysis of participation patterns in the 2017 and 2018 regions combined. In Section 2.A. and 2.B., we include information about payer and practice participation during the first Program Year (PY 1) in the four regions that began CPC+ in 2018. In Section 2.C., we provide details about the number and characteristics of those Medicare FFS beneficiaries served by practices that started in the 2018 regions. In Section 2.D., we examine participation patterns in the 2017 and 2018 regions combined, including the characteristics of CPC+ participants, applicants, and non-applicants, and corresponding participation rates.

2.A. Characteristics of payers that partnered in regions that began CPC+ in 2018

Figure 2.1. Percentage of payer partners in 2018 regions that included a line of business in CPC+ in PY 1

Payer partners that joined CPC+ in 2018 regions most commonly offered commercial insurance and Medicaid managed care lines of business during PY 1. In addition to fully insured lines of business, four of the eight payers included self-insured clients in CPC+.



Source: Mathematica's analysis of data from the independent evaluation's 2018 CPC+ Payer Survey.

Note: N=8.

We counted multi-region payers separately for each region in which they partner because they often approach CPC+.

FFS = fee-for-service; MCO = managed care organization; TPA/ASO = third-party administrator/administrative services only.

Table 2.1. Characteristics of payers that partnered in CPC+ in 2018 regions

Five of the eight payers that joined CPC+ in a 2018 region were medium-sized and most participated in a single region.

	Number of CPC+ payers	Percentage of CPC+ payers
Payer size		
Large (≥ 100,000 lives attributed to CPC+ practices)	0	0.0%
Medium (10,000–99,999 lives attributed to CPC+ practices)	5	62.5%
Small (<10,000 lives attributed to CPC+ practices)	3	37.5%
Single- versus multi-region presence		
Single region	7	87.5%
Multi-region ^a	1	12.5%

Source: Mathematica's analysis of data from the independent evaluation's 2018 CPC+ Payer Survey and 2018 CPC+ payer tracking data provided by CMS.

Note: N = 8.

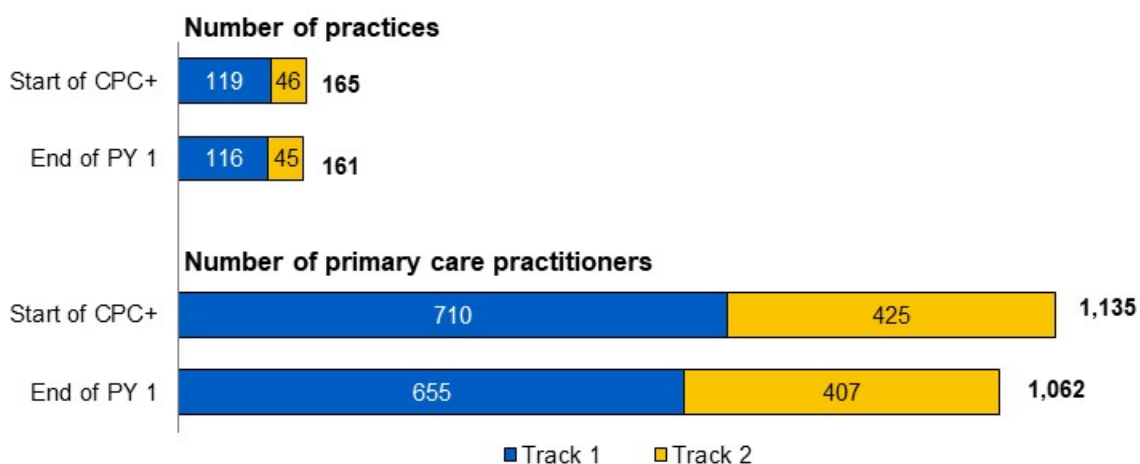
We counted multi-region payers separately for each region in which they partner because they often approach CPC+.

^a This payer is also participating in two 2017 regions. This payer is using a different approach for CPC+ in its 2018 region.

2.B. Practice participation and characteristics in regions that began CPC+ in 2018

Figure 2.2. Practice participation in CPC+ in 2018 regions

Practice participation in the 2018 regions remained relatively stable throughout PY 1.



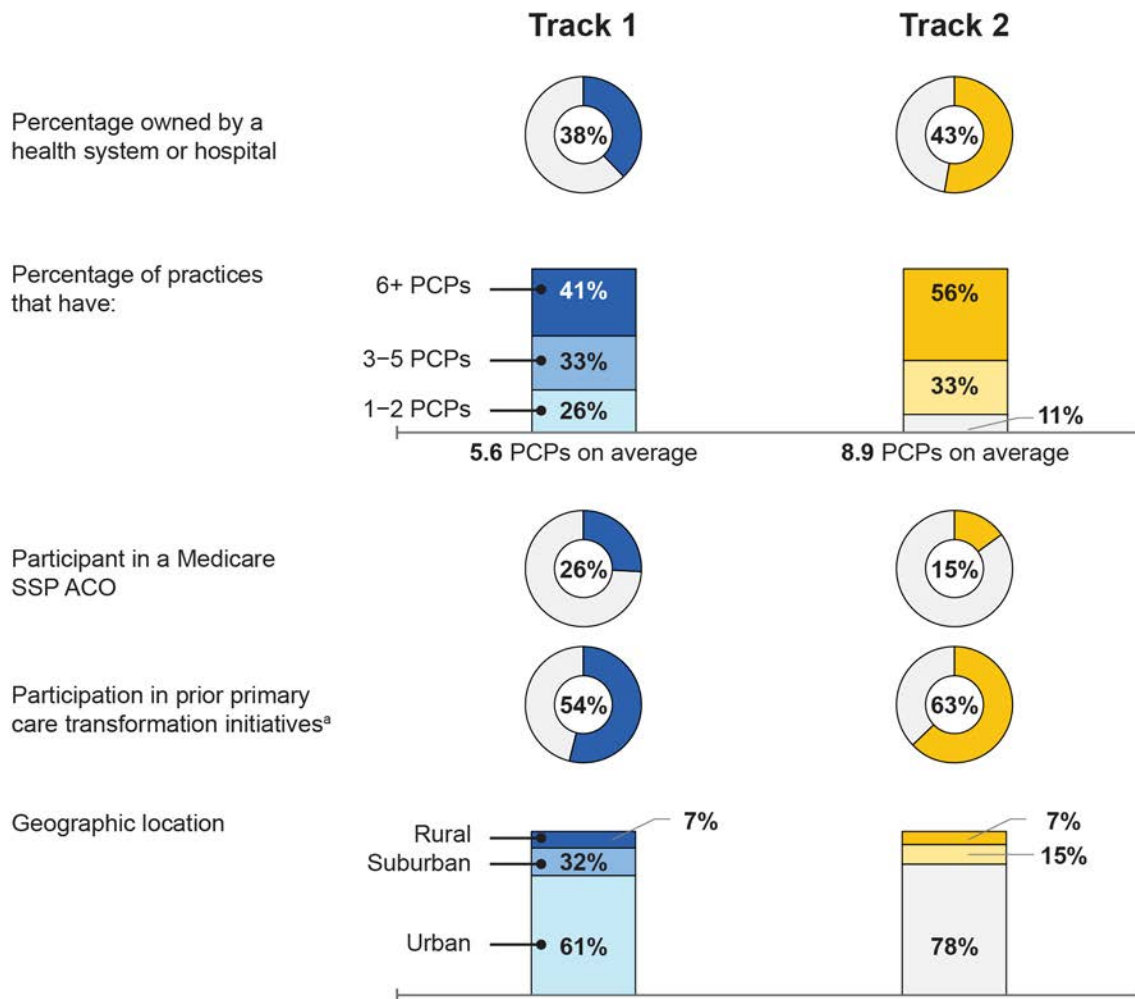
Source: Mathematica's analysis of 2018 CPC+ practice tracking data provided by CMS.

Notes: N = 2,905 CPC+ practices.

PY = Program Year.

Figure 2.3. Characteristics of practices that participated in 2018 regions until the end of PY 1

Similar to the practices that joined CPC+ in 2017, practices that joined in 2018 regions ranged from small to large; are located in rural, suburban, and urban areas, and have varying levels of prior transformation experience.



Source: Mathematica’s analysis of CMS’ CPC+ practice tracking data for practice size and SSP participation (note that the data on the number of PCPs at baseline in the text box comes from SK&A data), SK&A data for ownership, Area Health Resource File data for geography, and CMS and organizations that offer medical home recognition data for participation in prior primary care transformation initiatives including CPC Classic.

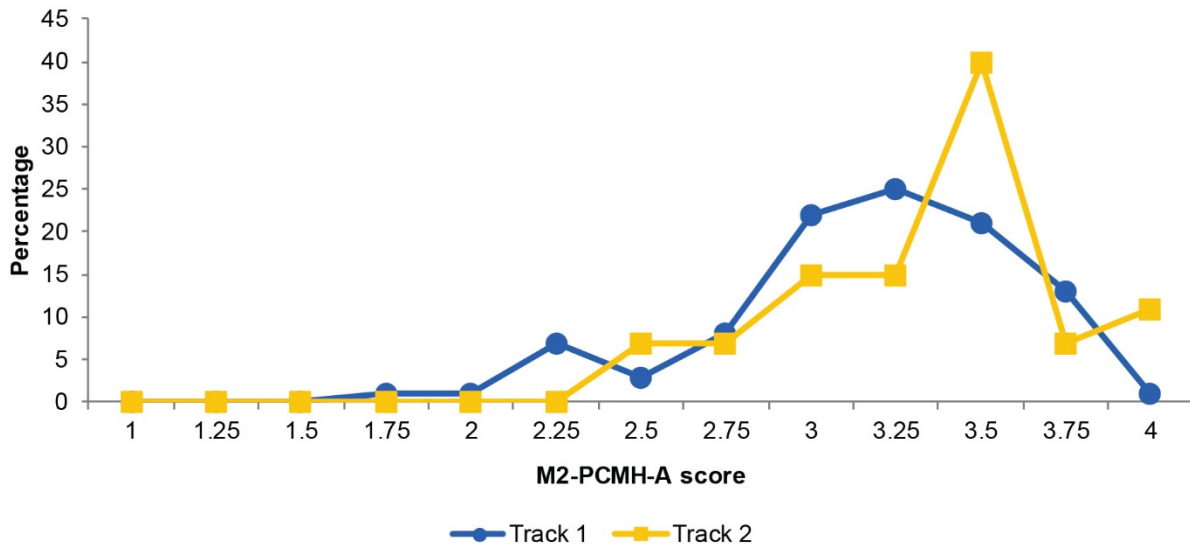
Note: N = 116 Track 1 practices and 45 Track 2 practices.

^a We define participation in prior primary care transformation initiatives as participation in CPC Classic or the Multi-payer Advanced Primary Care Practice Demonstration or being a medical home (indicated by National Committee for Quality Assurance, The Joint Commission, Accreditation Association for Ambulatory Health Care, Utilization Review Accreditation Commission, or state medical-home recognition status).

ACO = Accountable Care Organization; PCP = primary care practitioner, SSP = Medicare Shared Savings Program.

Figure 2.4. 2018 Starters’ distribution of overall M2-PCMH-A scores at the start of CPC+, by track

Practices that joined 2018 regions had fairly advanced approaches to care delivery at the start of CPC+. Track 2 practices had higher overall M2-PCMH-A scores on average, but there is substantial overlap in scores between practices in each track.



Source: Mathematica’s analysis of data from the independent evaluation’s 2018 CPC+ Practice Survey.

Note: The CPC+ Practice Survey includes a modified Patient-Centered Medical Home Assessment (M2-PCMH-A) tool, which Mathematica adapted for the CPC+ evaluation to capture approaches to care delivery. Practices were asked to rate their approaches on a scale from 1 (least advanced approach) to 4 (most advanced approach).

M2-PCMH-A = Modified version of the Patient-Centered Medical Home-Assessment.

2.C. Medicare FFS beneficiaries served by CPC+ practices in 2018 regions

Table 2.2. Characteristics of Medicare beneficiaries assigned to CPC+ practices that started in 2018 and all primary care practices in CPC+ regions, at baseline

Medicare FFS beneficiaries attributed to CPC+ practices at baseline were on average wealthier, more likely to be white, and healthier than beneficiaries served by all primary care practices in the 2018 regions.

Characteristic	2018 Starters (N=163)	All practices in the 2018 regions (N=1,894)
Characteristics of Medicare beneficiaries assigned to practices		
Percentage of beneficiaries who were dually eligible for Medicare and Medicaid in 2017 ^a	21%	28%
Mean HCC score ^b	1.15	1.14
Percentage of beneficiaries in top quartile of HCC scores ^b	26%	25%
Percentages of beneficiaries assigned to the practices in 2017 who had the following chronic conditions, as of January 1, 2017^c		
Alzheimer's and related dementia	8%	9%
Cancer	8%	7%
Chronic obstructive pulmonary disease	11%	11%
Chronic kidney disease	22%	20%
Congestive heart failure	12%	13%
Diabetes	26%	27%
Medicare expenditures and services used^d		
Mean monthly Medicare expenditures per beneficiary (\$ per month) ^e	863	1,036
Median monthly Medicare expenditures per beneficiary (\$ per month) ^e	207	375
Acute hospitalizations per 1,000 beneficiaries ^f	286	322
Total ED visits per 1,000 beneficiaries ^g	514	691
Primary care (ambulatory) visits per 1,000 beneficiaries ^h	4,939	4,652
Percentage who had a 14-day follow-up visit after hospitalization ⁱ	71%	61%

Source: 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.

Note: 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).

^a 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 prior to the start of the baseline year.

^b For 2018 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2016.

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

^d Among beneficiaries assigned to practices in 2017, expenditures accrued from January through December 2017.

^e 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).

^f Includes short-stay acute care and Critical Access Hospitals, and is annualized.

^g Total ED visits includes observation stays and is annualized.

^h Primary care ambulatory visits includes visits to Federally Qualified Health Centers, Rural Health Clinics, and Critical Access Hospitals, and is annualized.

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

ED = emergency department; FFS = fee-for-service; HCC = hierarchical condition category, a claims-based measure of risk for subsequent expenditures.

2.D. Participation analysis of practices in 2017 and 2018 regions

Table 2.3. Practice characteristics for CPC+ applicants and non-applicants in the 2017 and 2018 CPC+ regions, before CPC+

Practices that applied to CPC+ were on average larger in size, more sophisticated EHR users, more likely to be owned by a hospital or health system, and more likely to have had experience with transformation efforts before CPC+ than practices that did not apply.

Characteristic	All practices (n = 16,883) ^a	Among all practices in CPC+ regions		p-value
		Applicants (n = 4,346) ^b	Non-applicants (n = 12,537)	
Practice size and ownership at baseline^c				
Total number of practitioners (any specialty)				
Median (IQR)	2.0 (1.0, 4.0)	3.0 (2.0, 6.0)	2.0 (1.0, 3.0)	<0.001
Number of primary care practitioners				
Median (IQR)	2.0 (1.0, 3.0)	3.0 (2.0, 5.0)	1.0 (1.0, 3.0)	<0.001
Percentage of practices that are:				
Large (6+ primary care practitioners) (95% CI)	12.0 (11.5, 12.5)	23.2 (22.0, 24.5)	8.1 (7.6, 8.6)	<0.001
Medium (3-5 primary care practitioners) (95% CI)	24.6 (23.9, 25.2)	36.2 (34.8, 37.6)	20.5 (19.8, 21.2)	<0.001
Small (1-2 primary care practitioners) (95% CI)	63.4 (62.7, 64.2)	40.5 (39.1, 42.0)	71.4 (70.6, 72.2)	<0.001
Number of attributed Medicare beneficiaries at baseline				
Median (IQR)	204 (82, 412)	410 (231, 740)	155 (55, 311)	<0.001
Number of attributed Medicare beneficiaries at baseline per PCP				
Median (IQR)	113 (48, 194)	144 (89, 214)	99 (32, 183)	<0.001
Percentage owned by a health system or a hospital ^d (95% CI)	31.6 (30.9, 32.3)	50.9 (49.5, 52.4)	24.9 (24.2, 25.7)	<0.001
Percentage owned (or managed) by a health system (95% CI)	27.2 (26.5, 27.8)	46.4 (44.9, 47.8)	20.5 (19.8, 21.2)	<0.001
Percentage owned by a hospital (95% CI)	17.4 (16.8, 18.0)	25.4 (24.1, 26.7)	14.7 (14.0, 15.3)	<0.001
Percentages of practices with selected transformation experience				
Patient-centered medical-home (PCMH) recognition ^e , (95% CI)	23.8 (23.1, 24.4)	47.5 (46.0, 49.0)	15.5 (14.9, 16.2)	<0.001

Table 2.3. (continued)

Characteristic	All practices (n = 16,883) ^a	Among all practices in CPC+ regions		p-value
		Applicants (n = 4,346) ^b	Non-applicants (n = 12,537)	
Participant in a Medicare SSP ACO as of January 1 of the first intervention year (95% CI)	31.0 (30.3, 31.7)	47.0 (45.6, 48.5)	25.4 (24.6, 26.2)	<0.001
Participant in CMMI's Transforming Clinical Practices Initiative (TCPI) (95% CI)	7.6 (7.2, 8.0)	10.5 (9.6, 11.4)	6.6 (6.2, 7.1)	<0.001
Participant in CMMI's Multi-Payer Advanced Primary Care Program (MAPCP) ^f (95% CI)	2.5 (2.3, 2.7)	5.6 (4.9, 6.3)	1.4 (1.2, 1.7)	<0.001
Participant in CPC Classic ^g (95% CI)	2.6 (2.3, 2.8)	9.9 (9.1, 10.8)	0 (0-0)	<0.001
Primary care transformation experience (PCMH recognition ⁱ , or participant MAPCP ^g , or CPC Classic ^h) (95% CI)	25.8 (25.2, 26.5)	53.6 (52.1, 55.1)	16.2 (15.6, 16.8)	<0.001
Primary care transformation experience or TCPI (95% CI)	31.3 (30.6, 32.0)	59.4 (58.0, 60.9)	21.6 (20.8, 22.3)	<0.001
Primary care transformation experience or TCPI or SSP as of January 1 of the first intervention year (95% CI)	50.5 (49.8, 51.3)	81.1 (79.9, 82.3)	39.9 (39.1, 40.8)	<0.001
Percentages of practices with at least one practitioner attesting to meaningful use of an EHR				
Meaningful EHR use ^h (95% CI)	57.7 (57.0, 58.4)	85.8 (84.7, 86.8)	48.0 (47.1, 48.9)	<0.001
Characteristics of practices' county				
Median household income in the county in which the practice is located (\$) (IQR)	51,475 (43,338, 62,867)	53,164 (45,698, 64,916)	50,453 (42,896, 62,861)	<0.001
Percentage in a rural location, 2013 (95% CI)	12.9 (12.4, 13.4)	8.6 (7.7, 9.4)	14.4 (13.8, 15.0)	<0.001
Percentage in a suburban location, 2013 (95% CI)	14.5 (14.0, 15.0)	14.8 (13.8, 15.9)	14.4 (13.8, 15.0)	0.469
Percentage in an urban location, 2013 (95% CI)	72.6 (71.9, 73.2)	76.6 (75.3, 77.9)	71.2 (70.4, 72.0)	<0.001

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 Practices Initiative, participation in CMMI's Multi-Payer Advanced Primary Care Program, 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.

Table 2.3. (continued)

^a Table includes only 16,883 of the 19,809 primary care practices in the 2017 and 2018 regions because we excluded 2,926 practices (15%) that had no attributed Medicare FFS beneficiaries in the baseline year.

^b 4,599 practices applied for CPC+. The number of applicants in this table, 4,346, is smaller, because some applicants could not be identified in the SK&A data and some applicants had no attributed Medicare FFS beneficiaries at baseline.

^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 it 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 (MAPCP) 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.

AAAHC = Accreditation Association for Ambulatory Health Care; ACO = accountable care organization; ARF = Area Resource File; CI = confidence interval; CMMI = Center for Medicare & 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.

Table 2.4. Characteristics of CPC+ applicants and non-applicants in the 2017 and 2018 CPC+ regions based on the composition of their Medicare FFS beneficiaries, before CPC+

Applicants served slightly healthier and less disadvantaged Medicare FFS beneficiaries on average than practices that did not apply.

Characteristic	All practices (n = 16,883) ^a	Among all practices in CPC+ regions		p-value
		Applicants (n = 4,346) ^b	Non-applicants (n = 12,537)	
Characteristics of Medicare FFS beneficiaries attributed to practices at baseline^c				
Percentage of beneficiaries ages:				
0-49 years (95% CI)	7.4 (7.2, 7.5)	6.0 (5.8, 6.2)	7.8 (7.6, 8.0)	<0.001
50-64 years (95% CI)	15.2 (15.1, 15.5)	13.1 (12.9, 13.4)	16.0 (15.8, 16.3)	<0.001
65-74 years (95% CI)	43.6 (43.4, 43.8)	45.3 (45.0, 45.6)	43.0 (42.8, 43.3)	<0.001
75 to 84 years (95% CI)	22.8 (22.6, 22.9)	24.1 (23.9, 24.3)	22.3 (22.1, 22.5)	<0.001
85+ years (95% CI)	11.0 (10.8, 11.1)	11.5 (11.3, 11.7)	10.8 (10.6, 11.0)	<0.001
Percentage of beneficiaries who are male (95% CI)	42.4 (42.2, 42.6)	41.6 (41.4, 41.9)	42.7 (42.4, 42.9)	<0.001
Percentage of beneficiaries who are:				
Black (95% CI)	12.0 (11.7, 12.3)	8.5 (8.1, 9.0)	13.2 (12.9, 13.6)	<0.001
White (95% CI)	80.1 (79.7, 80.5)	84.3 (83.7, 84.9)	78.6 (78.2, 79.1)	<0.001
Other (95% CI)	7.9 (7.6, 8.1)	7.2 (6.8, 7.6)	8.1 (7.8, 8.4)	<0.001
Percentage of beneficiaries who were dually eligible ^d (95% CI)	21.7 (21.4, 22.0)	17.0 (16.6, 17.5)	23.4 (23.0, 23.8)	<0.001
Mean HCC score among beneficiaries attributed in the baseline year ^e (95% CI)	1.15 (1.15, 1.16)	1.12 (1.11, 1.13)	1.16 (1.16, 1.17)	<0.001
Percentages of beneficiaries with the following chronic conditions as of the baseline year ^f (95% CI)				
Alzheimer's and related dementia (95% CI)	8.3 (8.1, 8.4)	7.7 (7.5, 7.9)	8.4 (8.3, 8.6)	<0.001
Cancer (95% CI)	7.0 (7.0, 7.1)	7.6 (7.5, 7.7)	6.8 (6.7, 6.9)	<0.001
Chronic obstructive pulmonary disease (95% CI)	11.5 (11.4, 11.7)	10.8 (10.7, 11.0)	11.8 (11.6, 12.0)	<0.001
Chronic kidney disease (95% CI)	16.9 (16.7, 17.1)	16.8 (16.6, 17.1)	16.9 (16.7, 17.1)	0.665
Congestive heart failure (95% CI)	12.7 (12.5, 12.8)	11.4 (11.2, 11.6)	13.1 (12.9, 13.3)	<0.001
Diabetes (95% CI)	27.9 (27.7, 28.1)	26.3 (26.1, 26.6)	28.4 (28.2, 28.7)	<0.001

Table 2.4. (continued)

Characteristic	All practices (n = 16,883) ^a	Among all practices in CPC+ regions		p-value
		Applicants (n = 4,346) ^b	Non-applicants (n = 12,537)	
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)	878 (717, 1,088)	858 (744, 1,004)	888 (702, 1,126)	<0.001
Weighted monthly Medicare expenditures per beneficiary (\$ per month) ^{g,h}				
Median (IQR)	875 (765, 1,020)	855 (761, 976)	895 (771, 1,067)	<0.001
Acute care stays per 1,000 beneficiaries, annualized				
Median (IQR)	289 (220, 374)	282 (233, 346)	292 (213, 388)	0.007
ED visits per 1,000 beneficiaries, annualized				
Median (IQR)	506 (368, 721)	481 (374, 638)	518 (364, 762)	<0.001
Primary care (ambulatory) visits per 1,000 beneficiaries, annualized				
Median (IQR)	4,518 (3,724, 5,517)	4,471 (3,927, 5,161)	4,539 (3,623, 5,683)	0.592
Percentage of discharges where the beneficiary had a 14-day follow-up visit after hospitalization ⁱ				
Median (IQR)	67.6 (59.6, 74.8)	69.1 (63.0, 74.4)	66.7 (57.7, 75.0)	<0.001

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 Table includes only 16,883 of the 19,809 primary care practices in the 2017 and 2018 regions because we excluded 2,926 practices (15%) that had no attributed Medicare FFS beneficiaries in the baseline year.

^b 4,599 practices applied for CPC+. The number of applicants in this table (4,346) is smaller, because some applicants could not be identified in the SK&A data and some applicants had no attributed Medicare FFS beneficiaries at baseline.

^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 prior to 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 prior to the baseline year for Alzheimer's and related dementia; one year prior to the baseline year for cancer and chronic obstructive pulmonary disease; and two years prior to 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).

Table 2.4. (continued)

^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.

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

Table 2.5. Practice characteristics for CPC+ participants and non-participants among CPC+ applicants in the 2017 and 2018 CPC+ regions, before CPC+

Participants were more likely to be large, to have at least one practitioner attest to the meaningful use of an EHR, to be system owned, and to have prior transformation experience than non-participants.

Characteristic	Applicants (n = 4,346) ^a	Among applicants		p-value
		Participants (n = 3,051) ^{b,c}	Non-participants (n = 1,295)	
Practice size and ownership at baseline^d				
Total number of practitioners (any specialty)				
Median (IQR)	3.0 (2.0, 6.0)	4.0 (2.0, 6.0)	3.0 (2.0, 5.0)	<0.001
Number of primary care practitioners				
Median (IQR)	3.0 (2.0, 5.0)	3.0 (2.0, 6.0)	2.0 (1.0, 4.0)	<0.001
Percentage of practices that are:				
Large (6+ primary care practitioners) (95% CI)	23.3 (22.0, 24.5)	26.6 (25.0, 28.2)	15.4 (13.4, 17.3)	<0.001
Medium (3-5 primary care practitioners) (95% CI)	36.2 (34.8, 37.6)	37.1 (35.4, 38.9)	34.1 (31.5, 36.6)	0.052
Small (1-2 primary care practitioners) (95% CI)	40.5 (39.1, 42.0)	36.3 (34.5, 38.0)	50.6 (47.9, 53.3)	<0.001
Number of attributed Medicare beneficiaries at baseline				
Median (IQR)	410 (231, 740)	484 (288, 837)	253 (117, 497)	<0.001
Number of attributed Medicare beneficiaries at baseline per PCP				
Median (IQR)	144 (89, 214)	159 (107, 232)	107 (61, 173)	<0.001
Percentage owned by a health system or a hospital ^e (95% CI)	50.9 (49.5, 52.4)	54.0 (52.2, 55.8)	43.7 (41.0, 46.4)	<0.001
Percentage owned (or managed) by a health system (95% CI)	46.4 (44.9, 47.8)	49.3 (47.5, 51.0)	39.5 (36.9, 42.2)	<0.001
Percentage owned by a hospital (95% CI)	25.4 (24.1, 26.7)	27.6 (26.0, 29.2)	20.2 (18.0, 22.4)	<0.001
Percentages of practices with selected transformation experience				
Patient-centered medical- home (PCMH) recognition ^f (95% CI)	47.5 (46.0, 49.0)	52.6 (50.8, 54.3)	35.4 (32.8, 38.1)	<0.001
Participant in a Medicare SSP ACO as of January 1 of the first intervention year (95% CI)	47.0 (45.6, 48.5)	46.2 (44.5, 48.0)	49.0 (46.2, 51.7)	0.104

Table 2.5. (continued)

Characteristic	Applicants (n = 4,346) ^a	Among applicants		p-value
		Participants (n = 3,051) ^{b,c}	Non-participants (n = 1,295)	
Participant in CMMI's Transforming Clinical Practices Initiative (TCPI) (95% CI)	10.5 (9.6, 11.4)	10.8 (9.7, 11.9)	9.7 (8.1, 11.3)	0.276
Participant in CMMI's Multi-Payer Advanced Primary Care Program (MAPCP) ^g (95% CI)	5.6 (4.9, 6.3)	6.9 (6.0, 7.7)	2.5 (1.7, 3.4)	<0.001
Participant in CPC Classic ^h (95% CI)	9.9 (9.1, 10.8)	14.1 (12.8, 15.3)	0.2 (0.0, 0.5)	<0.001
Primary care transformation experience (PCMH recognition ^f , or participant MAPCP ^g or CPC Classic ^h) (95% CI)	53.6 (52.1, 55.1)	60.7 (59.0, 62.4)	36.8 (34.2, 39.5)	<0.001
Primary care transformation experience or TCPI (95% CI)	59.4 (58.0, 60.9)	65.7 (64.1, 67.4)	44.5 (41.8, 47.2)	<0.001
Primary care transformation experience or TCPI or SSP as of January 1 of the first intervention year (95% CI)	81.1 (79.9, 82.3)	84.6 (83.3, 85.9)	72.9 (70.5, 75.3)	<0.001
Percentages of practices with at least one practitioner attesting to meaningful use of an EHR				
Meaningful EHR use ⁱ (95% CI)	85.8 (84.7, 86.8)	90.4 (89.3, 91.4)	74.9 (72.5, 77.3)	<0.001
Characteristics of practices' county				
Median household income in the county in which the practice is located (\$) (IQR)	53,164 (45,698, 64,916)	54,089 (46,185, 66,315)	49,503 (44,015, 61,170)	<0.001
Percentage in a rural location, 2013 (95% CI)	8.6 (7.7, 9.4)	8.7 (7.7, 9.7)	8.3 (6.8, 9.8)	0.646
Percentage in a suburban location, 2013 (95% CI)	14.8 (13.8, 15.9)	15.4 (14.2, 16.7)	13.4 (11.6, 15.3)	0.082
Percentage in an urban location, 2013 (95% CI)	76.6 (75.3, 77.9)	75.9 (74.4, 77.4)	78.3 (76.1, 80.5)	0.080

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 Practices Initiative, participation in CMMI's Multi-Payer Advanced Primary Care Program, 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 4,599 practices applied for CPC+. The number of applicants in this table, 4,346, is smaller, because some applicants could not be identified in the SK&A data and some applicants had no attributed Medicare FFS beneficiaries at baseline.

^b 2018 starters make up approximately 5% of the participating CPC+ practices and 5% of attributed beneficiaries.

^c As of April 1 of the first intervention year.

Table 2.5. (continued)

^d The baseline year is 2016 for the 2017 starters and 2017 for the 2018 starters.

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

^f A practice was considered to have medical home recognition if it 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.

^g 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.

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

ⁱ 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.

^j Reflects 2014 data for the 2017 starters and 2015 data for the 2018 starters.

AAAHC = Accreditation Association for Ambulatory Health Care; ACO = accountable care organization; ARF = Area Resource File; CI = confidence interval; CMMI = Center for Medicare & 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.

Table 2.6. Characteristics of CPC+ participants and non-participants among CPC+ applicants in the 2017 and 2018 CPC+ regions, based on the composition of their Medicare FFS beneficiaries, before CPC+

Participants served slightly more advantaged beneficiaries than non-participants.				
Characteristic	Applicants (n = 4,346) ^a	Among applicants		p-value
		Participants (n = 3,051) ^{b,c}	Non-participants (n = 1,295)	
Characteristics of Medicare FFS beneficiaries attributed to practices at baseline^d				
Percentage of beneficiaries ages:				
0-49 years (95% CI)	6.0 (5.8, 6.2)	5.2 (5.1, 5.4)	7.9 (7.5, 8.4)	<0.001
50-64 years (95% CI)	13.1 (12.9, 13.4)	12.0 (11.7, 12.2)	15.9 (15.4, 16.4)	<0.001
65-74 years (95% CI)	45.3 (45.0, 45.6)	46.1 (45.8, 46.4)	43.3 (42.7, 44.0)	<0.001
75 to 84 years (95% CI)	24.1 (23.9, 24.3)	24.9 (24.7, 25.1)	22.2 (21.7, 22.6)	<0.001
85+ years (95% CI)	11.5 (11.3, 11.7)	11.8 (11.6, 12.0)	10.7 (10.2, 11.1)	<0.001
Percentage of beneficiaries who are male (95% CI)	41.6 (41.4, 41.9)	41.7 (41.4, 41.9)	41.5 (41.0, 42.1)	0.664
Percentage of beneficiaries who are				
Black (95% CI)	8.5 (8.1, 9.0)	6.9 (6.5, 7.4)	12.3 (11.3, 13.4)	<0.001
White (95% CI)	84.3 (83.7, 84.9)	85.8 (85.1, 86.5)	80.8 (79.6, 82.0)	<0.001
Other (95% CI)	7.2 (6.8, 7.6)	7.3 (6.8, 7.8)	6.9 (6.2, 7.6)	0.383
Percentage of beneficiaries who were dually eligible ^e (95% CI)	17.0 (16.6, 17.5)	14.9 (14.4, 15.4)	22.0 (21.0, 23.0)	<0.001
Mean HCC score among beneficiaries attributed in the baseline year ^f (95% CI)	1.12 (1.11, 1.13)	1.10 (1.10, 1.11)	1.16 (1.14, 1.18)	<0.001
Percentages of beneficiaries with the following chronic conditions as of the baseline year ^g				
Alzheimer's and related dementia (95% CI)	7.7 (7.5, 7.9)	7.4 (7.2, 7.5)	8.4 (8.0, 8.9)	<0.001
Cancer (95% CI)	7.6 (7.5, 7.7)	7.9 (7.8, 8.0)	7.0 (6.8, 7.1)	<0.001
Chronic obstructive pulmonary disease (95% CI)	10.8 (10.7, 11.0)	10.3 (10.2, 10.5)	12.0 (11.6, 12.4)	<0.001
Chronic kidney disease (95% CI)	16.8 (16.6, 17.1)	16.4 (16.2, 16.6)	17.9 (17.4, 18.4)	<0.001
Congestive heart failure (95% CI)	11.4 (11.2, 11.6)	11.0 (10.8, 11.1)	12.4 (11.9, 12.8)	<0.001
Diabetes (95% CI)	26.3 (26.1, 26.6)	25.7 (25.4, 26.0)	27.8 (27.2, 28.4)	<0.001
Medicare FFS expenditures and service use for Medicare FFS beneficiaries attributed to practices at baseline				
Monthly Medicare expenditures per beneficiary (\$ per month) ^{h,i}				
Median (IQR)	858 (744, 1,004)	850 (745, 981)	874 (737, 1,090)	<0.001

Table 2.6. (continued)

Characteristic	Applicants (n = 4,346) ^a	Among applicants		p-value
		Participants (n = 3,051) ^{b,c}	Non-participants (n = 1,295)	
Weighted monthly Medicare expenditures per beneficiary (\$ per month) ^{h,i}				
Median (IQR)	855 (761, 976)	849 (757, 964)	869 (768, 1,020)	<0.001
Acute care stays per 1,000 beneficiaries, annualized				
Median (IQR)	282 (233, 346)	276 (231, 331)	302 (239, 390)	<0.001
ED visits per 1,000 beneficiaries, annualized				
Median (IQR)	481 (374, 638)	465 (366, 598)	537 (397, 753)	<0.001
Primary care (ambulatory) visits per 1,000 beneficiaries, annualized				
Median (IQR)	4,471 (3,927, 5,161)	4,443 (3,917, 5,087)	4,565 (3,957, 5,503)	<0.001
Percentage of discharges where the beneficiary had a 14-day follow-up visit after hospitalization ^l				
Median (IQR)	69.1 (63.0, 74.4)	69.6 (64.0, 74.5)	67.8 (60.4, 74.3)	<0.001

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 4,599 practices applied for CPC+. The number of applicants in this table, 4,346, is smaller, because some applicants could not be identified in the SK&A data and some applicants had no attributed Medicare FFS beneficiaries at baseline.

^b 2018 starters make up approximately 5% of the participating CPC+ practices and 5% of attributed beneficiaries.

^c As of April 1 of the first intervention year.

^d The baseline year is 2016 for the 2017 starters and 2017 for the 2018 starters.

^e 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 prior to the start of the baseline year.

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

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

^h 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).

ⁱ 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.

^j This measure was calculated for beneficiaries attributed in the first quarter of the baseline year.

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

Table 2.7. Practice characteristics for CPC+ participants in the 2017 and 2018 CPC+ regions, by track, before CPC+ and 2018 Starters combined

Track 2 practices, on average, were larger than Track 1 practices and had more attributed Medicare beneficiaries, but had fewer attributed Medicare beneficiaries per primary care practitioner. Track 2 practices were substantially more likely to have experience with primary care transformation efforts than Track 1 practices.

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
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

Table 2.7. (continued)

Characteristic	Participants (n = 3,051) ^{a,b}	Track 1 (n = 1,490)	Track 2 (n = 1,561)	p-value
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
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				
Median household income in the county in which the practice is located (\$) (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, 2013(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, 2013(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, 2013(95% CI)	75.9 (74.4, 77.4)	71.9 (69.6, 74.2)	79.7 (77.7, 81.7)	<0.001

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 Program, 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.

Table 2.7. (continued)

^e A practice was considered to have medical home recognition if it 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.

AAAHC = Accreditation Association for Ambulatory Health Care; ACO = accountable care organization; ARF = Area Resource File; CI = confidence interval; CMMI = Center for Medicare & 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.

Table 2.8. Characteristics of CPC+ participants in the 2017 and 2018 CPC+ regions, by track, based on the composition of their Medicare FFS beneficiaries, before CPC+

The demographic and risk characteristics, and the average expenditure and utilization of beneficiaries served by practices in Tracks 1 and 2 were very similar.

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

Table 2.8. (continued)

Characteristic	Participants (n = 3,051) ^{a,b}	Track 1 (n = 1,490)	Track 2 (n = 1,561)	p-value
Weighted monthly Medicare expenditures per beneficiary (\$ per month) ^{g,h}				
Median (IQR)	849 (757, 964)	848 (756, 968)	852 (759, 962)	0.855
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

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 prior to 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 prior to the baseline year for Alzheimer's and related dementia; one year prior to the baseline year for cancer and chronic obstructive pulmonary disease; and two years prior to 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.

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

Table 2.9. Sample sizes and exclusions for practices in the 2017 and 2018 CPC+ regions

Of the 19,809 practices providing primary care to adults in the 18 regions that we identified in our data, 4,366 (22 percent) applied to participate in CPC+ (233 additional applicant practices could not be identified in our data). CMS accepted all 3,051 that met minimum requirements, or 15 percent of the 19,809 practices.

	All practices	Practices excluded because did not have any 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.

Table 2.10. Participation rates, by CPC+ region

Participation rates varied across the CPC+ regions. Four regions had participation rates of 2–10 percent, eight had rates from 11–20 percent, and the remaining six regions had participation rates between 20–34 percent. Regional variation in participation rates could be driven by a number of factors- variation in payer penetration and expected payment levels (which both affect 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).

Region	Number of primary care practices in the region (Overall)	Percentage of all practices that applied ^a	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.

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CHAPTER 4 APPENDIX

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4.A. Care delivery requirement reporting data: CPC+ practices that started in 2017

This Appendix contains detailed information on practices' approaches to delivering care based on Mathematica's analysis of the CPC+ Practice Portal data. CMS requires active CPC+ practices to submit quarterly responses about care delivery requirements and related practice activities online through the CPC+ Practice Portal. These data are used to track practices' progress on the CPC+ care delivery functions, and may be used to judge compliance and to inform learning activities. In this Appendix, we present CPC+ Practice Portal data from the most recent quarter available (for most tables, Quarter 3 or 4 of 2018) separately for practices that started CPC+ in 2017 and practices that started CPC+ in 2018; the data reflect the experiences of practices at the end of Program Year (PY) 2 and PY 1, respectively.

Table 4.A.1 summarizes the number of practices (overall and by track and Medicare Shared Savings Program [SSP] status) that were active in CPC+ at the end of 2018, including 2,716 practices that started in 2017 and 163 practices that started in 2018. For practices that started CPC+ in 2017, we present data in this Appendix by track and SSP status. Participation status in an SSP reflects status at the end of the year. More CPC+ practices that started in 2017 participated in an SSP at the end of PY 2 than at the end of PY 1. For practices that started CPC+ in 2018, we present data by track alone due to small sample sizes. Even so, relatively few Track 2 practices started CPC+ in 2018, so readers should interpret findings for these practices with caution.

Table 4.A.1. Participation in CPC+ for 2017 Starters and 2018 Starters, by track and SSP status

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Participation in CPC+: 2017 Starters							
Baseline (January 1, 2017)	2,905	1,385	738	647	1,520	616	904
End of Program Year 1 (December 31, 2017)	2,786	1,310	689	621	1,476	587	889
End of Program Year 2 (December 31, 2018) ^a	2,716	1,271	724	547	1,445	622	823
Participation in CPC+: 2018 Starters							
Baseline (January 1, 2018)	165	119	30	89	46	7	39
End of Program Year 1 (December 31, 2018)	163	117	30	87	46	7	39

Source: Mathematica's analysis of 2017 and 2018 CPC+ practice tracking data provided by CMS.

^a One Track 1 practice that started in 2017 did not submit care delivery reporting data in Quarter 4 and thus is not included in Appendix tables that reflect Quarter 4.

SSP = Medicare Shared Savings Program.

Although CPC+ requirements are based on track and starting year, every practice must answer the same CPC+ Practice Portal questions. However, some questions include skip patterns. Therefore, it is important to note denominators when interpreting the percentage of practices with a particular response.

We generally present the wording and organization of the questions and responses exactly as they appear in the CPC+ Practice Portal, recognizing that these factors could influence interpretation and practices' responses. To facilitate comparisons to the Care Delivery Reporting Guide, we have numbered our appendix tables using the same scheme. Acronyms CMS used in the question stem or response options are defined in the acronyms list. Questions for which Mathematica did additional data manipulation (for example, combining items, applying thresholds, or conducting other data cleaning steps) are indicated in the notes section.

Data for PY 1 for practices that started CPC+ in 2017 are available in the CPC+ first annual report, and are not repeated in this second annual report Appendix. Comparisons over time should be made with caution for two reasons. First, the wording and response options for many CPC+ Practice Portal questions changed over time, complicating the interpretation of such comparisons between PY 1 and PY 2. In addition, the sample changes over time. In this year's Appendix, we report responses to CPC+ Practice Portal questions based on the 2,716 CPC+ practices that were active at the end of PY 2; in last year's Appendix, we reported responses to CPC+ Practice Portal questions based on the 2,786 practices that were active at the end of PY 1.

Table 4.A.1.1. Access and continuity: Empanelment, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
Do you primarily empanel patients by practitioner (i.e., each MD, DO, PA, or NP) or by care team (i.e., practitioner-led teams)?							
Practitioner	87%	87%	91%	82%	87%	88%	86%
Care Team	13%	13%	9%	18%	13%	12%	14%
N	2,715	1,270	723	547	1,445	622	823
What is your active patient lookback period?							
Less than one year	1%	1%	1%	2%	<1%	<1%	<1%
1-2 years	80%	84%	84%	84%	76%	75%	77%
More than two years	19%	15%	15%	14%	23%	24%	22%
N	2,715	1,270	723	547	1,445	622	823
Percentage of practices with 95 percent or more of their patients empaneled.							
Yes	98%	98%	98%	98%	98%	98%	97%
No	2%	2%	2%	2%	2%	2%	3%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.1.2. Access and continuity: 24/7 access, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Does a clinician or care team member from your practice site usually provide 24/7 coverage?							
No, we do not provide 24/7 coverage	<1%	<1%	<1%	<1%	<1%	0%	<1%
Yes	80%	81%	78%	84%	78%	78%	78%
No, we have a centralized call-center for our health system (after-hours coverage for all practices in the system)	15%	13%	15%	11%	17%	18%	16%
No, we have a formal coverage arrangement with another practice/organization	5%	6%	7%	5%	5%	4%	5%
N	2,716	1,271	724	547	1,445	622	823
Is 24/7 coverage provided with real-time access to your practice's EHR?							
Yes	99%	98%	98%	98%	100%	100%	100%
No	<1%	2%	2%	2%	<1%	<1%	<1%
N	2,712	1,268	722	546	1,444	622	822

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.1.3. Access and continuity: Continuity of care, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Do you track continuity of care (in terms of how often patients see the practitioner or care team to which they are empaneled) for your patients?							
Yes	91%	89%	88%	90%	92%	91%	93%
No	9%	11%	12%	10%	8%	9%	7%
N	2,716	1,271	724	547	1,445	622	823
What system(s) do you primarily use to track continuity of care? (Select all that apply.)							
EHR	91%	91%	92%	90%	91%	93%	89%
Electronic practice management systems (e.g., appointment scheduling system)	27%	30%	22%	39%	24%	22%	26%
Other	6%	7%	6%	7%	5%	5%	4%
N	2,458	1,130	636	494	1,328	565	763
How does your practice measure continuity of care? (Select all that apply.)							
We use patient-centric measures	51%	45%	48%	40%	56%	59%	53%
We use practitioner-centric measures	69%	68%	68%	68%	69%	78%	62%
Other	5%	5%	3%	9%	5%	2%	7%
N	2,458	1,130	636	494	1,328	565	763

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.1.4.a. Access and continuity: Enhanced access and communication, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
When patients need it, my practice is able to provide same- or next-day appointments							
Never	0%	0%	0%	0%	0%	0%	0%
Rarely	<1%	<1%	0%	<1%	0%	0%	0%
Sometimes	<1%	<1%	<1%	<1%	1%	0%	2%
Often	19%	20%	21%	20%	18%	15%	21%
Always	80%	79%	78%	80%	80%	85%	77%
N	2,715	1,270	723	547	1,445	622	823
When patients need it, my practice is able to provide office visits on the weekend, in the evening, or in the early morning							
Never	9%	11%	8%	14%	7%	5%	8%
Rarely	4%	6%	6%	6%	3%	3%	3%
Sometimes	10%	10%	7%	15%	9%	9%	9%
Often	25%	24%	26%	21%	25%	26%	25%
Always	53%	49%	53%	44%	56%	56%	56%
N	2,715	1,270	723	547	1,445	622	823
When patients need it, my practice is able to provide telephone advice on clinical issues during office hours							
Never	0%	0%	0%	0%	0%	0%	0%
Rarely	<1%	<1%	0%	<1%	<1%	0%	<1%
Sometimes	2%	1%	<1%	2%	3%	5%	2%
Often	7%	8%	8%	7%	7%	6%	7%
Always	90%	91%	91%	90%	90%	88%	91%
N	2,715	1,270	723	547	1,445	622	823
When patients need it, my practice is able to provide telephone advice on clinical issues on weekends and/or after regular office hours							
Never	<1%	<1%	<1%	0%	<1%	0%	2%
Rarely	<1%	<1%	<1%	<1%	<1%	0%	<1%
Sometimes	2%	3%	1%	4%	2%	1%	2%
Often	10%	10%	10%	10%	10%	12%	8%
Always	87%	87%	89%	85%	87%	86%	87%
N	2,715	1,270	723	547	1,445	622	823

Table 4.A.1.4.a. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
When patients need it, my practice is able to provide email or portal advice on clinical issues							
Never	3%	5%	5%	6%	<1%	<1%	<1%
Rarely	2%	3%	3%	3%	2%	1%	2%
Sometimes	7%	8%	7%	9%	5%	4%	6%
Often	14%	13%	11%	15%	15%	15%	15%
Always	74%	71%	75%	67%	77%	79%	76%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.1.4.b. Access and continuity: Enhanced access and communication, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
In the last quarter, in which of the following ways did your practice provide alternative approaches to care other than traditional office-based visits? (Select all that apply.)							
We did not provide alternative approaches to care	16%	30%	31%	29%	3%	<1%	5%
Visits in alternative locations (e.g., nursing facilities, hospitals, senior centers)	45%	44%	42%	45%	46%	50%	44%
Home-based care (e.g., primary care home visits)	40%	31%	30%	33%	48%	54%	43%
Medical group visits (e.g., shared medical appointments)	22%	16%	13%	20%	26%	25%	27%
Video-based conferencing (i.e., telehealth or telemedicine)	19%	13%	14%	13%	24%	34%	18%
Medical visit over an electronic exchange (i.e., phone, e-visit, portal)	46%	30%	29%	31%	61%	70%	54%
Other	20%	14%	15%	13%	24%	27%	22%
N	2,715	1,270	723	547	1,445	622	823
If your practice provided visits in alternative locations (e.g., nursing facilities, hospitals, senior centers): How many of your patients who could benefit from this type of care received it?							
None	7%	7%	6%	9%	7%	10%	4%
Some	61%	60%	67%	51%	62%	63%	62%
Most	17%	20%	18%	23%	14%	13%	15%
All	15%	13%	9%	17%	17%	14%	20%
N	1,224	553	307	246	671	308	363
If your practice provided visits in alternative locations (e.g., nursing facilities, hospitals, senior centers): Who primarily provided this care? (Select all that apply.)							
MD/DO	83%	88%	90%	85%	80%	69%	89%
NP/PA	29%	24%	25%	24%	33%	26%	40%
Other care team members	15%	5%	7%	4%	22%	26%	20%
N	1,224	553	307	246	671	308	363

Table 4.A.1.4.b. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
If your practice provided home-based care (e.g., primary care home visits): How many of your patients who could benefit from this type of care received it?							
None	9%	13%	9%	16%	8%	8%	7%
Some	73%	71%	79%	62%	74%	83%	66%
Most	7%	9%	7%	11%	7%	7%	6%
All	10%	7%	4%	10%	12%	2%	21%
N	1,089	397	214	183	692	334	358
If your practice provided home-based care (e.g., primary care home visits): Who primarily provided this care? (Select all that apply.)							
MD/DO	63%	63%	64%	61%	62%	47%	77%
NP/PA	37%	31%	34%	27%	41%	38%	44%
Other care team members	30%	15%	15%	14%	39%	50%	29%
N	1,089	397	214	183	692	334	358
If your practice provided medical group visits (e.g., shared medical appointments): How many of your patients who could benefit from this type of care received it?							
None	20%	31%	31%	31%	14%	17%	12%
Some	68%	63%	63%	63%	71%	56%	82%
Most	10%	5%	4%	5%	12%	22%	5%
All	2%	1%	2%	<1%	2%	4%	<1%
N	584	207	97	110	377	156	221
If your practice provided medical group visits (e.g., shared medical appointments): Who primarily provided this care? (Select all that apply.)							
MD/DO	42%	33%	36%	30%	47%	42%	52%
NP/PA	25%	20%	22%	19%	28%	27%	29%
Other care team members	57%	47%	47%	47%	62%	67%	59%
N	584	207	97	110	377	156	221
If your practice provided video-based conferencing (i.e., telehealth or telemedicine): How many of your patients who could benefit from this type of care received it?							
None	42%	57%	53%	64%	35%	37%	33%
Some	52%	41%	46%	33%	57%	62%	50%
Most	6%	2%	1%	3%	8%	<1%	17%
All	<1%	0%	0%	0%	<1%	<1%	0%
N	522	168	99	69	354	209	145

Table 4.A.1.4.b. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
If your practice provided video-based conferencing (i.e., telehealth or telemedicine): Who primarily provided this care? (Select all that apply.)							
MD/DO	43%	33%	39%	23%	47%	45%	51%
NP/PA	26%	21%	33%	4%	28%	19%	41%
Other care team members	14%	9%	6%	13%	16%	19%	12%
N	522	168	99	69	354	209	145
If your practice provided medical visits over an electronic exchange (i.e., phone, e-visit, portal): How many of your patients who could benefit from this type of care received it?							
None	9%	14%	14%	12%	7%	4%	9%
Some	67%	69%	74%	64%	66%	71%	60%
Most	14%	11%	9%	15%	16%	10%	21%
All	10%	6%	3%	9%	12%	15%	10%
N	1,259	376	207	169	883	436	447
If your practice provided medical visits over an electronic exchange (i.e., phone, e-visit, portal): Who primarily provided this care? (Select all that apply.)							
MD/DO	77%	74%	71%	76%	79%	79%	78%
NP/PA	43%	37%	35%	38%	46%	48%	45%
Other care team members	26%	25%	26%	23%	27%	23%	31%
N	1,259	376	207	169	883	436	447

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.2.1. Targeted care management: Risk stratification, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
Do you risk stratify your empaneled patients?							
Yes	100%	100%	100%	100%	100%	100%	100%
No, we do not risk stratify our patients	<1%	<1%	0%	<1%	0%	0%	0%
N	2,716	1,271	724	547	1,445	622	823
If you risk stratify your empaneled patients: Do you use a two-step process for risk stratifying your empaneled patients?							
Yes	93%	89%	87%	92%	96%	93%	98%
No	7%	11%	13%	8%	4%	7%	2%
N	2,714	1,269	724	545	1,445	622	823
What factors are included in your data-driven algorithm for risk stratifying your patients? (Select all that apply.)							
We do not use a data-driven algorithm as part of our risk stratification	2%	3%	2%	3%	<1%	<1%	<1%
Claims variables	29%	26%	28%	23%	32%	35%	29%
Clinical variables from the EHR	85%	82%	86%	76%	88%	88%	87%
Computed risk scores (e.g., CMS-HCC scores or risk scores from other payers)	44%	39%	35%	43%	49%	54%	45%
Other	19%	18%	19%	17%	19%	23%	16%
N	2,714	1,269	724	545	1,445	622	823
What factors do you consider when using care team/clinical intuition to stratify your patients? Do not include factors included in your data-driven algorithm. (Select all that apply.)							
We do not use the care team's perception as part of our risk stratification	3%	6%	7%	4%	<1%	0%	1%
Social needs	88%	85%	85%	84%	91%	93%	90%
Behavioral health needs	85%	82%	81%	83%	88%	82%	93%
Clinical factors	92%	90%	87%	93%	93%	94%	93%
Other	10%	10%	11%	8%	10%	13%	8%
N	2,714	1,269	724	545	1,445	622	823

Table 4.A.2.1. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
What prompts reassessment of a patient's risk stratification assignment?							
We do not reassess the risk stratification of our patients	<1%	<1%	<1%	<1%	<1%	0%	1%
Only as needed, or we do not have a protocol in place	7%	8%	7%	9%	7%	7%	6%
Pre-specified clinical events (e.g., new diagnosis, hospitalization)	33%	30%	24%	38%	35%	32%	37%
Automatically updated when new information is in the Health IT or EHR platform	25%	25%	32%	15%	25%	33%	20%
Schedule-driven protocol	26%	29%	29%	29%	23%	20%	25%
Other	9%	8%	8%	8%	10%	9%	11%
N	2,714	1,269	724	545	1,445	622	823
If a schedule-driven protocol prompts reassessment of a patient's risk stratification assignment: Indicate the frequency.							
At each patient visit	37%	34%	29%	41%	39%	38%	40%
Multiple times a year	29%	29%	33%	24%	29%	26%	30%
Annually	22%	25%	26%	24%	19%	18%	19%
Other	13%	12%	12%	11%	13%	18%	10%
N	696	369	209	160	327	125	202
Is risk stratification integrated within your EHR or health IT system?							
Yes	88%	85%	86%	83%	92%	91%	92%
No	12%	15%	14%	17%	8%	9%	8%
N	2,714	1,269	724	545	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.2.2.a. Targeted care management: Identifying patients for episodic care management, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Indicate how you identify patients for episodic care management. This refers to short-term, goal-directed care management for patients who are not already in longitudinal care management as a result of their risk status. (Select all that apply.)							
We do not identify patients for episodic care management	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Practitioner or care team referral	83%	80%	85%	73%	85%	91%	81%
Hospital admission or discharge	98%	97%	97%	98%	98%	98%	99%
ED visit	94%	94%	96%	92%	94%	95%	93%
Skilled Nursing Facility (SNF) admission or discharge	62%	59%	67%	48%	65%	76%	57%
New health condition (e.g., cancer diagnosis, accident, chronic condition)	70%	65%	68%	61%	75%	73%	76%
New clinical instability in a chronic condition, including change in medications	66%	62%	66%	56%	70%	68%	70%
Life event (e.g., death of spouse, financial loss)	55%	47%	52%	41%	61%	64%	60%
Initiation or stabilization on a high risk medication (e.g., anticoagulants)	48%	46%	51%	40%	50%	56%	46%
Other	10%	10%	12%	7%	10%	13%	8%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.2.2.b. Targeted care management: Longitudinal care management, Program Year 2, 2017 Starters

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Tier 1 (Highest risk)							
Median percentage of empaneled patients in risk tier	2%	3%	3%	3%	2%	2%	2%
Median percentage of patients in risk tier receiving longitudinal care management	30%	31%	31%	29%	30%	30%	31%
N	2,638	1,219	697	522	1,419	610	809
Tier 2							
Median percentage of empaneled patients in risk tier	10%	11%	11%	12%	9%	9%	9%
Median percentage of patients in risk tier receiving longitudinal care management	7%	6%	5%	7%	7%	9%	6%
N	2,705	1,265	721	544	1,440	621	819
Tier 3							
Median percentage of empaneled patients in risk tier	39%	38%	40%	33%	41%	42%	40%
Median percentage of patients in risk tier receiving longitudinal care management	1%	1%	1%	2%	1%	2%	1%
N	2,626	1,237	711	526	1,389	588	801
Tier 4+							
Median percentage of empaneled patients in risk tier	54%	56%	56%	58%	52%	53%	50%
Median percentage of patients in risk tier receiving longitudinal care management	<1%	<1%	<1%	<1%	<1%	1%	<1%
N	1,636	713	390	323	923	391	532

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Practices are only included in each calculation if they have at least one patient in that risk tier. A small number of practices indicated they had no patients in a particular risk tier; they are excluded here, since it is not possible to calculate the percentage of patients in that risk tier receiving longitudinal care management.

SSP = Medicare Shared Savings Program.

Table 4.A.2.3. Targeted care management: Care management staffing, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
What type of clinician and staff at your practice is/are primarily responsible for developing and monitoring care plans? (Select all that apply.)							
None	2%	4%	5%	2%	<1%	0%	<1%
Practitioner (i.e., MD, DO, NP, PA)	40%	47%	48%	46%	34%	40%	30%
Care manager/clinical staff (i.e., RN, LPN, social worker)	52%	44%	42%	46%	59%	57%	60%
Other clinical staff (e.g., MA/CMA/CNA)	2%	1%	<1%	2%	2%	<1%	3%
Non-clinical staff (e.g., admin, front desk)	<1%	<1%	0%	<1%	0%	0%	0%
Other	4%	4%	5%	4%	5%	2%	7%
N	2,716	1,271	724	547	1,445	622	823
What type of clinician and staff at your practice is/are primarily responsible for assessing and reassessing patient risk status? (Select all that apply.)							
None	1%	3%	5%	<1%	<1%	<1%	<1%
Practitioner (i.e., MD, DO, NP, PA)	62%	57%	54%	61%	67%	67%	67%
Care manager/clinical staff (i.e., RN, LPN, social worker)	25%	28%	31%	25%	23%	24%	21%
Other clinical staff (e.g., MA/CMA/CNA)	4%	5%	4%	6%	3%	5%	2%
Non-clinical staff (e.g., admin, front desk)	<1%	2%	1%	2%	<1%	<1%	<1%
Other	6%	5%	5%	5%	7%	3%	9%
N	2,716	1,271	724	547	1,445	622	823
What type of clinician and staff at your practice is/are primarily responsible for providing patient education and self-management support? (Select all that apply.)							
None	0%	0%	0%	0%	0%	0%	0%
Practitioner (i.e., MD, DO, NP, PA)	34%	37%	34%	41%	31%	39%	25%
Care manager/clinical staff (i.e., RN, LPN, social worker)	49%	46%	51%	39%	52%	46%	57%
Other clinical staff (e.g., MA/CMA/CNA)	9%	11%	9%	13%	9%	9%	8%
Non-clinical staff (e.g., admin, front desk)	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Other	7%	6%	6%	7%	8%	5%	11%
N	2,716	1,271	724	547	1,445	622	823

Table 4.A.2.3. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
What type of clinician and staff at your practice is/are primarily responsible for routine medication reconciliation at scheduled visits? (Select all that apply.)							
None	<1%	<1%	0%	<1%	<1%	<1%	<1%
Practitioner (i.e., MD, DO, NP, PA)	49%	49%	56%	40%	49%	55%	46%
Care manager/clinical staff (i.e., RN, LPN, social worker)	12%	12%	9%	16%	13%	15%	12%
Other clinical staff (e.g., MA/CMA/CNA)	33%	34%	30%	39%	32%	28%	35%
Non-clinical staff (e.g., admin, front desk)	<1%	<1%	<1%	<1%	<1%	0%	<1%
Other	5%	5%	4%	6%	5%	2%	8%
N	2,716	1,271	724	547	1,445	622	823
What type of clinician and staff at your practice is/are primarily responsible for medication reconciliation during transitions of care (hospital, ED discharges)? (Select all that apply.)							
None	<1%	<1%	<1%	0%	<1%	<1%	0%
Practitioner (i.e., MD, DO, NP, PA)	36%	39%	43%	34%	33%	34%	33%
Care manager/clinical staff (i.e., RN, LPN, social worker)	47%	45%	44%	46%	49%	54%	46%
Other clinical staff (e.g., MA/CMA/CNA)	10%	11%	8%	14%	10%	8%	12%
Non-clinical staff (e.g., admin, front desk)	<1%	<1%	<1%	0%	<1%	0%	<1%
Other	6%	5%	4%	6%	8%	5%	9%
N	2,716	1,271	724	547	1,445	622	823
What type of clinician and staff at your practice is/are primarily responsible for management of care transitions (hospital, ED discharges)? (Select all that apply.)							
None	<1%	<1%	<1%	<1%	0%	0%	0%
Practitioner (i.e., MD, DO, NP, PA)	18%	18%	17%	20%	18%	15%	20%
Care manager/clinical staff (i.e., RN, LPN, social worker)	62%	62%	64%	60%	62%	65%	61%
Other clinical staff (e.g., MA/CMA/CNA)	12%	13%	12%	14%	11%	16%	7%
Non-clinical staff (e.g., admin, front desk)	2%	2%	3%	1%	2%	<1%	3%
Other	6%	4%	4%	4%	7%	4%	10%
N	2,716	1,271	724	547	1,445	622	823

Table 4.A.2.3. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
What type of clinician and staff at your practice is/are primarily responsible for coordinating and communicating with specialty care? (Select all that apply.)							
None	<1%	<1%	2%	0%	0%	0%	0%
Practitioner (i.e., MD, DO, NP, PA)	28%	32%	33%	30%	24%	23%	24%
Care manager/clinical staff (i.e., RN, LPN, social worker)	24%	24%	23%	25%	24%	26%	23%
Other clinical staff (e.g., MA/CMA/CNA)	27%	26%	28%	24%	27%	29%	25%
Non-clinical staff (e.g., admin, front desk)	13%	10%	8%	14%	15%	17%	13%
Other	9%	7%	7%	7%	10%	5%	14%
N	2,716	1,271	724	547	1,445	622	823
What type of clinician and staff at your practice is/are primarily responsible for navigating patients to community and social services? (Select all that apply.)							
None	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Practitioner (i.e., MD, DO, NP, PA)	6%	6%	6%	6%	7%	10%	4%
Care manager/clinical staff (i.e., RN, LPN, social worker)	68%	64%	68%	60%	70%	68%	72%
Other clinical staff (e.g., MA/CMA/CNA)	12%	16%	13%	19%	8%	9%	8%
Non-clinical staff (e.g., admin, front desk)	6%	8%	7%	8%	5%	7%	3%
Other	8%	6%	5%	7%	10%	5%	13%
N	2,716	1,271	724	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.2.4. Targeted care management: Care plans, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
Among patients under longitudinal care management, how many have a care plan?							
None	2%	4%	4%	4%	<1%	0%	<1%
Some	28%	34%	35%	31%	22%	14%	28%
Most	32%	29%	25%	34%	34%	41%	29%
All	39%	34%	36%	31%	43%	44%	42%
N	2,715	1,270	723	547	1,445	622	823
Do you document and store care plans?							
No	<1%	1%	1%	<1%	0%	0%	0%
Yes, care plans are integrated with the EHR or other health IT	90%	87%	86%	89%	93%	95%	92%
Yes, care plans are documented and stored, but are not integrated with the EHR or other health IT	9%	11%	12%	11%	7%	5%	8%
N	2,665	1,222	696	526	1,443	622	821
Who has real-time/point-of-care access to a patient's care plan? (Select all that apply.)							
Members of the care team within the practice	98%	97%	96%	99%	99%	99%	98%
Clinicians outside of the practice (i.e., other specialists who care for the patient)	42%	38%	39%	36%	46%	55%	39%
Community and/or social service agencies and practitioners	5%	3%	5%	2%	6%	8%	3%
Patient and his/her caregiver(s)	51%	50%	54%	45%	52%	65%	43%
Other	9%	6%	8%	4%	11%	15%	8%
N	2,665	1,222	696	526	1,443	622	821

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.2.5.1. Targeted care management: Patient follow-up after hospital discharge and ED visits, Program Year 2, 2017 Starters

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Hospital follow-up rate							
Median	88%	88%	88%	89%	88%	84%	90%
N	2,705	1,262	721	541	1,443	621	822
ED follow-up rate							
Median	88%	88%	87%	89%	89%	80%	93%
N	2,699	1,260	719	541	1439	617	822

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Mathematica calculated hospital and ED follow-up rates as the practice's overall number of follow-ups divided by the practice's overall number of discharges for up to three target hospitals and EDs, respectively.

SSP = Medicare Shared Savings Program.

Table 4.A.3.1. Comprehensiveness and coordination: Collaborative care agreements with specialists, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Identify the high-volume or high-cost specialists and health care organizations with whom you have formal care compacts or collaborative care agreements. (Select all that apply.)							
We have not established care compacts or collaborative care agreements.	4%	6%	6%	7%	1%	<1%	2%
Allergy/Infectious Disease	14%	11%	11%	11%	17%	25%	11%
Cardiology	52%	48%	48%	48%	55%	60%	52%
Dermatology	15%	10%	7%	14%	19%	30%	11%
Emergency Medicine	12%	9%	8%	10%	15%	19%	12%
Endocrinology	30%	25%	26%	24%	34%	46%	24%
ENT/Otolaryngology	17%	15%	15%	15%	18%	26%	13%
Gastroenterology	35%	29%	30%	26%	41%	49%	35%
Hospitalist Care	21%	17%	17%	17%	25%	26%	24%
Nephrology	16%	14%	12%	16%	18%	23%	14%
Neurology	21%	17%	17%	18%	23%	29%	19%
Obstetrics/Gynecology	22%	19%	18%	20%	25%	28%	23%
Oncology/Hematology	21%	20%	22%	17%	21%	29%	15%
Ophthalmology	30%	29%	28%	30%	30%	36%	25%
Optometry	10%	8%	7%	9%	13%	14%	12%
Orthopedic surgery	26%	22%	21%	23%	29%	34%	25%
Palliative care	11%	7%	9%	5%	14%	20%	10%
Pain management	14%	11%	11%	12%	16%	24%	11%
Podiatry	13%	9%	9%	10%	16%	19%	14%
Psychiatry/Psychology	32%	27%	27%	27%	36%	38%	35%
Pulmonology	22%	18%	19%	17%	25%	41%	13%
Radiology	13%	10%	10%	9%	15%	22%	10%
Rheumatology	15%	15%	15%	13%	15%	24%	9%
Surgery	23%	19%	20%	18%	25%	34%	19%
Urology	18%	14%	15%	12%	21%	33%	12%
Other	31%	27%	31%	22%	35%	37%	33%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.3.3. Comprehensiveness and coordination: Comprehensive medication management, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Which of the following steps has your practice achieved to implement comprehensive medication management? (Select all that apply.)							
We have not taken any of these steps yet	25%	47%	46%	47%	7%	<1%	11%
Established a plan for identifying patients with comprehensive medication management needs	62%	38%	39%	37%	83%	91%	78%
Identified and/or hired personnel for comprehensive medication management	46%	25%	25%	24%	64%	75%	56%
Trained staff as necessary	41%	28%	25%	31%	53%	61%	46%
Developed workflows and processes	46%	29%	28%	31%	61%	68%	56%
N	2,715	1,270	723	547	1,445	622	823
In the last two quarters, has your practice provided comprehensive medication management to patients?							
No, we are not implementing comprehensive medication management	16%	30%	27%	35%	3%	0%	5%
No, we are in the process of developing a plan for comprehensive medication management	18%	25%	30%	18%	13%	7%	18%
No, we have established a plan for comprehensive medication management, but have not yet implemented it	14%	5%	7%	2%	22%	27%	18%
Yes, we provided comprehensive medication management support	52%	40%	36%	45%	63%	67%	60%
N	2,715	1,270	723	547	1,445	622	823
Who primarily provides comprehensive medication management for your patients?							
Pharmacist	52%	35%	35%	35%	61%	67%	56%
Primary care practitioners at our practice (MD/DO, NP/PA)	41%	55%	58%	51%	33%	30%	36%
Other	7%	10%	6%	13%	6%	3%	9%
N	1,415	508	262	246	907	415	492

Table 4.A.3.3. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How does your practice deliver comprehensive medication management?							
Coordination with an external pharmacist, program, or service	13%	9%	5%	13%	16%	17%	15%
Co-management with a pharmacist, program, or service located at our practice	47%	37%	40%	33%	53%	56%	51%
Primary care practitioners from our practice primarily deliver comprehensive medication management	40%	55%	55%	54%	31%	28%	34%
N	1,415	508	262	246	907	415	492
How do you identify patients for comprehensive medication management? (Select all that apply.)							
Recent discharge from the hospital	79%	77%	79%	74%	80%	92%	70%
Patients who are receiving longitudinal care management	69%	62%	60%	64%	73%	82%	66%
Recent visit to ED	61%	68%	71%	65%	57%	77%	41%
Active medication issues (e.g., adverse reactions, adherence, not reaching intended treatment outcomes)	76%	79%	82%	76%	74%	93%	59%
Potential therapy issues (e.g., high risk medications, poly-pharmacy, multi-therapy drug interactions, high cost medications)	74%	77%	80%	74%	72%	91%	56%
Referred by practitioner or care team	71%	58%	57%	59%	78%	87%	70%
Other	11%	5%	4%	6%	15%	15%	15%
N	1,415	508	262	246	907	415	492

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.3.4. Comprehensiveness and coordination: Behavioral health integration, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
What is your practice's primary strategy for addressing behavioral health needs? If you are planning to integrate one of the behavioral health models listed below, please select that option.							
We are not addressing behavioral health needs at our practice	1%	3%	3%	3%	0%	0%	0%
Behavioral health integration with Care Management for Mental Illness (Option 1)	32%	33%	36%	30%	31%	25%	36%
Behavioral health integration with the Primary Care Behaviorist model (Option 2)	43%	26%	24%	30%	57%	67%	51%
Referrals or care compacts/collaborative agreements for external behavioral health specialists	20%	33%	34%	32%	8%	7%	10%
Other	4%	4%	3%	6%	3%	2%	4%
N	2,716	1,271	724	547	1,445	622	823
If you selected Care Management for Mental Illness: Which of the following steps has your practice achieved to integrate behavioral health? (Select all that apply)							
We have not taken any of these steps yet	4%	8%	7%	10%	<1%	0%	<1%
Established a plan for identifying patients with behavioral health needs	81%	78%	83%	69%	84%	78%	87%
Identified and/or hired personnel	63%	55%	62%	43%	71%	75%	69%
Trained staff as necessary	52%	37%	45%	26%	66%	56%	71%
Developed workflows and processes	59%	52%	50%	55%	66%	56%	71%
N	874	425	262	163	449	153	296
If you selected Care Management for Mental Illness: Who primarily provides care management for mental illness?							
We do not have a care manager for mental illness at our practice	11%	12%	13%	9%	10%	18%	5%
Licensed behavioral health clinician (e.g., LCSW, psychologist)	24%	21%	22%	18%	27%	22%	29%
Care manager (e.g., RN, LPN)	44%	43%	40%	47%	45%	44%	45%
Other	22%	25%	24%	26%	19%	16%	21%
N	874	425	262	163	449	153	296

Table 4.A.3.4. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
If you selected Care Management for Mental Illness: In the last two quarters, of your patients with identified behavioral health needs, approximately how many received behavioral health care management at your practice?							
None	13%	21%	23%	19%	6%	3%	7%
Some	76%	70%	69%	71%	81%	84%	80%
Most	10%	6%	6%	7%	13%	14%	12%
All	1%	2%	2%	2%	<1%	0%	<1%
N	874	425	262	163	449	153	296
If you selected the Primary Care Behaviorist model: Which of the following steps has your practice achieved to integrate behavioral health? (Select all that apply.)							
We have not taken any of these steps yet	4%	12%	17%	6%	<1%	<1%	<1%
Established a plan for identifying patients with behavioral health needs	91%	81%	79%	83%	96%	96%	95%
Identified and/or hired personnel	79%	63%	58%	69%	86%	82%	90%
Trained staff as necessary	65%	48%	40%	57%	72%	70%	73%
Developed workflows and processes	81%	59%	58%	59%	90%	90%	89%
N	1,165	335	173	162	830	414	416
If you selected the Primary Care Behaviorist model: What type of practitioner(s) act as primary care behaviorist(s) at your practice? (Select all that apply.)							
We do not have a primary care behaviorist	10%	25%	33%	16%	5%	6%	4%
Psychologist	21%	22%	17%	28%	20%	16%	24%
Social worker (LCSW)	55%	38%	38%	38%	62%	60%	64%
Psychiatric NP/PA	6%	8%	5%	10%	6%	7%	4%
Other	25%	22%	24%	20%	27%	27%	26%
N	1,165	335	173	162	830	414	416
If you selected the Primary Care Behaviorist model: In the last two quarters, of your patients with identified behavioral health needs, approximately how many were seen by a primary care behaviorist at your practice?							
None	20%	43%	47%	38%	11%	17%	6%
Some	59%	41%	40%	42%	67%	73%	60%
Most	20%	15%	12%	19%	22%	10%	33%
All	<1%	<1%	<1%	1%	<1%	0%	<1%
N	1,165	335	173	162	830	414	416

Table 4.A.3.4. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
What mental health conditions are you targeting with your behavioral health strategy? (Select all that apply.)							
We do not target specific mental health conditions	5%	10%	10%	9%	2%	<1%	3%
Anxiety disorders	75%	67%	69%	64%	82%	89%	76%
Alzheimer's disease and related dementias	35%	35%	33%	37%	34%	43%	28%
Depressive disorders	87%	84%	84%	85%	90%	92%	88%
Chronic pain	37%	37%	37%	35%	38%	44%	33%
Complex/chronic disease and comorbidities (e.g., major depressive disorder, poorly controlled diabetes)	65%	60%	63%	55%	69%	79%	61%
High risk behaviors (e.g., tobacco use, obesity, medication adherence)	62%	61%	63%	58%	63%	78%	52%
Insomnia	30%	28%	31%	24%	32%	43%	24%
Substance use disorders	42%	37%	32%	43%	46%	51%	43%
Other	7%	3%	4%	3%	10%	6%	13%
N	2,680	1,235	703	532	1,445	622	823
What types of targeted tactics for your patients are available at your practice? (Select all that apply.)							
We do not use any targeted tactics for behavioral health	2%	4%	4%	3%	<1%	0%	<1%
Screening for behavioral health conditions as standard practice	90%	88%	87%	88%	93%	96%	90%
SBIRT (e.g., alcohol misuse)	23%	18%	13%	26%	28%	20%	34%
Evidence-based psychotherapy (e.g., CBT, PST)	29%	15%	15%	14%	41%	47%	35%
Self-management support for behavioral health conditions	61%	51%	52%	51%	68%	67%	69%
Counseling for behavior change (e.g., smoking cessation, weight loss)	81%	79%	76%	84%	83%	82%	84%
Other	7%	6%	5%	8%	8%	6%	9%
N	2,680	1,235	703	532	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.3.5. Comprehensiveness and coordination: Linkages with social services, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Do you routinely screen your patients for unmet social needs?							
We do not screen patients for unmet social needs	11%	21%	19%	24%	2%	<1%	3%
We screen a targeted subpopulation of patients for unmet social needs	58%	48%	48%	48%	66%	65%	67%
We universally screen all patients for unmet social needs	32%	31%	33%	28%	32%	34%	31%
N	2,716	1,271	724	547	1,445	622	823
What type of screening tool(s) do you use or adapt to capture unmet social needs in your patient population? (Select all that apply.)							
We do not use any screening tools	8%	16%	13%	19%	2%	<1%	3%
Standardized screening tool (e.g., screening tools published by HealthLeads, IOM/NAM, Accountable Health Communities [AHC])	34%	26%	27%	24%	39%	47%	34%
Tool developed by practice or system	54%	52%	53%	51%	56%	64%	49%
Other	15%	16%	15%	17%	14%	6%	20%
N	2,422	1,001	585	416	1,421	619	802
Are screening tools or questions integrated with your EHR or health IT system?							
Yes	72%	63%	65%	61%	78%	82%	75%
No	28%	37%	35%	39%	22%	18%	25%
N	2,422	1,001	585	416	1,421	619	802
What are the social needs your practice has prioritized to address in your patient population? (Select all that apply.)							
We have not prioritized any social needs to address in our patient population	10%	18%	14%	23%	3%	1%	4%
Food insecurity: Limited or uncertain access to adequate and nutritious food	64%	55%	58%	51%	72%	76%	70%
Housing instability: Homelessness, unsafe housing quality, inability to pay mortgage/rent, eviction	52%	46%	46%	47%	58%	56%	59%
Utility needs: Difficulty paying utility bills, shut off notices, disconnected phone	51%	47%	48%	45%	54%	56%	53%

Table 4.A.3.5. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Financial resource strain: Inability to pay for basics such as food, medical care, insurance, and medication costs	64%	59%	62%	55%	69%	69%	70%
Transportation: Difficulty accessing/affording transportation (i.e., medical or public)	72%	67%	70%	63%	77%	74%	79%
Employment: Under-employment/unemployment	25%	25%	27%	23%	25%	28%	23%
Social isolation: Lack of family and/or friend networks, minimal community contacts, absence of social engagement	45%	43%	45%	40%	48%	44%	51%
Safety: Intimate partner violence, elder abuse, community violence	55%	49%	48%	52%	60%	64%	57%
Other	6%	6%	6%	4%	6%	5%	6%
N	2,716	1,271	724	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.3.5.1. Comprehensiveness and coordination: Coordinating with social service resources, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How frequently is the inventory of social service resources your practice uses updated?							
We do not maintain or have access to an inventory of these resources	2%	3%	3%	4%	<1%	0%	<1%
Ad hoc basis only	41%	44%	39%	50%	39%	38%	41%
At least monthly	11%	5%	4%	6%	17%	15%	18%
Every 2-6 months	12%	11%	10%	14%	13%	15%	12%
Every 6-12 months	31%	32%	40%	23%	29%	30%	28%
Less than annually	2%	4%	4%	3%	1%	2%	<1%
N	2,716	1,271	724	547	1,445	622	823
Is the inventory of social service resources integrated with your EHR?							
Yes	20%	14%	15%	13%	25%	26%	24%
No	80%	86%	85%	87%	75%	74%	76%
N	2,666	1,228	702	526	1,438	622	816
Identify the social service resources and supports with whom you have established relationships to address the prioritized areas you selected above. (Select all that apply.)							
We have not established relationships with social service resources and supports	15%	24%	24%	24%	7%	5%	9%
Financial (e.g., TANF, SSDI/SSI, cash assistance)	38%	33%	34%	32%	43%	46%	41%
Nutrition and food (e.g., SNAP/WIC, food pantries, Meals on Wheels)	66%	55%	56%	54%	76%	77%	74%
Health-related services (e.g., insurance, prescription assistance, home health, durable medical equipment)	71%	60%	59%	62%	80%	82%	78%
Housing (e.g., shelter, public housing, transitional support)	42%	35%	35%	35%	48%	44%	51%
Transportation (e.g., medical transport, public transit)	71%	62%	62%	63%	79%	85%	75%
Utilities (e.g., energy assistance/subsidies [LIHEAP], telephone)	39%	35%	35%	35%	42%	40%	43%
Other	11%	9%	9%	8%	14%	11%	16%
N	2,716	1,271	724	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.3.6. Comprehensiveness and coordination: Comprehensiveness, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
What is/are the complex need(s) your practice is developing capabilities to address? (Select all that apply.)							
We are not developing capabilities to increase comprehensiveness	10%	19%	20%	17%	3%	2%	4%
End of life or palliative care	65%	59%	63%	55%	70%	78%	63%
Chronic pain	46%	50%	45%	56%	44%	45%	43%
Substance use disorders	42%	43%	44%	41%	41%	49%	36%
Co-existing chronic conditions	50%	50%	48%	52%	51%	55%	47%
High acuity chronic conditions, please specify	47%	45%	47%	41%	49%	50%	48%
Alzheimer's disease and related dementias	28%	27%	25%	28%	30%	33%	27%
Frailty	25%	24%	27%	20%	27%	31%	24%
Other	17%	21%	25%	16%	13%	13%	14%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.
 SSP = Medicare Shared Savings Program.

Table 4.A.4.1.a. Patient and caregiver engagement: Engaging patients and caregivers in your practice, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Tell us how frequently your practice engages patients and caregivers in developing agendas for Patient and Family Advisory Council (PFAC) meetings.							
Never	2%	2%	2%	3%	2%	<1%	2%
Rarely	5%	4%	5%	2%	6%	4%	8%
Sometimes	23%	25%	26%	23%	22%	25%	20%
Often	32%	32%	29%	37%	32%	31%	32%
Always	38%	37%	38%	35%	39%	40%	37%
N	2,715	1,270	723	547	1,445	622	823
Tell us how frequently your practice engages patients and caregivers in establishing improvement projects.							
Never	1%	1%	1%	2%	<1%	<1%	<1%
Rarely	3%	3%	2%	5%	2%	3%	<1%
Sometimes	29%	30%	32%	27%	28%	27%	28%
Often	44%	43%	39%	47%	44%	44%	45%
Always	24%	23%	25%	19%	25%	25%	26%
N	2,715	1,270	723	547	1,445	622	823
Tell us how frequently your practice engages patients and caregivers in communicating results of improvement projects.							
Never	2%	2%	2%	3%	<1%	<1%	1%
Rarely	4%	4%	3%	6%	4%	3%	4%
Sometimes	23%	27%	28%	27%	20%	16%	22%
Often	40%	38%	35%	40%	42%	45%	40%
Always	31%	29%	33%	24%	33%	35%	32%
N	2,715	1,270	723	547	1,445	622	823
Which of the following steps has your practice achieved to implement and integrate the PFAC? (Select all that apply.)							
We have not taken any of these steps	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Identified staff participants	97%	96%	97%	96%	98%	99%	97%
Recruited patient participants	97%	96%	96%	96%	98%	99%	97%
Defined mission and vision of PFAC	93%	92%	92%	91%	93%	95%	92%

Table 4.A.4.1.a. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Determined structure of PFAC (e.g., number of patients or family advisors, frequency of meetings, term lengths, and other meeting logistics)	95%	94%	94%	93%	96%	97%	96%
Incorporated PFAC recommendations into practice	85%	81%	80%	82%	89%	89%	89%
Communicated PFAC recommendations to patients and staff	81%	76%	80%	71%	85%	86%	84%
Developed a sustainability plan for the PFAC	63%	61%	62%	61%	65%	69%	63%
N	2,715	1,270	723	547	1,445	622	823
Who typically meets with or is a part of your PFAC?							
Practitioners (MD/DO, NP, PA)	69%	71%	69%	73%	67%	72%	63%
Clinical staff (e.g., RN, LPN, MA, care manager)	88%	89%	90%	88%	87%	86%	88%
Patients and family/caregivers	99%	98%	97%	99%	99%	100%	99%
Non-clinical staff (e.g., administration, front office, IT)	89%	90%	91%	90%	88%	84%	90%
Other	12%	10%	11%	9%	14%	17%	12%
N	2,706	1,264	721	543	1,442	621	821
Rate how well your PFAC reflects your practice's overall patient population (i.e., based on factors such as age, gender, race, socioeconomic status, language, or medical conditions).							
Not applicable, or PFAC is still in development	<1%	2%	2%	<1%	<1%	0%	<1%
Not at all representative	<1%	1%	1%	1%	<1%	<1%	<1%
Slightly representative	22%	21%	23%	19%	22%	27%	18%
Moderately representative	47%	43%	42%	44%	51%	44%	56%
Very representative	28%	31%	29%	34%	25%	26%	24%
Completely representative	2%	2%	2%	2%	2%	3%	<1%
N	2,706	1,264	721	543	1,442	621	821

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.4.1.b. Patient and caregiver engagement: Engaging patients and caregivers in your practice, Program Year 2, 2017 Starters

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Number of PFAC meetings held by practices in 2018							
Median	4	3	3	3	4	4	4
N	2,715	1,270	723	547	1,445	622	823
Percentage of practices...							
...with at least one PFAC meeting in 2018	99%	98%	98%	99%	100%	100%	99%
...with at least three PFAC meetings in 2018	92%	87%	86%	88%	97%	97%	97%
...with at least four PFAC meetings in 2018	66%	44%	44%	44%	86%	88%	85%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Requirements differ between start year and track; thus, we constructed the percentage of practices with one, three, and four PFAC meetings in 2018. SSP = Medicare Shared Savings Program.

Table 4.A.4.2.a. Patient and caregiver engagement: Self-management support for selected conditions, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
For which conditions did your practice provide condition-specific support for self management in the last quarter? (Select all that apply.)							
We do not offer self-management support for any conditions	<1%	2%	<1%	3%	<1%	<1%	<1%
Cardiovascular - Congestive Heart Failure (CHF)	63%	60%	65%	53%	65%	75%	58%
Cardiovascular - Coronary Artery Disease (CAD)	27%	32%	35%	27%	23%	34%	15%
Cardiovascular - Hyperlipidemia/high cholesterol	45%	52%	54%	49%	39%	47%	33%
Cardiovascular - Hypertension	67%	72%	67%	78%	63%	67%	61%
Respiratory/Pulmonary - Asthma	38%	43%	48%	37%	33%	37%	30%
Respiratory/Pulmonary - COPD	62%	60%	67%	51%	63%	70%	58%
Mental Health - Anxiety	40%	38%	40%	35%	43%	56%	33%
Mental Health - Depression	55%	51%	53%	49%	58%	69%	50%
Substance Disorder - Alcohol misuse	24%	26%	26%	25%	23%	31%	17%
Substance Disorder - Tobacco cessation	69%	67%	71%	62%	70%	75%	66%
Substance Disorder - Opioid misuse	21%	23%	25%	19%	20%	26%	15%
Other - Chronic pain	26%	29%	30%	29%	24%	32%	18%
Other - Diabetes	94%	93%	97%	89%	95%	96%	94%
Other - Obesity/weight loss	52%	57%	63%	50%	48%	65%	36%
Other - Other	10%	5%	3%	9%	15%	19%	11%
N	2,715	1,270	723	547	1,445	622	823
Percentage of practices...							
..that implemented self-management support for at least three high-risk conditions ¹	97%	95%	97%	92%	99%	99%	99%
N	2,715	1,270	723	547	1,445	622	823
How do you identify patients for self-management support? (Select all that apply.)							
We do not systematically identify patients for self-management support	1%	2%	<1%	3%	<1%	0%	<1%
All patients with targeted condition	52%	49%	51%	46%	56%	57%	54%
General risk status (using the practice's risk stratification methodology)	53%	47%	49%	44%	58%	63%	54%

Table 4.A.4.2.a. (continued)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Poorly controlled disease	84%	83%	86%	81%	84%	93%	77%
Data from a formal self-management assessment tool	21%	18%	20%	14%	24%	35%	15%
Patient expression of interest	78%	77%	82%	72%	78%	89%	69%
Clinician referral/identification	83%	81%	82%	80%	86%	90%	82%
Other	10%	9%	10%	7%	12%	10%	13%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

¹ Mathematica defined the number of conditions for which the practice provided self-management support based on the list of conditions, including "other" conditions, provided in the above question.

SSP = Medicare Shared Savings Program.

Table 4.A.4.2.b. Patient and caregiver engagement: Self-management support for selected conditions, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How frequently does your practice encourage patients to choose goals that are meaningful to them?							
Never	<1%	<1%	0%	2%	0%	0%	0%
Rarely	<1%	<1%	<1%	0%	<1%	<1%	<1%
Sometimes	9%	12%	11%	12%	7%	5%	9%
Often	42%	39%	38%	40%	45%	36%	51%
Always	48%	49%	51%	46%	48%	59%	39%
N	2,715	1,270	723	547	1,445	622	823
How frequently does your practice include family/caregivers in goal-setting and care plan development?							
Never	<1%	<1%	0%	2%	<1%	0%	<1%
Rarely	2%	1%	1%	1%	3%	2%	4%
Sometimes	33%	35%	29%	42%	32%	29%	35%
Often	45%	43%	43%	43%	47%	43%	51%
Always	19%	20%	27%	11%	17%	27%	10%
N	2,715	1,270	723	547	1,445	622	823
How frequently does your practice connect or provide patients and caregivers with formal self-management support services at your practice or in the community?							
Never	<1%	2%	<1%	4%	<1%	<1%	<1%
Rarely	5%	6%	7%	5%	4%	1%	6%
Sometimes	32%	34%	29%	40%	30%	20%	37%
Often	46%	42%	42%	42%	49%	57%	43%
Always	16%	16%	21%	9%	17%	21%	14%
N	2,715	1,270	723	547	1,445	622	823

Table 4.A.4.2.b. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How frequently does your practice measure patients' skills and progress (e.g., How's My Health, Patient Activation Measure [PAM])?							
Never	24%	29%	29%	29%	20%	19%	21%
Rarely	19%	18%	17%	18%	20%	20%	19%
Sometimes	27%	26%	24%	29%	28%	20%	33%
Often	22%	19%	20%	18%	24%	31%	18%
Always	9%	8%	11%	5%	9%	9%	8%
N	2,715	1,270	723	547	1,445	622	823
How frequently are staff trained in specific self-management support techniques (e.g., motivational interviewing, 5 A's, Teach Back, reflective listening)?							
Never	9%	15%	16%	13%	3%	3%	3%
Rarely	7%	9%	7%	13%	4%	3%	5%
Sometimes	23%	23%	22%	24%	23%	14%	30%
Often	34%	29%	28%	30%	39%	40%	38%
Always	28%	24%	27%	20%	31%	40%	24%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.4.3. Patient and caregiver engagement: Advance care planning, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
Who at your practice is/are typically involved in advance care planning? (Select all that apply.)							
We do not provide advance care planning	6%	9%	6%	14%	3%	<1%	5%
Practitioners (MD/DO, NP, PA)	89%	86%	88%	82%	91%	94%	89%
Other clinical staff (RN,LPN, MA, care manager)	64%	57%	63%	50%	71%	76%	66%
Other non-clinical members of the care team (e.g., administrative or front office staff)	14%	10%	9%	11%	17%	24%	12%
Other	7%	6%	6%	6%	8%	5%	11%
N	2,715	1,270	723	547	1,445	622	823
How does your practice identify patients for advance care planning? (Select all that apply.)							
We do not systematically identify patients for advance care planning	6%	8%	4%	14%	4%	3%	4%
High-risk status (using the practice's two-step risk stratification methodology)	43%	44%	46%	41%	42%	41%	42%
Patients with serious illness and/or based on age (e.g., cancer diagnosis, end-stage kidney disease, heart failure, COPD)	67%	66%	73%	56%	68%	74%	63%
Clinician or care team referral/identification	63%	61%	63%	57%	64%	63%	65%
Other	26%	22%	24%	19%	30%	34%	26%
N	2,552	1,150	678	472	1,402	618	784
As part of advance care planning conversations, do clinicians and staff... (Select all that apply.)							
Address the patient's values, goals, or care preferences at the end of life	81%	81%	80%	83%	81%	80%	81%
Determine patient designation of health care surrogate or proxy	64%	64%	66%	61%	64%	72%	58%
Assist patients in understanding and completing relevant documents (e.g., advance directives, POLST/MOLST forms, health care power of attorney)	87%	87%	91%	80%	88%	90%	87%
Other	7%	4%	3%	6%	8%	9%	8%
N	2,552	1,150	678	472	1,402	618	784

Table 4.A.4.3. (continued)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
What system(s) do you use to document and store advance care planning conversations and decisions? (Select all that apply.)							
We do not document and store advance care planning conversations and decisions	<1%	<1%	<1%	1%	<1%	0%	<1%
EHR or other health IT	96%	97%	98%	96%	96%	99%	93%
A local or regional Health Information Exchange	5%	4%	1%	7%	6%	8%	5%
Patient portal/patient health record	13%	14%	14%	15%	12%	11%	13%
Other	6%	4%	2%	7%	7%	2%	11%
N	2,552	1,150	678	472	1,402	618	784

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.5.1. Planned care and population health: Team-based care, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How often do care teams at your practice have structured huddles focused on patient care?							
Never	<1%	1%	<1%	1%	<1%	<1%	<1%
Only as needed or ad hoc	15%	23%	24%	22%	8%	9%	7%
At least daily	52%	47%	49%	44%	57%	57%	57%
At least weekly	24%	19%	17%	22%	29%	27%	30%
At least every 2 weeks	2%	2%	3%	1%	2%	3%	2%
At least monthly	5%	7%	6%	9%	4%	4%	4%
N	2,716	1,271	724	547	1,445	622	823
How often do care teams at your practice have scheduled care team meetings to discuss high-risk patients and planned care?							
Never	1%	2%	2%	3%	<1%	<1%	<1%
Only as needed or ad hoc	32%	44%	43%	44%	21%	19%	22%
At least daily	13%	13%	16%	8%	13%	17%	11%
At least weekly	32%	21%	20%	22%	43%	45%	41%
At least every 2 weeks	5%	3%	3%	3%	6%	4%	8%
At least monthly	17%	17%	17%	18%	16%	14%	18%
N	2,716	1,271	724	547	1,445	622	823
How often are direct patient care activities (e.g., patient education, self-management support activities) delegated to members of the care team (e.g., RN, MA, front desk or other practice staff) other than the practitioner?							
Never	<1%	<1%	<1%	1%	<1%	<1%	<1%
Rarely	3%	4%	5%	4%	3%	3%	2%
Sometimes	23%	26%	24%	29%	21%	17%	23%
Often	56%	52%	53%	50%	59%	59%	59%
Always	17%	17%	18%	15%	17%	20%	15%
N	2,716	1,271	724	547	1,445	622	823

Table 4.A.5.1. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How often are patient assessments (e.g., assessing lifestyle factors, screening) delegated to members of the care team (e.g., RN, MA, front desk or other practice staff) other than the practitioner?							
Never	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Rarely	4%	3%	4%	3%	4%	3%	5%
Sometimes	19%	23%	20%	27%	16%	11%	19%
Often	52%	50%	49%	50%	55%	55%	55%
Always	24%	23%	26%	19%	25%	31%	21%
N	2,716	1,271	724	547	1,445	622	823
How often are communications with patients (e.g., answering messages from patients) delegated to members of the care team (e.g., RN, MA, front desk or other practice staff) other than the practitioner?							
Never	<1%	0%	0%	0%	<1%	<1%	0%
Rarely	<1%	<1%	<1%	0%	<1%	<1%	<1%
Sometimes	7%	9%	10%	8%	5%	4%	7%
Often	55%	51%	47%	55%	58%	57%	59%
Always	38%	40%	42%	37%	36%	39%	34%
N	2,716	1,271	724	547	1,445	622	823
How often do care teams at your practice meet and review quality improvement data (e.g., data on quality, cost, utilization, patient experience of care)?							
Never	<1%	<1%	<1%	1%	0%	0%	0%
Only as needed or ad hoc	7%	10%	11%	8%	4%	5%	3%
At least weekly	24%	13%	12%	15%	33%	29%	36%
At least monthly	50%	49%	52%	45%	51%	56%	46%
At least quarterly	18%	26%	23%	29%	12%	9%	14%
At least annually	<1%	1%	1%	2%	<1%	<1%	<1%
N	2,716	1,271	724	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.5.2.a. Planned care and population health: Use of data to plan care, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
At what level are electronic clinical quality measures (eQMs) available?							
Not available	<1%	<1%	<1%	<1%	<1%	0%	<1%
Practice level	19%	22%	25%	18%	17%	18%	15%
Care team or panel level	6%	5%	6%	5%	7%	6%	7%
Both the practice and the care team/panel level	75%	72%	68%	77%	77%	76%	77%
N	2,715	1,270	723	547	1,445	622	823
If electronic clinical quality measures (eQMs) are available, how frequently do care teams review this data?							
We do not regularly review this data	1%	2%	2%	<1%	<1%	1%	<1%
At least weekly	23%	12%	9%	16%	31%	25%	37%
At least monthly	53%	55%	54%	55%	51%	53%	49%
At least quarterly	19%	25%	27%	23%	14%	17%	13%
At least annually	3%	4%	6%	2%	2%	3%	<1%
Other	1%	2%	<1%	3%	1%	<1%	1%
N	2,711	1,267	721	546	1,444	622	822
At what level is claims data feedback from CMS available?							
Not available	4%	4%	3%	6%	3%	3%	4%
Practice level	53%	57%	53%	62%	50%	47%	51%
Care team or panel level	8%	7%	8%	5%	8%	6%	10%
Both the practice and the care team/panel level	36%	32%	36%	27%	39%	44%	35%
N	2,715	1,270	723	547	1,445	622	823
If claims data feedback from CMS is available, how frequently do care teams review this data?							
We do not regularly review this data	5%	5%	4%	7%	5%	4%	5%
At least weekly	4%	2%	2%	2%	6%	3%	8%
At least monthly	13%	12%	16%	7%	15%	26%	6%
At least quarterly	70%	70%	68%	72%	70%	63%	76%
At least annually	6%	9%	8%	10%	4%	4%	4%
Other	1%	2%	2%	2%	<1%	<1%	<1%
N	2,613	1,213	700	513	1,400	606	794

Table 4.A.5.2.b. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
At what level is claims data feedback from other payers available?							
Not available	13%	14%	9%	20%	13%	4%	19%
Practice level	30%	30%	35%	25%	29%	36%	25%
Care team or panel level	11%	10%	7%	14%	11%	13%	9%
Both the practice and the care team/panel level	46%	45%	49%	41%	47%	47%	48%
N	2,715	1,270	723	547	1,445	622	823
If claims data feedback from other payers is available, how frequently do care teams review this data?							
We do not regularly review this data	6%	7%	8%	4%	5%	5%	5%
At least weekly	7%	6%	8%	4%	8%	3%	13%
At least monthly	33%	31%	29%	33%	35%	37%	33%
At least quarterly	46%	47%	45%	49%	45%	48%	43%
At least annually	6%	7%	9%	6%	4%	5%	4%
Other	2%	2%	<1%	5%	2%	2%	2%
N	2,357	1,095	658	437	1,262	596	666
At what level is patient experience data available?							
Not available	5%	7%	4%	10%	3%	3%	3%
Practice level	27%	28%	27%	29%	27%	26%	27%
Care team or panel level	5%	4%	4%	4%	5%	4%	7%
Both the practice and the care team/panel level	63%	61%	65%	57%	65%	67%	63%
N	2,715	1,270	723	547	1,445	622	823
If patient experience data is available, how frequently do care teams review this data?							
We do not regularly review this data	<1%	1%	2%	<1%	<1%	<1%	<1%
At least weekly	12%	10%	10%	11%	13%	12%	14%
At least monthly	43%	43%	49%	35%	43%	48%	39%
At least quarterly	22%	25%	24%	26%	20%	21%	20%
At least annually	20%	19%	14%	25%	20%	16%	24%
Other	3%	2%	2%	1%	3%	3%	4%
N	2,586	1,186	691	495	1,400	601	799

Table 4.A.5.2.b. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
At what level is Patient-Reported Outcome Measures (PROMs) data available?							
Not available	62%	55%	45%	68%	68%	66%	70%
Practice level	12%	17%	23%	9%	8%	9%	7%
Care team or panel level	4%	4%	4%	3%	5%	8%	3%
Both the practice and the care team/panel level	21%	24%	28%	20%	19%	18%	20%
N	2,715	1,270	723	547	1,445	622	823
If Patient-Reported Outcome Measures (PROMs) are available, how frequently do care teams review this data?							
We do not regularly review this data	11%	10%	12%	5%	11%	21%	3%
At least weekly	14%	13%	14%	10%	16%	8%	23%
At least monthly	26%	23%	22%	26%	29%	30%	28%
At least quarterly	30%	31%	30%	32%	28%	31%	26%
At least annually	15%	16%	18%	14%	14%	7%	19%
Other	5%	7%	4%	13%	2%	3%	1%
N	1,028	571	395	176	457	214	243
At what level is multi-payer data from Health Information Exchange (HIE), all payer claims databases (APCDs), or other data aggregator available?							
Not available	51%	53%	52%	55%	49%	41%	56%
Practice level	14%	15%	13%	17%	14%	12%	16%
Care team or panel level	8%	8%	9%	7%	8%	13%	4%
Both the practice and the care team/panel level	26%	24%	26%	20%	29%	34%	25%
N	2,715	1,270	723	547	1,445	622	823
If multi-payer data from Health Information Exchange (HIE), all payer claims databases (APCDs), or other data aggregator is available, how frequently do care teams review this data?							
We do not regularly review this data	9%	13%	13%	14%	6%	5%	7%
At least weekly	26%	21%	24%	17%	30%	31%	29%
At least monthly	20%	23%	23%	24%	18%	27%	10%
At least quarterly	28%	26%	27%	25%	29%	17%	41%
At least annually	8%	11%	9%	14%	6%	4%	8%
Other	8%	6%	5%	6%	10%	15%	6%
N	1,324	592	350	242	732	366	366

Table 4.A.5.2.b. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
At what level is public health data from county or state government available?							
Not available	61%	61%	56%	67%	61%	51%	69%
Practice level	20%	20%	24%	14%	20%	33%	11%
Care team or panel level	4%	4%	5%	3%	4%	4%	3%
Both the practice and the care team/panel level	15%	16%	15%	16%	15%	12%	17%
N	2,715	1,270	723	547	1,445	622	823
If public health data from county or state government is available, how frequently do care teams review this data?							
We do not regularly review this data	11%	11%	12%	11%	11%	12%	9%
At least weekly	21%	12%	13%	11%	28%	27%	29%
At least monthly	19%	17%	18%	15%	21%	23%	20%
At least quarterly	17%	21%	22%	20%	13%	8%	21%
At least annually	20%	29%	29%	30%	13%	10%	16%
Other	11%	9%	7%	13%	13%	21%	5%
N	1,062	499	320	179	563	306	257
At what level is internal practice or system data available?							
Not available	6%	7%	6%	8%	6%	2%	9%
Practice level	15%	19%	20%	18%	11%	9%	13%
Care team or panel level	7%	5%	4%	6%	9%	9%	9%
Both the practice and the care team/panel level	72%	69%	69%	69%	74%	80%	70%
N	2,715	1,270	723	547	1,445	622	823
If internal practice or system data is available, how frequently do care teams review this data?							
We do not regularly review this data	1%	2%	2%	1%	<1%	<1%	<1%
At least weekly	30%	22%	21%	23%	38%	39%	37%
At least monthly	46%	49%	52%	46%	44%	43%	44%
At least quarterly	19%	23%	21%	25%	16%	15%	16%
At least annually	2%	2%	2%	3%	1%	1%	1%
Other	2%	2%	2%	2%	2%	1%	2%
N	2,540	1,180	677	503	1,360	610	750

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.5.2.b. Planned care and population health: Use of data to plan care, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How helpful are internal practice or system data in quality improvement or population health work at your practice?							
1 - Not helpful at all	1%	1%	1%	<1%	1%	<1%	2%
2	2%	3%	3%	2%	2%	<1%	3%
3	15%	15%	14%	17%	14%	9%	18%
4	35%	40%	41%	38%	30%	37%	24%
5 - Most helpful	47%	41%	40%	43%	52%	52%	52%
N	2,540	1,180	677	503	1,360	610	750
How helpful is claims data feedback from CMS in quality improvement or population health work at your practice?							
1 - Not helpful at all	7%	8%	6%	12%	6%	4%	7%
2	16%	14%	14%	14%	18%	18%	18%
3	36%	39%	34%	45%	34%	29%	38%
4	24%	21%	27%	14%	26%	28%	24%
5 - Most helpful	17%	17%	19%	15%	16%	21%	12%
N	2,613	1,213	700	513	1,400	606	794
How helpful is claims data feedback from other payers in quality improvement or population health work at your practice?							
1 - Not helpful at all	7%	8%	9%	6%	6%	6%	6%
2	14%	14%	12%	17%	14%	9%	19%
3	32%	30%	28%	34%	33%	25%	40%
4	30%	32%	35%	26%	29%	35%	23%
5 - Most helpful	17%	16%	16%	16%	18%	25%	12%
N	2,358	1,096	658	438	1,262	596	666
How helpful are electronic clinical quality measures (eCQMs) in quality improvement or population health work at your practice?							
1 - Not helpful at all	1%	2%	2%	1%	<1%	<1%	<1%
2	3%	4%	3%	5%	2%	2%	2%
3	15%	15%	14%	15%	15%	17%	13%
4	32%	34%	34%	34%	31%	29%	31%
5 - Most helpful	49%	45%	46%	45%	52%	51%	53%
N	2,711	1,267	721	546	1,444	622	822

Table 4.A.5.2.b. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
How helpful are multi-payer data from Health Information Exchange (HIE), all payer claims databases (APCDs), or other data aggregator in quality improvement or population health work at your practice?							
1 - Not helpful at all	10%	12%	9%	16%	9%	3%	14%
2	11%	12%	13%	12%	9%	5%	13%
3	33%	35%	36%	34%	31%	31%	31%
4	23%	23%	27%	17%	24%	18%	29%
5 - Most helpful	23%	18%	16%	20%	27%	42%	13%
N	1,326	594	350	244	732	366	366
How helpful are patient experience data in quality improvement or population health work at your practice?							
1 - Not helpful at all	2%	2%	1%	3%	2%	<1%	2%
2	4%	5%	4%	5%	3%	1%	5%
3	20%	21%	21%	20%	19%	15%	22%
4	37%	33%	33%	33%	41%	40%	42%
5 - Most helpful	37%	39%	40%	38%	35%	43%	29%
N	2,586	1,186	691	495	1,400	601	799
How helpful are Patient-Reported Outcome Measures (PROMs) in quality improvement or population health work at your practice?							
1 - Not helpful at all	10%	9%	9%	10%	11%	14%	7%
2	6%	6%	7%	4%	7%	5%	8%
3	28%	32%	36%	24%	23%	22%	23%
4	30%	24%	22%	28%	37%	22%	49%
5 - Most helpful	26%	29%	27%	33%	23%	36%	12%
N	1,029	572	395	177	457	214	243
How helpful are public health data from county or state government in quality improvement or population health work at your practice?							
1 - Not helpful at all	14%	12%	10%	14%	16%	5%	29%
2	17%	17%	19%	13%	16%	18%	14%
3	28%	36%	39%	31%	21%	16%	26%
4	21%	18%	15%	23%	25%	27%	21%
5 - Most helpful	20%	17%	17%	19%	23%	34%	10%
N	1,064	501	320	181	563	306	257

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.5.3. Planned care and population health: Continuous quality improvement, Program Year 2, 2017 Starters (percentages)

	Track 1				Track 2		
	Overall	Total	SSP	Non-SSP	Total	SSP	Non-SSP
Identify the CPC+ measures on which your practice focused its quality improvement efforts during the past two quarters. (Select all that apply.)							
We have not focused quality improvement efforts on any of the CPC+ measures below	<1%	<1%	<1%	<1%	0%	0%	0%
eCQMs							
Controlling High Blood Pressure	74%	70%	68%	73%	76%	78%	75%
Diabetes: Hemoglobin HbA1c Poor Control (>9%)	90%	89%	89%	89%	90%	88%	92%
Diabetes: Eye Exam	69%	67%	70%	63%	70%	78%	64%
Diabetes: Medical Attention for Nephropathy	48%	48%	47%	50%	47%	44%	49%
Dementia: Cognitive Assessment	29%	24%	19%	31%	33%	21%	41%
Depression Utilization of the PHQ-9 Tool	51%	53%	54%	50%	50%	45%	54%
Preventive Care and Screening: Screening for Depression and Follow-Up Plan	47%	44%	43%	44%	50%	46%	52%
Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention	56%	54%	55%	52%	58%	54%	62%
Initiation and Engagement of Alcohol and Other Drug Dependence Treatment	10%	9%	8%	10%	11%	15%	8%
Falls: Screening for Future Falls Risk	59%	58%	58%	59%	59%	53%	64%
Breast Cancer Screening	77%	76%	78%	74%	77%	78%	76%
Cervical Cancer Screening	50%	47%	45%	49%	52%	53%	52%
Colorectal Cancer Screening	78%	79%	80%	79%	76%	79%	74%
Preventive Care and Screening: Influenza Immunization	53%	52%	52%	52%	54%	52%	55%
Pneumococcal Vaccination Status for Older Adults	49%	52%	52%	53%	47%	45%	48%
Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antiplatelet	22%	23%	20%	28%	22%	16%	26%
Statin Therapy for the Prevention and Treatment of Cardiovascular Disease	24%	27%	29%	25%	22%	23%	20%
Closing the Referral Loop: Receipt of Specialist Report	31%	31%	26%	37%	31%	33%	29%

Table 4.A.5.3. (continued)

	Overall	Track 1			Track 2		
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Utilization and cost							
ED	88%	86%	90%	81%	90%	90%	89%
Inpatient	74%	74%	75%	71%	74%	78%	71%
Specialty care	22%	21%	26%	15%	23%	27%	21%
Imaging/labs	20%	18%	22%	13%	21%	23%	19%
Post-acute care	20%	21%	29%	12%	19%	24%	15%
Observation stays	12%	13%	16%	9%	12%	15%	9%
Patient Experience (CAHPS domains)							
Getting timely appointments, care, and information	73%	70%	77%	60%	75%	83%	70%
How well practitioners communicate with patients	51%	47%	53%	38%	54%	57%	52%
Overall practitioner ratings	49%	48%	59%	34%	50%	58%	43%
Attention to care from other practitioners	22%	23%	24%	22%	21%	17%	24%
Practitioners support patients in taking care of own health	30%	29%	28%	31%	32%	24%	38%
N	2,715	1,270	723	547	1,445	622	823
Why are these measures high-priority areas? (Select all that apply.)							
High volume of patients	57%	53%	52%	55%	61%	61%	61%
High-risk population	78%	77%	76%	79%	78%	81%	77%
Poor performance or outcomes	50%	48%	55%	38%	52%	58%	48%
High cost or utilization in this area	64%	64%	62%	66%	64%	61%	66%
Patient feedback	35%	33%	38%	27%	36%	42%	32%
Payment incentive from payers	65%	62%	65%	57%	68%	73%	64%
Other	5%	3%	3%	3%	6%	9%	4%
N	2,708	1,263	719	544	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

Table 4.A.5.4.a. Planned care and population health: Culture of improvement at your practice, Program Year 2, 2017 Starters (percentages)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Over the last two quarters, who in your practice primarily generated improvement ideas and opportunities?							
Did not occur	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Clinical and administrative leadership	85%	82%	85%	78%	89%	89%	88%
Designated quality improvement team	53%	53%	61%	43%	53%	51%	54%
Care teams and clinical staff	73%	72%	72%	71%	75%	82%	69%
Non-clinical staff	40%	38%	38%	37%	41%	46%	38%
Patients/caregivers	38%	37%	37%	37%	39%	43%	37%
N	2,715	1,270	723	547	1,445	622	823
Over the last two quarters, who in your practice implemented improvement projects or tests of change?							
Did not occur	1%	2%	2%	3%	<1%	<1%	<1%
Clinical and administrative leadership	73%	73%	75%	70%	73%	70%	76%
Designated quality improvement team	51%	48%	56%	38%	53%	50%	55%
Care teams and clinical staff	77%	74%	77%	71%	79%	79%	79%
Non-clinical staff	42%	39%	42%	34%	44%	51%	39%
Patients/caregivers	9%	9%	10%	8%	8%	9%	7%
N	2,715	1,270	723	547	1,445	622	823
Over the last two quarters, who in your practice had access to practice-level results?							
Did not occur	<1%	1%	<1%	2%	<1%	<1%	<1%
Clinical and administrative leadership	91%	89%	90%	86%	93%	93%	93%
Designated quality improvement team	60%	57%	65%	46%	62%	66%	59%
Care teams and clinical staff	83%	80%	80%	80%	85%	88%	83%
Non-clinical staff	51%	46%	50%	42%	55%	61%	49%
Patients/caregivers	14%	15%	16%	13%	14%	16%	13%
N	2,715	1,270	723	547	1,445	622	823

Table 4.A.5.4.a. (continued)

	Overall	Track 1		Track 2			
		Total	SSP	Non-SSP	Total	SSP	Non-SSP
Over the last two quarters, who in your practice had access to results identified to the applicable practitioner or care team?							
Did not occur	2%	3%	3%	4%	1%	1%	1%
Clinical and administrative leadership	90%	87%	88%	85%	93%	93%	92%
Designated quality improvement team	56%	52%	59%	43%	59%	65%	54%
Care teams and clinical staff	79%	75%	76%	72%	82%	86%	79%
Non-clinical staff	42%	38%	41%	35%	45%	54%	39%
Patients/caregivers	8%	9%	9%	8%	7%	8%	6%
N	2,715	1,270	723	547	1,445	622	823

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

SSP = Medicare Shared Savings Program.

**4.B. Care delivery requirement reporting data:
CPC+ practices that started in 2018**

Table 4.B.1.1. Access and continuity: Empanelment, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Do you primarily empanel patients by practitioner (i.e., each MD, DO, PA, or NP) or by care team (i.e., practitioner-led teams)?			
Practitioner	82%	82%	80%
Care team	18%	18%	20%
N	163	117	46
What is your active patient lookback period?			
Less than one year	3%	2%	7%
1-2 years	42%	48%	26%
More than two years	55%	50%	67%
N	163	117	46
Percentage of practices with 95 percent or more of their patients empaneled			
Yes	80%	80%	78%
No	20%	20%	22%
N	163	117	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.1.2. Access and continuity: 24/7 access, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Does a clinician or care team member from your practice site usually provide 24/7 coverage?			
No, we do not provide 24/7 coverage	2%	3%	0%
Yes	77%	72%	89%
No, we have a centralized call-center for our health system (after-hours coverage for all practices in the system)	17%	20%	11%
No, we have a formal coverage arrangement with another practice/organization	4%	5%	0%
N	163	117	46
Is 24/7 coverage provided with real-time access to your practice's EHR?			
Yes	96%	95%	100%
No	4%	5%	0%
N	159	113	46

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.1.3. Access and continuity: Continuity of care, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Do you track continuity of care (in terms of how often patients see the practitioner or care team to which they are empaneled) for your patients?			
Yes	58%	61%	52%
No	42%	39%	48%
N	163	117	46
What system(s) do you primarily use to track continuity of care? (Select all that apply.)			
EHR	84%	85%	83%
Electronic practice management systems (e.g., appointment scheduling system)	36%	35%	38%
Other	11%	8%	17%
N	95	71	24
How does your practice measure continuity of care? (Select all that apply.)			
We use patient-centric measures	49%	46%	58%
We use practitioner-centric measures	62%	61%	67%
Other	11%	10%	13%
N	95	71	24

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.1.4.a. Access and continuity: Enhanced access and communication, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
When patients need it, my practice is able to provide same or next-day appointments.			
Never	0%	0%	0%
Rarely	0%	0%	0%
Sometimes	1%	<1%	2%
Often	23%	25%	17%
Always	76%	74%	80%
N	163	117	46
When patients need it, my practice is able to provide office visits on the weekend, or in the evening or early morning.			
Never	17%	17%	15%
Rarely	9%	9%	7%
Sometimes	11%	9%	15%
Often	17%	22%	4%
Always	47%	42%	59%
N	163	117	46
When patients need it, my practice is able to provide telephone advice on clinical issues during office hours.			
Never	0%	0%	0%
Rarely	0%	0%	0%
Sometimes	0%	0%	0%
Often	6%	6%	4%
Always	94%	94%	96%
N	163	117	46
When patients need it, my practice is able to provide telephone advice on clinical issues on weekends and/or after regular office hours.			
Never	<1%	<1%	0%
Rarely	0%	0%	0%
Sometimes	4%	3%	4%
Often	10%	11%	7%
Always	86%	85%	89%
N	163	117	46

Table 4.B.1.4.a. (continued)

	Overall	Track 1	Track 2
When patients need it, my practice is able to provide email or portal advice on clinical issues.			
Never	3%	4%	0%
Rarely	3%	3%	4%
Sometimes	7%	9%	0%
Often	16%	14%	22%
Always	71%	70%	74%
N	163	117	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.1.4.b. Access and continuity: Enhanced access and communication, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
In the last quarter, in which of the following ways did your practice provide alternative approaches to care other than traditional office-based visits? (Select all that apply.)			
We did not provide alternative approaches to care	23%	30%	4%
Visits in alternative locations (e.g., nursing facilities, hospitals, senior centers)	56%	50%	70%
Home-based care (e.g., primary care home visits)	47%	44%	52%
Medical group visits (e.g., shared medical appointments)	39%	35%	50%
Video-based conferencing (i.e., telehealth or telemedicine)	37%	30%	54%
Medical visit over an electronic exchange (i.e., phone, e-visit, portal)	57%	50%	76%
Other	3%	2%	7%
N	163	117	46
If your practice provided visits in alternative locations (e.g., nursing facilities, hospitals, senior centers): How many of your patients who could benefit from this type of care received it?			
None	9%	7%	13%
Some	54%	53%	56%
Most	14%	17%	9%
All	23%	24%	22%
N	91	59	32
If your practice provided visits in alternative locations (e.g., nursing facilities, hospitals, senior centers): Who primarily provided this care? (Select all that apply.)			
MD/DO	88%	92%	81%
NP/PA	33%	32%	34%
Other care team members	2%	2%	3%
N	91	59	32

Table 4.B.1.4.b. (continued)

	Overall	Track 1	Track 2
If your practice provided home-based care (e.g., primary care home visits): How many of your patients who could benefit from this type of care received it?			
None	18%	17%	21%
Some	72%	71%	75%
Most	8%	12%	0%
All	1%	0%	4%
N	76	52	24
If your practice provided home-based care (e.g., primary care home visits): Who primarily provided this care? (Select all that apply.)			
MD/DO	61%	65%	50%
NP/PA	14%	13%	17%
Other care team members	20%	17%	25%
N	76	52	24
If your practice provided medical group visits (e.g., shared medical appointments): How many of your patients who could benefit from this type of care received it?			
None	47%	54%	35%
Some	50%	44%	61%
Most	2%	0%	4%
All	2%	2%	0%
N	64	41	23
If your practice provided medical group visits (e.g., shared medical appointments): Who primarily provided this care? (Select all that apply.)			
MD/DO	17%	12%	26%
NP/PA	23%	22%	26%
Other care team members	28%	22%	39%
N	64	41	23
If your practice provided video-based conferencing (i.e., telehealth or telemedicine): How many of your patients who could benefit from this type of care received it?			
None	70%	89%	44%
Some	25%	11%	44%
Most	5%	0%	12%
All	0%	0%	0%
N	60	35	25

Table 4.B.1.4.b. (continued)

	Overall	Track 1	Track 2
If your practice provided video-based conferencing (i.e., telehealth or telemedicine): Who primarily provided this care? (Select all that apply.)			
MD/DO	25%	11%	44%
NP/PA	20%	9%	36%
Other care team members	7%	0%	16%
N	60	35	25
If your practice provided medical visits over an electronic exchange (i.e., phone, e-visit, portal): How many of your patients who could benefit from this type of care received it?			
None	23%	29%	11%
Some	51%	52%	49%
Most	12%	9%	17%
All	15%	10%	23%
N	93	58	35
If your practice provided medical visit over an electronic exchange (i.e., phone, e-visit, portal): Who primarily provided this care? (Select all that apply.)			
MD/DO	60%	52%	74%
NP/PA	44%	41%	49%
Other care team members	30%	19%	49%
N	93	58	35

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.2.1. Targeted care management: Risk stratification, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Do you risk stratify your empaneled patients?			
Yes	85%	87%	78%
No, we do not risk stratify our patients	15%	13%	22%
N	163	117	46
If you risk stratify your empaneled patients: Do you use a two-step process for risk stratifying your empaneled patients?			
Yes	74%	68%	92%
No	26%	32%	8%
N	138	102	36
What factors are included in your data-driven algorithm for risk stratifying your patients? (Select all that apply.)			
We do not use a data-driven algorithm as part of our risk stratification	1%	2%	0%
Claims variables	8%	4%	19%
Clinical variables from the EHR	84%	80%	94%
Computed risk scores (e.g., CMS-HCC scores or risk scores from other payers)	37%	37%	36%
Other	15%	18%	8%
N	138	102	36
What factors do you consider when using care team/clinical intuition to stratify your patients? Do not include factors included in your data-driven algorithm. (Select all that apply.)			
We do not use the care team's perception as part of our risk stratification	21%	26%	6%
Social needs	67%	61%	86%
Behavioral health needs	67%	61%	86%
Clinical factors	78%	74%	89%
Other	5%	4%	8%
N	138	102	36

Table 4.B.2.1. (continued)

	Overall	Track 1	Track 2
What prompts reassessment of a patient's risk stratification assignment?			
We do not reassess the risk stratification of our patients	4%	4%	6%
Only as needed, or we do not have a protocol in place	13%	18%	0%
Pre-specified clinical events (e.g., new diagnosis, hospitalization)	33%	32%	36%
Automatically updated when new information is in the health IT or EHR platform	11%	12%	8%
Schedule-driven protocol	29%	25%	39%
Other	9%	9%	11%
N	138	102	36
If a schedule-driven protocol prompts reassessment of a patient's risk stratification assignment: indicate the frequency.			
At each patient visit	18%	15%	21%
Multiple times a year	23%	19%	29%
Annually	23%	23%	21%
Other	38%	42%	29%
N	40	26	14
Is risk stratification integrated within your EHR or health IT system?			
Yes	75%	69%	94%
No	25%	31%	6%
N	138	102	36

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.2.2.a. Targeted care management: Identifying patients for episodic care management, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Indicate how you identify patients for episodic care management. This refers to short-term, goal-directed care management for patients who are not already in longitudinal care management as a result of their risk status. (Select all that apply.)			
We do not identify patients for episodic care management	13%	18%	2%
Practitioner or care team referral	70%	62%	91%
Hospital admission or discharge	82%	78%	93%
ED visit	79%	76%	87%
Skilled Nursing Facility (SNF) admission or discharge	38%	28%	63%
New health condition (e.g., cancer diagnosis, accident, chronic condition)	66%	58%	87%
New clinical instability in a chronic condition, including change in medications	57%	49%	78%
Life event (e.g., death of spouse, financial loss)	42%	37%	57%
Initiation or stabilization on a high risk medication (e.g., anticoagulants)	39%	30%	63%
Other	6%	5%	9%
N	163	117	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.2.2.b. Targeted care management: Longitudinal care management, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Tier 1 (Highest risk)			
Median percentage of empaneled patients in risk tier	5%	4%	5%
Median percentage of patients in risk tier receiving longitudinal care management	16%	10%	29%
N	156	110	46
Tier 2			
Median percentage of empaneled patients in risk tier	19%	15%	25%
Median percentage of patients in risk tier receiving longitudinal care management	0	0	<1%
N	158	113	45
Tier 3			
Median percentage of empaneled patients in risk tier	42%	40%	50%
Median percentage of patients in risk tier receiving longitudinal care management	0%	0%	0%
N	155	110	45
Tier 4+			
Median percentage of empaneled patients in risk tier	53%	54%	24%
Median percentage of patients in risk tier receiving longitudinal care management	0%	0%	0%
N	55	48	7

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes. Practices are only included in each calculation if they have at least one patient in that risk tier. A small number of practices indicated they had no patients in a particular risk tier; they are excluded here, since it is not possible to calculate the percentage of patients in that risk tier receiving longitudinal care management.

Table 4.B.2.3. Targeted care management: Care management staffing, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
What type of clinician and staff at your practice is/are primarily responsible for developing and monitoring care plans? (Select all that apply.)			
None	6%	8%	2%
Practitioner (i.e., MD, DO, NP, PA)	34%	36%	30%
Care manager/clinical staff (i.e., RN, LPN, social worker)	57%	54%	65%
Other clinical staff (e.g., MA/CMA/CNA)	<1%	<1%	0%
Non-clinical staff (e.g., admin, front desk)	0%	0%	0%
Other	2%	2%	2%
N	163	117	46
What type of clinician and staff at your practice is/are primarily responsible for assessing and reassessing patient risk status? (Select all that apply.)			
None	7%	7%	7%
Practitioner (i.e., MD, DO, NP, PA)	46%	43%	54%
Care manager/clinical staff (i.e., RN, LPN, social worker)	35%	35%	35%
Other clinical staff (e.g., MA/CMA/CNA)	2%	3%	0%
Non-clinical staff (e.g., admin, front desk)	3%	3%	4%
Other	7%	10%	0%
N	163	117	46
What type of clinician and staff at your practice is/are primarily responsible for providing patient education and self-management support? (Select all that apply.)			
None	4%	5%	0%
Practitioner (i.e., MD, DO, NP, PA)	27%	31%	17%
Care manager/clinical staff (i.e., RN, LPN, social worker)	56%	47%	78%
Other clinical staff (e.g., MA/CMA/CNA)	4%	5%	2%
Non-clinical staff (e.g., admin, front desk)	1%	2%	0%
Other	8%	10%	2%
N	163	117	46

Table 4.B.2.3. (continued)

	Overall	Track 1	Track 2
What type of clinician and staff at your practice is/are primarily responsible for routine medication reconciliation at scheduled visits? (Select all that apply.)			
None	4%	6%	0%
Practitioner (i.e., MD, DO, NP, PA)	41%	45%	30%
Care manager/clinical staff (i.e., RN, LPN, social worker)	36%	31%	48%
Other clinical staff (e.g., MA/CMA/CNA)	16%	16%	15%
Non-clinical staff (e.g., admin, front desk)	0%	0%	0%
Other	3%	2%	7%
N	163	117	46
What type of clinician and staff at your practice is/are primarily responsible for medication reconciliation during transitions of care (hospital, ED discharges)? (Select all that apply.)			
None	6%	8%	2%
Practitioner (i.e., MD, DO, NP, PA)	28%	27%	28%
Care manager/clinical staff (i.e., RN, LPN, social worker)	56%	55%	61%
Other clinical staff (e.g., MA/CMA/CNA)	6%	9%	0%
Non-clinical staff (e.g., admin, front desk)	0%	0%	0%
Other	4%	2%	9%
N	163	117	46
What type of clinician and staff at your practice is/are primarily responsible for management of care transitions (hospital, ED discharges)? (Select all that apply.)			
None	6%	8%	0%
Practitioner (i.e., MD, DO, NP, PA)	24%	22%	28%
Care manager/clinical staff (i.e., RN, LPN, social worker)	61%	58%	67%
Other clinical staff (e.g., MA/CMA/CNA)	6%	9%	0%
Non-clinical staff (e.g., admin, front desk)	2%	3%	0%
Other	2%	<1%	4%
N	163	117	46

Table 4.B.2.3. (continued)

	Overall	Track 1	Track 2
What type of clinician and staff at your practice is/are primarily responsible for coordinating and communicating with specialty care? (Select all that apply.)			
None	6%	9%	0%
Practitioner (i.e., MD, DO, NP, PA)	31%	32%	30%
Care manager/clinical staff (i.e., RN, LPN, social worker)	40%	38%	48%
Other clinical staff (e.g., MA/CMA/CNA)	11%	11%	11%
Non-clinical staff (e.g., admin, front desk)	7%	6%	9%
Other	4%	5%	2%
N	163	117	46
What type of clinician and staff at your practice is/are primarily responsible for navigating patients to community and social services? (Select all that apply.)			
None	6%	7%	4%
Practitioner (i.e., MD, DO, NP, PA)	10%	11%	9%
Care manager/clinical staff (i.e., RN, LPN, social worker)	75%	73%	80%
Other clinical staff (e.g., MA/CMA/CNA)	4%	4%	2%
Non-clinical staff (e.g., admin, front desk)	2%	3%	0%
Other	3%	3%	4%
N	163	117	46

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.2.4. Targeted care management: Care plans, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Among patients under longitudinal care management, how many have a care plan?			
None	15%	20%	4%
Some	28%	28%	28%
Most	18%	17%	22%
All	38%	35%	46%
N	163	117	46
Do you document and store care plans?			
No	<1%	1%	0%
Yes, care plans are integrated with the EHR or other health IT	91%	87%	100%
Yes, care plans are documented and stored, but are not integrated with the EHR or other health IT	8%	12%	0%
N	138	94	44
Who has real-time/point-of-care access to a patient's care plan? (Select all that apply.)			
Members of the care team within the practice	99%	99%	100%
Clinicians outside of the practice (i.e., other specialists who care for the patient)	38%	41%	32%
Community and/or social service agencies and practitioners	6%	4%	9%
Patient and his/her caregiver(s)	54%	50%	61%
Other	3%	3%	2%
N	138	94	44

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.2.5.1. Targeted care management: Patient follow-up after hospital discharge and ED visits, Program Year 2, 2018 Starters

	Overall	Track 1	Track 2
Hospital follow-up rate			
Median	89%	89%	89%
N	146	106	40
ED follow-up rate			
Median	88%	89%	83%
N	140	99	41

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Mathematica calculated hospital and ED follow-up rates as the practice's overall number of follow-ups divided by the practice's overall number of discharges for up to three target hospitals and EDs, respectively.

Table 4.B.3.1. Comprehensiveness and coordination: Collaborative care agreements with specialists, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Identify the high-volume or high-cost specialists and health care organizations with whom you have formal care compacts or collaborative care agreements. (Select all that apply.)			
We have not established care compacts or collaborative care agreements.	26%	33%	7%
Allergy/Infectious Disease	10%	9%	15%
Cardiology	60%	51%	80%
Dermatology	10%	7%	17%
Emergency Medicine	9%	10%	4%
Endocrinology	20%	15%	33%
ENT/Otolaryngology	20%	20%	20%
Gastroenterology	31%	28%	37%
Hospitalist Care	16%	14%	22%
Nephrology	20%	15%	30%
Neurology	20%	21%	17%
Obstetrics/Gynecology	16%	15%	20%
Oncology/Hematology	23%	22%	26%
Ophthalmology	18%	16%	22%
Optometry	6%	5%	9%
Orthopedic surgery	37%	36%	39%
Palliative care	10%	11%	9%
Pain management	7%	8%	4%
Podiatry	12%	11%	15%
Psychiatry/Psychology	40%	32%	59%
Pulmonology	20%	18%	24%
Radiology	11%	13%	7%
Rheumatology	17%	11%	30%
Surgery	30%	32%	24%
Urology	21%	21%	24%
Other	18%	13%	33%
N	163	117	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.3.3. Comprehensiveness and coordination: Comprehensive medication management, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Which of the following steps has your practice achieved to implement comprehensive medication management? (Select all that apply.)			
We have not taken any of these steps yet	48%	55%	33%
Established a plan for identifying patients with comprehensive medication management needs	40%	36%	50%
Identified and/or hired personnel for comprehensive medication management	18%	14%	28%
Trained staff as necessary	26%	20%	43%
Developed workflows and processes	29%	26%	39%
N	163	117	46
In the last two quarters, has your practice provided comprehensive medication management to patients?			
No, we are not implementing comprehensive medication management	23%	29%	7%
No, we are in the process of developing a plan for comprehensive medication management	36%	39%	28%
No, we have established a plan for comprehensive medication management, but have not yet implemented it	4%	3%	7%
Yes, we provided comprehensive medication management support	37%	29%	59%
N	163	117	46
Who primarily provides comprehensive medication management for your patients?			
Pharmacist	33%	26%	41%
Primary care practitioners at our practice (MD/DO, NP/PA)	64%	71%	56%
Other	3%	3%	4%
N	61	34	27

Table 4.B.3.3. (continued)

	Overall	Track 1	Track 2
How does your practice deliver comprehensive medication management?			
Coordination with an external pharmacist, program, or service	7%	9%	4%
Co-management with a pharmacist, program, or service located at our practice	31%	24%	41%
Primary care practitioners from our practice primarily deliver comprehensive medication management	62%	68%	56%
N	61	34	27
How do you identify patients for comprehensive medication management? (Select all that apply.)			
Recent discharge from the hospital	82%	76%	89%
Patients who are receiving longitudinal care management	61%	53%	70%
Recent visit to ED	64%	53%	78%
Active medication issues (e.g., adverse reactions, adherence, not reaching intended treatment outcomes)	61%	47%	78%
Potential therapy issues (e.g., high risk medications, poly-pharmacy, multi-therapy drug interactions, high cost medications)	62%	47%	81%
Referred by practitioner or care team	52%	50%	56%
Other	8%	12%	4%
N	61	34	27

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.3.4. Comprehensiveness and coordination: Behavioral health integration, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
What is your practice's primary strategy for addressing behavioral health needs? If you are planning to integrate one of the behavioral health models listed below, please select that option.			
We are not addressing behavioral health needs at our practice	9%	11%	2%
Behavioral health integration with Care Management for Mental Illness (Option 1)	14%	13%	17%
Behavioral health integration with the Primary Care Behaviorist model (Option 2)	29%	21%	48%
Referrals or care compacts/collaborative agreements for external behavioral health specialists	41%	48%	24%
Other	7%	7%	9%
N	163	117	46
If you selected the Primary Care Behaviorist model: Which of the following steps has your practice achieved to integrate behavioral health? (Select all that apply.)			
We have not taken any of these steps yet	21%	32%	9%
Established a plan for identifying patients with behavioral health needs	70%	60%	82%
Identified and/or hired personnel	68%	56%	82%
Trained staff as necessary	55%	40%	73%
Developed workflows and processes	64%	56%	73%
N	47	25	22
If you selected the Primary Care Behaviorist model: What type of practitioner(s) act as primary care behaviorist(s) at your practice? (Select all that apply.)			
We do not have a primary care behaviorist	28%	44%	9%
Psychologist	19%	12%	27%
Social worker (LCSW)	36%	32%	41%
Psychiatric NP/PA	9%	8%	9%
Other	32%	12%	55%
N	47	25	22

Table 4.B.3.4. (continued)

	Overall	Track 1	Track 2
If you selected the Primary Care Behaviorist model: In the last two quarters, of your patients with identified behavioral health needs, approximately how many were seen by a primary care behaviorist at your practice?			
None	34%	48%	18%
Some	43%	40%	45%
Most	23%	12%	36%
All	0%	0%	0%
N	47	25	22
What mental health conditions are you targeting with your behavioral health strategy? (Select all that apply.)			
We do not target specific mental health conditions	17%	21%	7%
Anxiety disorders	63%	59%	73%
Alzheimer's disease and related dementias	25%	25%	24%
Depressive disorders	74%	70%	84%
Chronic pain	34%	33%	38%
Complex/chronic disease and comorbidities (e.g., major depressive disorder, poorly controlled diabetes)	56%	47%	76%
High risk behaviors (e.g., tobacco use, obesity, medication adherence)	46%	42%	53%
Insomnia	19%	12%	36%
Substance use disorders	52%	48%	60%
Other	5%	5%	7%
N	149	104	45
What types of targeted tactics for your patients are available at your practice? (Select all that apply.)			
We do not use any targeted tactics for behavioral health	3%	<1%	7%
Screening for behavioral health conditions as standard practice	91%	91%	89%
SBIRT (e.g., alcohol misuse)	31%	27%	40%
Evidence-based psychotherapy (e.g., CBT, PST)	15%	12%	24%
Self-management support for behavioral health conditions	42%	39%	49%
Counseling for behavior change (e.g., smoking cessation, weight loss)	77%	78%	73%
Other	5%	3%	11%
N	149	104	45

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes. In addition, we suppressed three questions that practices answered if they selected Care Management for Mental Illness as the practice's primary strategy for addressing behavioral health needs.

Table 4.B.3.5. Comprehensiveness and coordination: Linkages with social services, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Do you routinely screen your patients for unmet social needs?			
We do not screen patients for unmet social needs	21%	26%	9%
We screen a targeted subpopulation of patients for unmet social needs	41%	35%	57%
We universally screen all patients for unmet social needs	37%	38%	35%
N	163	117	46
What type of screening tool(s) do you use or adapt to capture unmet social needs in your patient population? (Select all that apply.)			
We do not use any screening tools	5%	5%	7%
Standardized screening tool (e.g., screening tools published by HealthLeads, IOM/NAM, Accountable Health Communities [AHC])	22%	20%	26%
Tool developed by practice or system	66%	63%	74%
Other	13%	16%	7%
N	128	86	42
Are screening tools or questions integrated with your EHR or health IT system?			
Yes	89%	87%	93%
No	11%	13%	7%
N	128	86	42
What are the social needs your practice has prioritized to address in your patient population? (Select all that apply.)			
We have not prioritized any social needs to address in our patient population	29%	38%	7%
Food insecurity: Limited or uncertain access to adequate and nutritious food	45%	41%	54%
Housing instability: Homelessness, unsafe housing quality, inability to pay mortgage/rent, eviction	42%	38%	52%
Utility needs: Difficulty paying utility bills, shut off notices, disconnected phone	33%	25%	54%
Financial resource strain: Inability to pay for basics such as food, medical care, insurance, and medication costs	47%	38%	67%

Table 4.B.3.5. (continued)

	Overall	Track 1	Track 2
Transportation: Difficulty accessing/affording transportation (i.e., medical or public)	57%	50%	76%
Employment: Under-employment/unemployment	20%	20%	22%
Social isolation: Lack of family and/or friend networks, minimal community contacts, absence of social engagement	44%	43%	48%
Safety: Intimate partner violence, elder abuse, community violence	53%	47%	70%
Other	4%	4%	2%
N	163	117	46

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.3.5.1. Comprehensiveness and coordination: Coordinating with social service resources, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
How frequently is the inventory of social service resources your practice uses updated?			
We do not maintain or have access to an inventory of these resources	15%	16%	13%
Ad hoc basis only	36%	32%	46%
At least monthly	3%	4%	0%
Every 2-6 months	8%	9%	7%
Every 6-12 months	35%	36%	33%
Less than annually	3%	3%	2%
N	163	117	46
Is the inventory of social service resources integrated with your EHR?			
Yes	29%	22%	45%
No	71%	78%	55%
N	138	98	40
Identify the social service resources and supports with whom you have established relationships to address the prioritized areas you selected above. (Select all that apply.)			
We have not established relationships with social service resources and supports	15%	18%	9%
Financial (e.g., TANF, SSDI/SSI, cash assistance)	33%	31%	39%
Nutrition and food (e.g., SNAP/WIC, food pantries, Meals on Wheels)	68%	67%	72%
Health-related services (e.g., insurance, prescription assistance, home health, durable medical equipment)	72%	71%	74%
Housing (e.g., shelter, public housing, transitional support)	44%	39%	54%
Transportation (e.g., medical transport, public transit)	67%	67%	67%
Utilities (e.g., energy assistance/subsidies [LIHEAP], telephone)	34%	34%	33%
Other	13%	13%	15%
N	163	117	46

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.3.6. Comprehensiveness and coordination: Comprehensiveness, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
What is/are the complex need(s) your practice is developing capabilities to address? (Select all that apply.)			
We are not developing capabilities to increase comprehensiveness	17%	21%	7%
End of life or palliative care	66%	62%	74%
Chronic pain	47%	46%	49%
Substance use disorders	57%	49%	74%
Co-existing chronic conditions	60%	57%	65%
High acuity chronic conditions, please specify	48%	46%	51%
Alzheimer's disease and related dementias	26%	25%	30%
Frailty	17%	9%	35%
Other	11%	8%	19%
N	163	117	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.4.1.a. Patient and caregiver engagement: Engaging patients and caregivers in your practice, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Tell us how frequently your practice engages patients and caregivers in developing agendas for Patient and Family Advisory Council (PFAC) meetings.			
Never	7%	10%	0%
Rarely	9%	12%	0%
Sometimes	37%	37%	37%
Often	23%	22%	24%
Always	25%	19%	39%
N	163	117	46
Tell us how frequently your practice engages patients and caregivers in establishing improvement projects.			
Never	9%	11%	4%
Rarely	12%	16%	2%
Sometimes	38%	39%	35%
Often	27%	24%	35%
Always	13%	9%	24%
N	163	117	46
Tell us how frequently your practice engages patients and caregivers in communicating results of improvement projects.			
Never	18%	24%	2%
Rarely	12%	15%	2%
Sometimes	37%	38%	35%
Often	20%	15%	33%
Always	14%	9%	28%
N	163	117	46
Which of the following steps has your practice achieved to implement and integrate the PFAC? (Select all that apply.)			
We have not taken any of these steps	2%	3%	0%
Identified staff participants	96%	95%	98%
Recruited patient participants	94%	93%	98%
Defined mission and vision of PFAC	87%	89%	80%
Determined structure of PFAC (e.g., number of patients or family advisors, frequency of meetings, term lengths, and other meeting logistics)	93%	92%	96%

Table 4.B.4.1.a. (continued)

	Overall	Track 1	Track 2
Incorporated PFAC recommendations into practice	56%	52%	65%
Communicated PFAC recommendations to patients and staff	67%	65%	74%
Developed a sustainability plan for the PFAC	47%	44%	54%
N	163	117	46
Who typically meets with or is a part of your PFAC?			
Practitioners (MD/DO, NP, PA)	58%	59%	54%
Clinical staff (e.g., RN, LPN, MA, care manager)	88%	90%	83%
Patients and family/caregivers	99%	99%	98%
Non-clinical staff (e.g., administration, front office, IT)	90%	91%	87%
Other	9%	9%	9%
N	160	114	46
Rate how well your PFAC reflects your practice's overall patient population (i.e., based on factors such as age, gender, race, socioeconomic status, language, or medical conditions).			
Not applicable, or PFAC is still in development	3%	3%	2%
Not at all representative	<1%	0%	2%
Slightly representative	15%	17%	11%
Moderately representative	50%	45%	63%
Very representative	29%	33%	20%
Completely representative	3%	3%	2%
N	160	114	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.4.1.b Patient and caregiver engagement: Engaging patients and caregivers in your practice, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Percentage of practices...			
...with at least one PFAC meeting in 2018	96%	96%	98%
...with at least two PFAC meetings in 2018	44%	26%	91%
N	163	117	46

Source: Mathematica's analysis of 2018 (Quarter 1-4) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.4.2. Patient and caregiver engagement: Self-management support for selected conditions, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
For which conditions did your practice provide condition-specific support for self-management in the last quarter? (Select all that apply.)			
We do not offer self-management support for any conditions	2%	3%	0%
Cardiovascular - Congestive Heart Failure (CHF)	47%	39%	65%
Cardiovascular - Coronary Artery Disease (CAD)	27%	22%	39%
Cardiovascular - Hyperlipidemia/high cholesterol	41%	35%	57%
Cardiovascular - Hypertension	75%	70%	87%
Respiratory/Pulmonary - Asthma	40%	32%	59%
Respiratory/Pulmonary - COPD	37%	30%	54%
Mental Health - Anxiety	38%	28%	63%
Mental Health - Depression	52%	40%	80%
Substance Disorder - Alcohol misuse	20%	18%	26%
Substance Disorder - Tobacco cessation	61%	55%	78%
Substance Disorder - Opioid misuse	16%	14%	22%
Other - Chronic pain	20%	15%	30%
Other - Diabetes	95%	93%	100%
Other - Obesity/weight loss	64%	53%	91%
Other - Other	7%	9%	4%
N	163	117	46
How do you identify patients for self-management support? (Select all that apply.)			
We do not systematically identify patients for self-management support	4%	6%	0%
All patients with targeted condition	56%	50%	72%
General risk status (using the practice's risk stratification methodology)	43%	35%	63%
Poorly controlled disease	80%	75%	93%
Data from a formal self-management assessment tool	21%	17%	30%
Patient expression of interest	74%	68%	89%
Clinician referral/identification	78%	75%	85%
Other	10%	10%	11%
N	163	117	46

Table 4.B.4.2. (continued)

	Overall	Track 1	Track 2
How frequently does your practice encourage patients to choose goals that are meaningful to them?			
Never	2%	3%	0%
Rarely	2%	3%	0%
Sometimes	12%	13%	9%
Often	40%	39%	43%
Always	44%	42%	48%
N	163	117	46
How frequently does your practice include family/caregivers in goal-setting and care plan development?			
Never	1%	2%	0%
Rarely	5%	7%	0%
Sometimes	50%	54%	41%
Often	34%	31%	41%
Always	10%	7%	17%
N	163	117	46
How frequently does your practice connect or provide patients and caregivers with formal self-management support services at our practice or in the community?			
Never	2%	3%	0%
Rarely	8%	8%	9%
Sometimes	41%	45%	30%
Often	37%	36%	41%
Always	11%	8%	20%
N	163	117	46
How frequently does your practice measure patients' skills and progress (e.g., How's My Health, Patient Activation Measure [PAM])?			
Never	39%	40%	35%
Rarely	20%	21%	20%
Sometimes	15%	17%	11%
Often	18%	17%	20%
Always	8%	5%	15%
N	163	117	46

Table 4.B.4.2. (continued)

	Overall	Track 1	Track 2
How frequently are practice staff trained in specific self-management support techniques (e.g., motivational interviewing, 5 A's, Teach Back reflective listening)?			
Never	20%	25%	9%
Rarely	10%	12%	4%
Sometimes	18%	15%	24%
Often	31%	28%	39%
Always	21%	20%	24%
N	163	117	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.4.3. Patient and caregiver engagement: Advance care planning, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Who at your practice is/are typically involved in advance care planning? (Select all that apply.)			
We do not provide advance care planning	9%	12%	2%
Practitioners (MD/DO, NP, PA)	83%	79%	91%
Other clinical staff (RN,LPN, MA, care manager)	60%	53%	76%
Other non-clinical members of the care team (e.g., administrative or front office staff)	12%	7%	24%
Other	9%	8%	13%
N	163	117	46
How does your practice identify patients for advance care planning? (Select all that apply.)			
We do not systematically identify patients for advance care planning	11%	14%	7%
High-risk status (using the practice's two-step risk stratification methodology)	35%	27%	53%
Patients with serious illness and/or based on age (e.g., cancer diagnosis, end-stage kidney disease, heart failure, COPD)	54%	47%	71%
Clinician or care team referral/identification	59%	53%	71%
Other	32%	36%	22%
N	148	103	45
As part of advance care planning conversations, do clinicians and staff... (Select all that apply.)			
Address the patient's values, goals, or care preferences at the end of life	84%	81%	91%
Determine patient designation of health care surrogate or proxy	68%	64%	78%
Assist patients in understanding and completing relevant documents (e.g., advance directives, POLST/MOLST forms, health care power of attorney)	81%	76%	93%
Other	6%	8%	2%
N	148	103	45

Table 4.B.4.3. (continued)

	Overall	Track 1	Track 2
What system(s) do you use to document and store advance care planning conversations and decisions? (Select all that apply.)			
We do not document and store advance care planning conversations and decisions	<1%	<1%	0%
EHR or other health IT	99%	98%	100%
A local or regional Health Information Exchange	1%	<1%	2%
Patient portal/patient health record	17%	14%	24%
Other	1%	2%	0%
N	148	103	45

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.5.1. Planned care and population health: Team-based care, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
How often do care teams at your practice have structured huddles focused on patient care?			
Never	3%	4%	0%
Only as needed or ad hoc	21%	24%	13%
At least daily	62%	58%	72%
At least weekly	12%	12%	11%
At least every 2 weeks	0%	0%	0%
At least monthly	2%	2%	4%
N	163	117	46
How often do care teams at your practice have scheduled care team meetings to discuss high-risk patients and planned care?			
Never	12%	15%	4%
Only as needed or ad hoc	40%	43%	35%
At least daily	17%	17%	17%
At least weekly	17%	14%	26%
At least every 2 weeks	3%	4%	0%
At least monthly	10%	8%	17%
N	163	117	46
How often are direct patient care activities (e.g., patient education, self-management support activities) delegated to members of the care team (e.g., RN, MA, front desk or other practice staff) other than the practitioner?			
Never	2%	3%	0%
Rarely	4%	6%	0%
Sometimes	21%	21%	22%
Often	56%	52%	65%
Always	16%	17%	13%
N	163	117	46
How often are patient assessments (e.g., assessing lifestyle factors, screening) delegated to members of the care team (e.g., RN, MA, front desk or other practice staff) other than the practitioner?			
Never	1%	<1%	2%
Rarely	3%	4%	0%
Sometimes	19%	20%	17%
Often	52%	51%	52%
Always	25%	24%	28%

Table 4.B.5.1. (continued)

	Overall	Track 1	Track 2
N	163	117	46
How often are communications with patients (e.g., answering messages from patients) delegated to members of the care team (e.g., RN, MA, front desk or other practice staff) other than the practitioner?			
Never	<1%	<1%	0%
Rarely	<1%	<1%	0%
Sometimes	5%	4%	7%
Often	48%	49%	46%
Always	46%	45%	48%
N	163	117	46
How often do care teams at your practice meet and review quality improvement data (e.g., data on quality, cost, utilization, patient experience of care)?			
Never	4%	5%	0%
Only as needed or ad hoc	6%	7%	4%
At least weekly	10%	8%	17%
At least monthly	49%	46%	57%
At least quarterly	28%	32%	17%
At least annually	2%	2%	4%
N	163	117	46

Source: Mathematica's analysis of 2018 (Quarter 3) care delivery reporting data submitted by practices to CMS via the CPC+ Practice Portal.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.5.2. Planned care and population health: Use of data to plan care, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
At what level are electronic clinical quality measures (eQMs) available?			
Not available	<1%	0%	2%
Practice level	33%	31%	37%
Care team or panel level	4%	4%	4%
Both the practice and the care team/panel level	63%	65%	57%
N	163	117	46
If electronic clinical quality measures (eQMs) are available: How frequently do care teams review this data?			
We do not regularly review this data	5%	7%	0%
At least weekly	14%	10%	22%
At least monthly	34%	37%	27%
At least quarterly	31%	33%	24%
At least annually	7%	8%	7%
Other	9%	5%	20%
N	162	117	45
At what level is claims data feedback from CMS available?			
Not available	10%	14%	0%
Practice level	58%	56%	61%
Care team or panel level	11%	12%	9%
Both the practice and the care team/panel level	21%	18%	30%
N	163	117	46
If claims data feedback from CMS is available: How frequently do care teams review this data?			
We do not regularly review this data	12%	12%	13%
At least weekly	5%	5%	4%
At least monthly	15%	11%	24%
At least quarterly	48%	56%	30%
At least annually	7%	8%	4%
Other	13%	8%	24%
N	147	101	46

Table 4.B.5.2. (continued)

	Overall	Track 1	Track 2
At what level is claims data feedback from other payers available?			
Not available	9%	9%	9%
Practice level	39%	44%	24%
Care team or panel level	17%	15%	22%
Both the practice and the care team/panel level	36%	32%	46%
N	163	117	46
If claims data feedback from other payers is available: How frequently do care teams review this data?			
We do not regularly review this data	4%	6%	0%
At least weekly	5%	6%	5%
At least monthly	22%	21%	24%
At least quarterly	41%	41%	40%
At least annually	14%	19%	0%
Other	15%	8%	31%
N	148	106	42
At what level is patient experience data available?			
Not available	13%	15%	9%
Practice level	34%	37%	26%
Care team or panel level	2%	<1%	4%
Both the practice and the care team/panel level	52%	48%	61%
N	163	117	46
If patient experience data is available: How frequently do care teams review this data?			
We do not regularly review this data	2%	3%	0%
At least weekly	6%	5%	7%
At least monthly	26%	27%	24%
At least quarterly	26%	24%	31%
At least annually	39%	39%	38%
Other	1%	2%	0%
N	142	100	42

Table 4.B.5.2. (continued)

	Overall	Track 1	Track 2
At what level are Patient-Reported Outcome Measures (PROMs) available?			
Not available	66%	68%	61%
Practice level	12%	13%	11%
Care team or panel level	7%	3%	17%
Both the practice and the care team/panel level	15%	17%	11%
N	163	117	46
If Patient-Reported Outcome Measures (PROMs) are available: How frequently do care teams review this data?			
We do not regularly review this data	18%	26%	0%
At least weekly	11%	5%	22%
At least monthly	30%	37%	17%
At least quarterly	14%	11%	22%
At least annually	18%	18%	17%
Other	9%	3%	22%
N	56	38	18
At what level is multi-payer data from Health Information Exchange (HIE), all payer claims databases (APCDs), or other data aggregator available?			
Not available	66%	65%	70%
Practice level	14%	16%	9%
Care team or panel level	6%	6%	7%
Both the practice and the care team/panel level	13%	13%	15%
N	163	117	46
If multi-payer data from Health Information Exchange (HIE), all payer claims databases (APCDs), or other data aggregator is available: How frequently do care teams review this data?			
We do not regularly review this data	9%	12%	0%
At least weekly	20%	12%	43%
At least monthly	13%	10%	21%
At least quarterly	33%	34%	29%
At least annually	5%	5%	7%
Other	20%	27%	0%
N	55	41	14

Table 4.B.5.2. (continued)

	Overall	Track 1	Track 2
At what level is public health data from county or state government available?			
Not available	71%	68%	80%
Practice level	16%	18%	11%
Care team or panel level	<1%	<1%	0%
Both the practice and the care team/panel level	12%	14%	9%
N	163	117	46
If public health data from county or state government is available: How frequently do care teams review this data?			
We do not regularly review this data	17%	16%	22%
At least weekly	11%	5%	33%
At least monthly	15%	18%	0%
At least quarterly	28%	32%	11%
At least annually	13%	8%	33%
Other	17%	21%	0%
N	47	38	9
At what level is Internal practice or system data available?			
Not available	7%	6%	9%
Practice level	22%	26%	13%
Care team or panel level	6%	7%	4%
Both the practice and the care team/panel level	65%	62%	74%
N	163	117	46
If Internal practice or system data is available: How frequently do care teams review this data?			
We do not regularly review this data	1%	2%	0%
At least weekly	26%	20%	43%
At least monthly	41%	39%	45%
At least quarterly	23%	27%	12%
At least annually	7%	10%	0%
Other	1%	2%	0%
N	152	110	42

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.5.3. Planned care and population health: Continuous quality improvement, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Identify the CPC+ measures on which your practice focused its quality improvement efforts during the past two quarters. (Select all that apply.)			
We have not focused quality improvement efforts on any of the CPC+ measures below	<1%	<1%	0%
eCQMs			
Controlling High Blood Pressure	80%	80%	78%
Diabetes: Hemoglobin HbA1c Poor Control (>9%)	83%	83%	83%
Diabetes: Eye Exam	63%	62%	65%
Diabetes: Medical Attention for Nephropathy	53%	55%	48%
Dementia: Cognitive Assessment	21%	21%	24%
Depression Utilization of the PHQ-9 Tool	53%	51%	59%
Preventive Care and Screening: Screening for Depression and Follow-Up Plan	53%	52%	54%
Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention	69%	68%	72%
Initiation and Engagement of Alcohol and Other Drug Dependence Treatment	13%	15%	11%
Falls: Screening for Future Falls Risk	67%	63%	76%
Breast Cancer Screening	82%	85%	74%
Cervical Cancer Screening	52%	50%	54%
Colorectal Cancer Screening	85%	85%	87%
Preventive Care and Screening: Influenza Immunization	72%	69%	78%
Pneumococcal Vaccination Status for Older Adults	68%	67%	72%
Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antiplatelet	40%	39%	41%
Statin Therapy for the Prevention and Treatment of Cardiovascular Disease	35%	34%	37%
Closing the Referral Loop: Receipt of Specialist Report	39%	34%	52%

Table 4.B.5.3. (continued)

	Overall	Track 1	Track 2
Utilization and cost			
ED	76%	72%	87%
Inpatient	67%	61%	83%
Specialty care	21%	15%	37%
Imaging/labs	21%	16%	33%
Post-acute care	18%	18%	20%
Observation stays	14%	15%	13%
Patient Experience (CAHPS domains)			
Getting timely appointments, care, and information	79%	79%	76%
How well practitioners communicate with patients	51%	49%	57%
Overall practitioner ratings	42%	34%	63%
Attention to care from other practitioners	20%	21%	17%
Practitioners support patients in taking care of own health	24%	23%	26%
N	163	117	46
Why are these measures high-priority areas? (Select all that apply.)			
High volume of patients	45%	43%	50%
High-risk population	69%	62%	85%
Poor performance or outcomes	41%	35%	54%
High cost or utilization in this area	54%	55%	52%
Patient feedback	28%	28%	30%
Payment incentive from payers	67%	72%	57%
Other	10%	12%	7%
N	162	116	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

Table 4.B.5.4. Planned care and population health: Culture of improvement at your practice, Program Year 1, 2018 Starters (percentages)

	Overall	Track 1	Track 2
Over the last two quarters, who in your practice primarily generated improvement ideas and opportunities?			
Did not occur	<1%	<1%	0%
Clinical and administrative leadership	83%	77%	98%
Designated quality improvement team	63%	62%	67%
Care teams and clinical staff	65%	63%	70%
Non-clinical staff	41%	40%	43%
Patients/caregivers	36%	36%	37%
N	163	117	46
Over the last two quarters, who in your practice implemented improvement projects or tests of change?			
Did not occur	3%	4%	0%
Clinical and administrative leadership	78%	76%	83%
Designated quality improvement team	60%	58%	63%
Care teams and clinical staff	66%	62%	78%
Non-clinical staff	37%	34%	46%
Patients/caregivers	7%	4%	13%
N	163	117	46
Over the last two quarters, who in your practice had access to practice-level results?			
Did not occur	<1%	<1%	0%
Clinical and administrative leadership	91%	88%	98%
Designated quality improvement team	67%	65%	72%
Care teams and clinical staff	71%	69%	76%
Non-clinical staff	41%	38%	48%
Patients/caregivers	11%	7%	22%
N	163	117	46
Over the last two quarters, who in your practice had access to results identified to the applicable practitioner or care team?			
Did not occur	2%	<1%	4%
Clinical and administrative leadership	83%	80%	91%
Designated quality improvement team	60%	57%	67%
Care teams and clinical staff	67%	64%	74%
Non-clinical staff	29%	26%	39%
Patients/caregivers	7%	5%	13%
N	163	117	46

Source: Mathematica's analysis of 2018 practice-reported care delivery data submitted to CMS.

Note: Table does not present data separately for Medicare Shared Savings Program status within track due to small sample sizes.

4.C. Practice Survey

This Appendix describes the CPC+ Practice Survey used to assess how practices that began participating in CPC+ in 2017 have changed the way they deliver care in response to CPC+, as well as their organizational characteristics and experiences with CPC+ supports, including data feedback, learning supports, and CPC+ payments. It details survey fielding (Section 1), sampling methods (Section 2), survey content and measures (Section 3), analytic methods (Section 4), and data tables (Section 5); and the Wave 2 practice survey instrument (Section 6).

4.C.1. Survey fielding

Timing of survey administration

We administered two waves of the CPC+ Practice Survey to practices that began CPC+ in 2017. The first survey was administered to practices from March 30, 2017, through September 24, 2017, 3 to 9 months after CPC+ began (Table 4.C.1). The second wave was administered from June 6, 2018, through September 25, 2018, 18 to 21 months after CPC+ began.

Table 4.C.1. CPC+ practice survey administration dates

	Fielding dates	Months after CPC+ began
Wave 1	March 30, 2017–September 24, 2017	3–9 months
Wave 2	June 6, 2018–September 25, 2018	18–21 months

Additionally, we plan to administer the CPC+ Practice Survey to comparison practices that were matched to the CPC+ practices via propensity score matching at most every other year beginning with wave 1 (see Appendix 6.C for more information on comparison practice selection). Because the comparison practices have only received one survey wave, we do not include them in this analysis, which focuses on understanding how CPC+ practices have been changing their approaches to care delivery.

Survey mode, length, incentive, and fielding procedures

The CPC+ Practice Survey was administered as a web-only survey. It collected general information about practices' characteristics and care delivery approaches, and was designed to be completed in 60 minutes. Mathematica designed the survey. Another CMS contractor, Telligen, fielded the survey to CPC + practices and Mathematica fielded it to practices that withdrew from CPC+. These contractors emailed a link to the questionnaire to practice managers, sent regular email reminders to nonresponding practices, and made follow-up phone calls to late responders. The survey instructions encouraged the practice manager to discuss the survey with the practice's practitioners and staff to deliver responses that reflected a consensus view. Participating CPC+ practices were required to respond as a condition of participation and were not compensated for doing so. Practices that had withdrawn from CPC+ prior to survey fielding were offered \$100 to complete the Wave 1 survey and \$200 to complete the Wave 2 survey.¹ Practices were told that responses would not be shared with CMS or other payers; their responses

¹ We increased the incentive payment for the Wave 2 survey because we increased the length of the survey to include new questions on the primary care functions and new sections on data feedback and participation in CPC+.

would not have any consequences for payment or affect practices' participation in CPC+, but would be shared with the CPC+ learning team so it could provide learning support.

4.C.2. Sampling methods

Sampling and sample sizes

We surveyed all practices that began participating in CPC+ in 2017 and did not withdraw in the first quarter of CPC+, regardless of whether they were still participating in CPC+ at the time of the survey.

In Wave 1, Telligen and Mathematica fielded the survey to 2,888 CPC+ practices: 1,373 in Track 1 and 1,515 in Track 2. Of those practices, 14 did not respond to the survey, and 5 responded but did not answer enough questions for the survey team to consider their response complete.

In Wave 2, Telligen and Mathematica fielded the survey to 2,833 CPC+ practices: 1,349 in Track 1 and 1,484 in Track 2. Of those practices, 59 did not respond to the survey (among these practices, 55 had closed and 4 remained in CPC+ as of the end of fielding, September 28, 2018), and 3 responded but did not answer enough questions for the survey team to consider their responses complete.

The analytic sample for this analysis includes responses from 2,765 practices: 1,304 practices in Track 1 and 1,461 in Track 2. These practices represent the CPC+ practices that responded to both waves of the survey² and that answered enough questions for us to consider the survey complete.³ The sample includes 2,741 practices that were actively participating in CPC+ at the time of the second wave. It also includes 24 of 68 practices that had previously withdrawn or were terminated from CPC+; 19 of these 24 practices were in Track 1 and 5 practices were in Track 2.

4.C.3. Survey content and measures

Survey content

The survey collects general information about practices' characteristics and care delivery approaches. The Wave 2 survey was divided into 10 sections. The first two sections asked practices to rate their approaches to delivering specific aspects of primary care. The questions in these sections were modified from the Patient-Centered Medical Home Assessment (PCMH-A) used in the Safety Net Medical Home Initiative (2010) and the modified PCMH-A used in the CPC Classic evaluation (Poznyak et al. 2017). The third section asked about practice characteristics and involvement in other initiatives. The fourth through sixth sections asked about data feedback on costs of care to insurers and practice performance, as well as use of health IT.

² The sample does not include 39 CPC+ practices that responded to the Wave 1 survey but merged with another CPC+ practice prior to the Wave 2 survey and therefore did not respond to the Wave 2 survey.

³ We considered a survey complete if the practice responded to 29 of the 38 questions included in the M2-PCMH-A composite measures. This restriction helped ensure the statistical reliability of the M2-PCMH-A measures.

The seventh section asked about sources of practice revenue. The eighth through tenth sections asked about practices' experience with CPC+ payments, learning activities and assistance, practice staff involvement in implementing CPC+, and perceptions of CPC+. The Wave 1 survey followed a similar format. In the Wave 2 survey, we made the following changes: (1) we dropped 13 Wave 1 items that were no longer needed⁴; (2) we edited question text or response options to collect more detailed information for 11 items; and (3) we added 42 items covering practices' experiences with CPC+ and reflecting PY 2 changes in CPC+ care delivery requirements. See Table 4.C.8 for details on the 11 survey items that were altered and Appendix 4.C.6 for the full Wave 2 Practice Survey instrument.

Measures

Care delivery domains. The M2-PCMH-A, which we adapted for the CPC+ evaluation to capture practices' approaches to care delivery, includes 56 questions, 41 of which are grouped into seven sub-sections in the instrument: (1) access, (2) continuity, (3) care management, (4) coordination of care across providers and settings in your community, (5) patient and caregiver engagement, (6) planned care for chronic conditions and population health, and (7) continuous improvement driven by data. To these 41 questions, we added 11 questions from the beginning of the survey titled "Key Approaches to Providing Primary Care." In all 52 of these survey questions, practices were asked to rate their approaches to care delivery on a scale of 1 (the least advanced approaches to delivering care) to 4 (the most advanced approaches). In addition to these 52 questions, we included 4 questions taken from other parts of the survey that also relate to the specific sub-sections, one of which (Question F2) was rescaled from a two-point to a four-point scale. For this analysis, we grouped 38 of these 56 questions into nine domains; the remaining 18 questions were omitted from the domains because they were not on the Wave 1 survey, and therefore responses could not be followed over time. In addition, five questions asked in the Wave 1 survey were not included in the Wave 2 survey; we omitted these five from the domains as well. See Table 4.C.2 for the topics covered in each domain.

⁴ To minimize burden for the practices, we cut items that were not critical to the evaluation, could be collected from other data sources, were problematic for the practice managers based on pretesting, or were more appropriate for inclusion in the physician survey.

Table 4.C.2. M2-PCMH-A domains and items used to measure care delivery approaches

Domain	Number of questions	Topics	Topic weight in domain score	Domain weight in overall score	Question weight in overall score
Access	5	• Patient after-hours access to a coverage team or the practice, and availability of patient electronic health record (EHR)	24%	10%	2%
		• Availability of same-day appointments	28%		3%
		• Electronic patient communication with practice team	28%		3%
		• Availability of scheduled phone or video visits with a physician	15%		2%
		• Practice site physicians or staff making home visits to patients ^a	5%		1%
Continuity	3	• Patient assignment to specific provider, and use of that assignment to schedule and monitor supply and demand	21%	5%	1%
		• Extent to which patients are scheduled with their own provider and practice team	35%		2%
		• Extent to which patients' care teams respond to clinical questions between scheduled encounters	44%		2%
Care management	8	• Collaborative development of care plans with patients and families that include self-management and clinical management goals, and are used to guide care	14%	15%	2%
		• Extent to which care plans are shared with high-risk patients	12%		2%
		• Degree to which a standard method or tool to stratify patients by risk level is used and guides care delivery	12%		2%
		• Practice staff follow-up with patients following emergency department (ED)/hospital visits	13%		2%
		• Provision of clinical care management services for high-risk patients by care managers located at the practice site	11%		2%
		• Practice staff follow-up with patients within one week of an ED visit	13%		2%
		• Outreach to patients within three days of hospital discharge	13%		2%
		• Type of self-management support provided by members of the practice team	13%		2%
Comprehensiveness	2	• How practices link patients to supportive community-based resources	53%	13%	7%
		• Assessment of the social and functional support needs of patients	47%		6%
Coordination of care across providers and settings in your community	7	• Timeliness of clinical information received from EDs following a patient's visit	12%	8%	1%
		• Timeliness of clinical information received from hospitals following a patient's visit	11%		1%
		• Timely receipt of information about patients after they visit specialists in the community	9%		1%
		• Extent to which practice has formalized referral agreements with a range of specialists	4%		<1%
		• Electronic sharing of patients' clinical data with hospitals	23%		2%

Table 4.C.2. (continued)

Domain	Number of questions	Topics	Topic weight in domain score	Domain weight in overall score	Question weight in overall score
		• Electronic sharing of patients' clinical data with specialist practices	22%		2%
		• Electronic sharing of patients' clinical data with diagnostic service facilities	19%		2%
Patient and caregiver engagement	3	• Extent to which patients' comprehension of verbal communication is assessed and addressed	38%	11%	4%
		• Assessment and incorporation of patient and family values and preferences in planning and organizing care	42%		5%
		• Use of feedback from patient surveys or a patient and family caregiver council to guide practice improvements ^b	20%		2%
Planned care for chronic conditions and population health	4	• Availability of registry data to assess and manage care for practice populations	23%	13%	3%
		• Extent of pre-visit planning done prior to patient visit	28%		4%
		• Availability and use of evidence-based guidelines in care	32%		4%
		• Extent to which practices notify patients of their laboratory and radiology results	18%		2%
Continuous improvement driven by data	4	• Practice's use of quality improvement (QI) activities that are continuous and based on proven improvement strategies	29%	12%	4%
		• Availability of staff, resources, and time for QI activities	26%		3%
		• Use of performance measures to guide QI	26%		3%
		• Use of data extracts or reports generated from EHR to guide QI efforts ^c	19%		2%
Teamwork	2	• Extent of role of nonphysician practice team members in providing clinical care	46%	11%	5%
		• Extent to which care team huddles occur	54%		6%

^a The wording of this item and response categories changed from Wave 1 to Wave 2. In Wave 1, the item had a two-point response category; we rescaled the two-point scale to a four-point scale to match the format of the other items in the M2-PCMH-A. Refer to Table 4.C.8 to see how item and response category wording changed between waves.

^b The wording of this item and response categories changed from Wave 1 to Wave 2.

^c Item was rescaled from a two-point to a four-point scale to match the format of the other items in the M2-PCMH-A.

4.C.4. Analytic methods

Care delivery domains and overall scores. We created summary scores for the nine M2-PCMH-A domains as weighted averages of each practice's response to the underlying questions in each domain. We determined weights for each question using a confirmatory factor analysis (CFA) that we conducted on responses from 2017 Starter CPC+ practices to the Wave 1 survey. CFA assigns weights to a question based on its correlation with other questions in the domain, meaning that items that better represented the domain received a higher relative weight than items that correlated more weakly. In our previous analyses, the domain and summary scores generated by CFA achieved better construct validity than did the basic scoring method that takes a simple average of the question responses within each domain and averages the resulting domain scores to generate a summary composite score (Poznyak et al. 2015; Gellar et al. 2017). Therefore, CFA-weighted scores for each practice might reflect more accurately the primary care delivery approaches the practice uses.

As stated above, most questions were scored on a four-point scale, with higher scores indicating more advanced approaches to care delivery. Before calculating domain summary scores, we rescaled questions that used different response scales to follow the same four-point scale. For example, for questions with a two-point scale (such as yes/no), we recoded *yes* responses to equal 4 on the four-point scale and *no* responses to equal 1. Two of the questions in the continuous improvement driven by data domain ask practices about the extent to which they use their electronic health record (EHR) system for quality improvement and data sharing. Practices that reported not having an EHR (Question F1) skipped the two questions about how they use their EHR (Questions F2 and F3). We gave these practices scores equal to 1 on the four-point scale for items F2 and F3. In all other cases, we calculated weighted mean scores among the non-missing responses. The percentage of practices that skipped these questions was small: at most, 1.5 percent per question. After we created scores for each domain, we calculated the "overall M2-PCMH-A score" by taking a weighted average of the nine domain scores, which we calculated using a factor analysis that assessed the fit (correlation) of each domain with a summary domain (reported in Table 4.C.2). The weights for individual questions in the total score ranged from 1 to 7 percent. Sixty-three percent of the questions had a weight of 2 percent or less, 24 percent of the questions had a weight of 3 or 4 percent, and 13 percent had a weight of 5 to 7 percent.

Statistical estimation. For each of the nine domain scores and the overall summary score, we statistically tested whether responses in the Wave 2 survey differed from those in the Wave 1 survey within tracks. To analyze differences over time, we used ordinary least squares regression. For each domain, we regressed the domain score on an indicator for the wave to identify a time trend. All regressions included practice fixed effects to control for time invariant practice characteristics, and cluster robust standard errors. To reduce the risk of false positives from multiple comparisons, we did not statistically test differences over time for the individual survey questions.

Subgroups: For each of the nine domain scores, we also calculated estimates on subsets of CPC+ practices defined by:

- Practice ownership by a hospital or a health system⁵
- Practice size (measured by number of primary care practitioners at practice site): large (6+ practitioners), medium (3–5 practitioners), or small (1–2 practitioners)⁶
- Whether the practice site is in a rural, suburban, or urban area⁷
- Whether the practice site participated in CPC Classic⁸
- Whether the practice site participated in prior practice transformation activities (was recognized as a medical home or participated in the Multi-Payer Advanced Primary Care Practice [MAPCP] or CPC Classic initiatives)⁹

Counts of practitioners and staff. The survey asked practices to provide counts of full- and part-time practitioners (Question A1), primary care practitioners (Question A2), nurses and medical assistants (Question C8), and care managers or care coordinators (Question C10). To estimate the full-time equivalent (FTE) number of employees, we counted part-time practitioners and staff as 0.5 FTE.

Software. All analyses were conducted using SAS version 9.4 and Stata version 15.

⁵ Practice ownership comes from the SK&A database, managed by IQVIA, a marketing organization that collects information directly from all health care practices in the United States. IQVIA updates this information on an ongoing basis; we pulled practice ownership information in November 2017. If the database did not report practice ownership as of November 2017, we used November 2016 information.

⁶ Practice size is determined from the number of primary care practitioners (PCPs) as of December 2017. Practices self-reported this information to CMS in roster files. If practice size was missing, we used the number of PCPs reported on the January 2017 roster files.

⁷ Geographic location is derived from the 2015–2016 Department of Health and Human Services’ Area Health Resource File (AHRF). The variable used reflects 2013 data. The AHRF provides a nine-point rural-urban continuum code (RUCC) from the USDA Economic Research Service. From these codes, we defined urban as a county in a metro area of more than 250,000 people (RUCC = 1 or 2), suburban as a county that is in a metro area of less than 250,000 people or that has an urban population of 20,000 or more and is adjacent to a metro area (RUCC = 3 or 4), or rural if it does not meet the urban or suburban classifications (RUCC = 5–9).

⁸ We considered a practice to have participated in CPC Classic if it enrolled in CPC Classic and did not drop out within the first five months of the model.

⁹ We considered a practice to be an MAPCP participant if it participated in any year, 2011–2014 for 2017 Starters, as determined by a file from CMS. We considered a practice to have medical home recognition if at least one of its primary care providers was listed as having recognition at some point in 2014–2017 from a state, the Accreditation Association for Ambulatory Health Care (AAAHC), The Joint Commission (TJC), the National Committee for Quality Assurance (NCQA), or the Utilization Review Accreditation Commission (URAC), as determined by the June 2016 (for 2017 Starters) NCQA PCMH file and data extracted from the websites of TJC, AAAHC, URAC, and state-specific sources between October 2016 and February 2017.

4.C.5. Data tables

This section presents six sets of tables showing results from the Wave 1 and Wave 2 practice surveys:

- **Tables 4.C.3.a-b. Care delivery means.** Mean CPC+ practice responses to questions about their approaches to care delivery and nine domain scores, overall by track, and by Medicare Shared Savings Program (SSP) status within track.
- **Table 4.C.4. Care delivery distributions.** Distribution of CPC+ practice responses to the same questions and domain scores about their approaches to care delivery, overall by track, and by SSP status within track.
- **Table 4.C.5. Practice characteristics.** CPC+ practice characteristics, overall by track, and within track by SSP status.
- **Table 4.C.6. CPC+ experience.** CPC+ practices' responses to questions about their experiences in CPC+, including their experiences with learning activities and assistance, data feedback, CPC+ payments, and the initiative as a whole.
- **Tables 4.C.7.a-f. Care delivery by practice type.** Mean CPC+ practice responses to questions about approaches to care delivery, overall and by track, by practice ownership, size, geographic location, CPC Classic participation, and transformation experience.
- **Table 4.C.8. Changes in item and response category wording over time.** Describes differences in item wording and response categories among questions that were asked in both survey waves but experienced wording changes.

Table 4.C.3.a. Mean CPC+ practice responses to questions about their approaches to care delivery, overall by track (2017 Starters)

Question ^a		Track 1 Overall				Track 2 Overall			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
	Sample size ^b	1,304	1,304			1,461	1,461		
Care delivery domains^c (scale: 1 [least advanced approach] to 4 [most advanced approach])									
	Overall M2-PCMH-A Score	2.94	3.16	0.22	<0.01	3.16	3.36	0.21	<0.01
A11, B1, B3-5	Access	2.88	2.94	0.05	<0.01	3.06	3.11	0.05	<0.01
A3, B6, B8	Continuity	3.61	3.68	0.06	<0.01	3.66	3.73	0.07	<0.01
A5-6, A8-9, B10, B15, B18, B29	Care Management	2.83	3.31	0.49	<0.01	3.24	3.58	0.34	<0.01
A10, B23	Comprehensiveness	2.55	2.78	0.23	<0.01	2.77	3.03	0.26	<0.01
B14, B17, B21-22, F3	Coordination of Care Across Providers and Setting in Your Community	2.78	2.88	0.10	<0.01	2.88	2.98	0.11	<0.01
B25, B27, B30	Patient and Caregiver Engagement	3.00	3.21	0.21	<0.01	3.06	3.40	0.34	<0.01
B32-35	Planned Care for Chronic Conditions and Population Health	3.04	3.18	0.14	<0.01	3.27	3.40	0.13	<0.01
A12-13, B38, F2	Continuous Improvement Driven by Data	3.20	3.44	0.24	<0.01	3.46	3.63	0.17	<0.01
A4, B31	Teamwork	2.94	3.20	0.26	<0.01	3.17	3.42	0.24	<0.01
M2-PCMH-A items by domain (Tests of statistical significance were not conducted)^d									
Access									
A11	Patient after-hours access to a coverage team or the practice, and availability of patient electronic health record (EHR)	3.31	3.49	0.18		3.50	3.59	0.09	
B1	Availability of same-day appointments	3.64	3.74	0.10		3.76	3.79	0.03	
B3	Electronic patient communication with practice team	2.82	2.78	-0.04		3.02	3.05	0.03	
B4	Availability of scheduled phone or video visits with a physician	1.32	1.38	0.06		1.51	1.69	0.18	
B5	Practice site physicians or staff make home visits to high-risk or homebound patients ^e	n.a.	1.46	n.a.		n.a.	1.70	n.a.	
C18	Practice site physicians or staff make home visits to patients	1.74	n.a.	n.a.		1.94	n.a.	n.a.	
Continuity									
A3	Patient assignment to specific provider, and use of that assignment to schedule and monitor supply and demand	3.18	3.33	0.15		3.34	3.50	0.16	
B6	The extent to which patients are scheduled with their own provider and practice team	3.65	3.71	0.06		3.65	3.71	0.06	

Table 4.C.3.a. (continued)

Question ^a		Track 1 Overall				Track 2 Overall			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B8	The extent to which patients' care teams respond to clinical questions between scheduled encounters	3.79	3.82	0.03		3.83	3.86	0.03	
Care management									
A5	The collaborative development of care plans with patients and families that include self-management and clinical management goals, and are used to guide care	2.70	3.06	0.36		3.11	3.51	0.40	
A6	The extent to which care plans are shared with high-risk patients	2.94	3.17	0.23		3.26	3.47	0.21	
A8	Degree to which a standard method or tool to stratify patients by risk level is used and guides care delivery	2.41	3.27	0.86		2.94	3.57	0.63	
A9	Practice staff follow-up with patients following emergency department (ED)/hospital visits	2.98	3.52	0.54		3.45	3.73	0.28	
B10	The provision of clinical care management services for high-risk patients by care managers located at the practice site	3.02	3.52	0.50		3.50	3.70	0.20	
B15	Practice staff follow-up with patients within one week of an ED visit	2.90	3.49	0.59		3.22	3.62	0.40	
B18	Outreach to patients within 3 days of hospital discharge	3.19	3.61	0.42		3.51	3.72	0.21	
B29	The type of self-management support provided by members of the practice team	2.49	2.89	0.40		2.98	3.32	0.34	
Comprehensiveness									
A10	How practices link patients to supportive community-based resources	2.47	2.89	0.42		2.86	3.16	0.30	
B23	Assessment of the social and functional support needs of patients	2.64	2.66	0.02		2.67	2.89	0.22	
Coordination of care across providers and setting in your community									
B14	The timeliness of clinical information received from EDs following a patient's visit	3.04	3.39	0.35		3.27	3.47	0.20	
B17	The timeliness of clinical information received from hospitals following a patient's visit	3.03	3.35	0.32		3.28	3.45	0.17	
B21	Timely receipt of information about patients after they visit specialists in the community	2.95	3.02	0.07		3.05	3.18	0.13	
B22	The extent to which practice has formal, written agreements with a range of specialists	1.62	1.90	0.28		1.72	2.25	0.53	
F3a	Electronic sharing of patient clinical data with hospitals	2.72	2.74	0.02		2.79	2.87	0.08	
F3b	Electronic sharing of patient clinical data with specialist practices	2.59	2.62	0.03		2.63	2.67	0.04	

Table 4.C.3.a. (continued)

Question ^a		Track 1 Overall				Track 2 Overall			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
F3c	Electronic sharing of patient clinical data with diagnostic service facilities	2.96	2.91	-0.05		2.99	2.99	0.00	
Patient and caregiver engagement									
B25	Extent to which patients' comprehension of verbal communication is assessed and addressed	3.04	3.14	0.10		3.01	3.35	0.34	
B27	Assessment and incorporation of patient and family values and preferences in planning and organizing care	2.99	3.19	0.20		3.02	3.36	0.34	
B30	The use of feedback from a patient and family caregiver council to guide practice improvements ^f	2.95	3.40	0.45		3.24	3.58	0.34	
Planned care for chronic conditions and population health									
B32	The availability of registry data to assess and manage care for practice populations	2.68	2.83	0.15		3.09	3.22	0.13	
B33	Extent of pre-visit planning done prior to patient visit	2.76	2.93	0.17		2.98	3.22	0.24	
B34	Availability and use of evidence-based guidelines in care	3.15	3.29	0.14		3.34	3.42	0.08	
B35	The extent to which practices notify patients of their laboratory and radiology results	3.71	3.81	0.10		3.80	3.86	0.06	
Continuous improvement driven by data									
A12	Practice's use of quality improvement (QI) activities that are continuous and based on proven improvement strategies	3.08	3.38	0.30		3.40	3.64	0.24	
A13	The availability of staff, resources, and time for QI activities	2.60	2.90	0.30		2.89	3.13	0.24	
B38	The use of performance measures to guide QI	3.51	3.71	0.20		3.74	3.87	0.13	
F2	Use of data extracts or reports generated from EHR to guide QI efforts	3.75	3.86	0.11		3.91	3.94	0.03	
Teamwork									
A4	Extent of role of nonphysician practice team members in providing clinical care	3.36	3.58	0.22		3.57	3.75	0.18	
B31	Extent to which care team huddles occur	2.57	2.87	0.30		2.82	3.13	0.31	
Questions not included in the M2-PCMH-A domains									
Questions included in Wave 1 but removed from future survey waves									
B7 (Wave 1 only)	Extent to which medication reconciliation occurs regularly	3.74	n.a.	n.a.		3.82	n.a.	n.a.	
B17 (Wave 1 only)	The use of shared decision making aids to help patients and providers jointly decide on treatment options	2.91	n.a.	n.a.		3.10	n.a.	n.a.	
B25 (Wave 1 only)	The extent to which behavioral health outcomes are measured and tracked	2.68	n.a.	n.a.		2.72	n.a.	n.a.	

Table 4.C.3.a. (continued)

Question ^a		Track 1 Overall				Track 2 Overall			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B27 (Wave 1 only)	The use of formal QI approaches or performance science methods	2.49	n.a.	n.a.		2.91	n.a.	n.a.	
C17 (Wave 1 only)	Pairing of medical assistants and nurses with physicians	3.39	n.a.	n.a.		3.48	n.a.	n.a.	
Questions that were added in the Wave 2 survey									
A7	Extent to which care plans for high-risk patients are shared with providers outside the practice site in electronic form	n.a.	2.67	n.a.		n.a.	2.78	n.a.	
B2	Among practices where same-day appointments for patients are available, same-day appointments are generally available with the physician who treats patient	n.a.	3.42	n.a.		n.a.	3.45	n.a.	
B7	Among practices that report patients have a specific physician they see, extent to which patients see their specific physician for acute care	n.a.	3.24	n.a.		n.a.	3.33	n.a.	
B9	Extent to which primary care physicians or staff from the practice site make visits to patients in the hospital	n.a.	1.76	n.a.		n.a.	1.77	n.a.	
B11	Among practices that provide care management services for high-risk patients, extent to which care managers engage in meetings, huddles, or conversations with the physicians at the practice site about high-risk patients	n.a.	2.79	n.a.		n.a.	3.07	n.a.	
B12	Extent to which comprehensive medication management (CMM) is conducted for high-risk patients	n.a.	2.44	n.a.		n.a.	2.65	n.a.	
B13	Extent to which CMM services are provided by a pharmacist who works closely with the care team at the practice site	n.a.	1.43	n.a.		n.a.	1.92	n.a.	
B16	Extent to which practice staff talk to patients with recent ED visits about the best ways to avoid future ED visits	n.a.	3.16	n.a.		n.a.	3.35	n.a.	
B19	Extent to which practice staff discuss recommended medication, diet, or activity plans with patients who have had recent hospital stays	n.a.	3.49	n.a.		n.a.	3.55	n.a.	
B20	Extent to which practice staff talk to patients with recent hospital stays about the best ways to avoid future hospitalizations	n.a.	3.33	n.a.		n.a.	3.45	n.a.	
B24	Extent to which care managers with behavioral health training screen for and monitor mental health conditions, and provide education and self-management support for patients with mental health needs	n.a.	1.84	n.a.		n.a.	2.26	n.a.	

Table 4.C.3.a. (continued)

Question ^a		Track 1 Overall				Track 2 Overall			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B26	After giving medical information to a patient, extent to which physicians and care team members ask patient to explain back information to ensure the patient understands	n.a.	2.78	n.a.		n.a.	2.94	n.a.	
B28	Extent to which practice site discusses advance care planning with the practice's high-risk patients and patient preferences are documented and accessible to the care team	n.a.	2.78	n.a.		n.a.	2.89	n.a.	
B36	Extent to which behavioral health outcomes at the population level are measured, tracked, and reviewed to improve care delivery and outcomes	n.a.	2.92	n.a.		n.a.	3.27	n.a.	
B37	Extent to which clinical quality of care metrics at the population level for patients with chronic conditions are measured, tracked, and reviewed to improve care delivery and outcomes	n.a.	3.57	n.a.		n.a.	3.83	n.a.	
B39	Extent to which patient experience measures (from surveys) are used to guide quality improvement	n.a.	3.42	n.a.		n.a.	3.61	n.a.	
B40	Extent to which quality of care measures are used to guide quality improvement	n.a.	3.74	n.a.		n.a.	3.89	n.a.	
B41	Extent to which cost or utilization measures are used to guide quality improvement	n.a.	3.17	n.a.		n.a.	3.39	n.a.	
Questions about practices' use of a formal screening tool (3-point scale: 1 [least advanced approach] to 3 [most advanced approach])									
B42a	Extent to which practice site uses a formal screening tool to assess patients for depression (such as PHQ-2 or PHQ-9)	n.a.	2.91	n.a.		n.a.	2.97	n.a.	
B42b	Extent to which practice site uses a formal screening tool to assess patients for anxiety (such as GAD-7)	n.a.	1.84	n.a.		n.a.	2.01	n.a.	
B42c	Extent to which practice site uses a formal screening tool to assess patients for dementia (such as the Mini Mental Status Examination or Mini Cog)	n.a.	2.45	n.a.		n.a.	2.50	n.a.	
B42d	Extent to which practice site uses a formal screening tool to assess patients for substance use (such as AUDIT-C or DAST)	n.a.	1.85	n.a.		n.a.	2.03	n.a.	
B42e	Extent to which practice site uses a formal screening tool to assess patients for adult attention-deficit/hyperactivity disorder (such as Adult ADHD self-report tool)	n.a.	1.59	n.a.		n.a.	1.67	n.a.	

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2). Differences between the Wave 1 and Wave 2 surveys that could change how practices respond to questions are indicated with footnotes.

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys.

Table 4.C.3.a. (continued)

^a The question numbering is based on the Wave 2 survey.

^b The sample sizes presented here are the largest sample sizes for each track and group (SSP or not SSP) across all M2-PCMH-A questions. Item-level nonresponse is less than 2% for all items and question-by-question sample sizes can be found in Table 4.C.4.

^c The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

^d To reduce the risk of false positives from multiple comparisons, we did not statistically test differences over time for the individual survey questions.

^e This question was added in the Wave 2 survey to replace C18. We determined that it was close enough to C18 to replace it in the domain score. Therefore, we used C18 in the Wave 1 domain score and this question in the Wave 2 domain score.

^f The wording of this question changed from the Wave 1 survey to the Wave 2 survey. In the Wave 1 survey, the question asked about "Feedback to the practice from patient surveys or from a patient and family advisory council...."

Diff = difference in mean score between Wave 1 and Wave 2; n.a. = not applicable because the question was not asked in that survey wave; SSP = Medicare Shared Savings Program participation status in 2018.

Table 4.C.3.b. Mean CPC+ practice responses to questions about their approaches to care delivery, overall by track and SSP status (2017 Starters)

Question ^a	Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP				
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	
Sample size ^b	741	741			563	563			629	629			832	832			
Care delivery domains^c (scale: 1 [least advanced approach] to 4 [most advanced approach])																	
Overall M2-PCMH-A Score	2.97	3.18	0.22	<0.01	2.91	3.14	0.23	<0.01	3.15	3.37	0.23	<0.01	3.16	3.36	0.19	<0.01	
A11, B1, B3-5 Access	2.88	2.94	0.06	0.01	2.89	2.93	0.05	0.12	3.07	3.12	0.04	0.08	3.04	3.10	0.06	0.01	
A3, B6, B8 Continuity	3.61	3.67	0.06	0.01	3.62	3.69	0.07	0.01	3.66	3.73	0.07	0.01	3.66	3.73	0.07	<0.01	
A5-6, A8-9, B10, B15, B18, B29 Care Management	2.85	3.32	0.47	<0.01	2.79	3.30	0.51	<0.01	3.20	3.55	0.36	<0.01	3.28	3.60	0.32	<0.01	
A10, B23 Comprehensiveness	2.58	2.78	0.20	<0.01	2.51	2.78	0.27	<0.01	2.70	3.05	0.35	<0.01	2.83	3.02	0.19	<0.01	
B14, B17, B21-22, F3 Coordination of Care Across Providers and Setting in Your Community	2.76	2.91	0.15	<0.01	2.80	2.83	0.03	0.44	2.88	2.97	0.10	<0.01	2.88	2.99	0.11	<0.01	
B25, B27, B30 Patient and Caregiver Engagement	3.05	3.24	0.19	<0.01	2.93	3.17	0.24	<0.01	3.02	3.41	0.39	<0.01	3.09	3.40	0.31	<0.01	
B32-35 Planned Care for Chronic Conditions and Population Health	3.06	3.18	0.12	<0.01	3.01	3.16	0.16	<0.01	3.33	3.45	0.12	<0.01	3.22	3.36	0.14	<0.01	
A12-13, B38, F2 Continuous Improvement Driven by Data	3.25	3.48	0.24	<0.01	3.14	3.38	0.24	<0.01	3.45	3.63	0.17	<0.01	3.46	3.63	0.17	<0.01	
A4, B31 Teamwork	2.98	3.24	0.26	<0.01	2.88	3.14	0.27	<0.01	3.18	3.44	0.26	<0.01	3.16	3.40	0.23	<0.01	
M2-PCMH-A items by domain (tests of statistical significance were not conducted)^d																	
Access																	
A11	Patient after-hours access to a coverage team or the practice, and availability of patient electronic health record (EHR)	3.30	3.52	0.22		3.33	3.45	0.12		3.53	3.59	0.06		3.48	3.59	0.11	
B1	Availability of same-day appointments	3.63	3.74	0.11		3.64	3.73	0.09		3.76	3.76	0.00		3.76	3.81	0.05	
B3	Electronic patient communication with practice team	2.85	2.74	-0.11		2.79	2.82	0.03		3.02	3.06	0.04		3.02	3.05	0.03	
B4	Availability of scheduled phone or video visits with a physician	1.29	1.40	0.11		1.36	1.36	0.00		1.61	1.76	0.15		1.44	1.64	0.20	

Table 4.C.3.b. (continued)

Question ^a		Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B5	Practice site physicians or staff make home visits to high-risk or homebound patients ^e	n.a.	1.46	n.a.		n.a.	1.46	n.a.		n.a.	1.72	n.a.		n.a.	1.68	n.a.	
C18	Practice site physicians or staff make home visits to patients	1.69	n.a.	n.a.		1.81	n.a.	n.a.		1.83	n.a.	n.a.		2.03	n.a.	n.a.	
Continuity																	
A3	Patient assignment to specific provider, and use of that assignment to schedule and monitor supply and demand	3.22	3.39	0.17		3.13	3.25	0.12		3.39	3.48	0.09		3.30	3.52	0.22	
B6	The extent to which patients are scheduled with their own provider and practice team	3.64	3.69	0.05		3.67	3.73	0.06		3.65	3.74	0.09		3.64	3.69	0.05	
B8	The extent to which patients' care teams respond to clinical questions between scheduled encounters	3.77	3.78	0.01		3.81	3.86	0.05		3.80	3.84	0.04		3.85	3.87	0.02	
Care management																	
A5	The collaborative development of care plans with patients and families that include self-management and clinical management goals, and are used to guide care	2.74	3.06	0.32		2.65	3.05	0.40		3.15	3.52	0.37		3.08	3.50	0.42	
A6	The extent to which care plans are shared with high-risk patients	2.98	3.23	0.25		2.89	3.09	0.20		3.27	3.47	0.20		3.25	3.46	0.21	
A8	Degree to which a standard method or tool to stratify patients by risk level is used and guides care delivery	2.48	3.28	0.80		2.32	3.26	0.94		2.86	3.57	0.71		3.00	3.57	0.57	
A9	Practice staff follow-up with patients following emergency department (ED)/hospital visits	2.97	3.50	0.53		3.01	3.55	0.54		3.32	3.71	0.39		3.55	3.75	0.20	

Table 4.C.3.b. (continued)

Question ^a		Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B10	The provision of clinical care management services for high-risk patients by care managers located at the practice site	3.07	3.55	0.48		2.94	3.49	0.55		3.47	3.73	0.26		3.52	3.68	0.16	
B15	Practice staff follow-up with patients within one week of an ED visit	2.86	3.46	0.60		2.97	3.54	0.57		3.03	3.47	0.44		3.37	3.73	0.36	
B18	Outreach to patients within 3 days of hospital discharge	3.22	3.62	0.40		3.14	3.61	0.47		3.34	3.62	0.28		3.64	3.80	0.16	
B29	The type of self-management support provided by members of the practice team	2.53	2.90	0.37		2.44	2.88	0.44		3.14	3.35	0.21		2.85	3.30	0.45	
Comprehensiveness																	
A10	How practices link patients to supportive community-based resources	2.49	2.92	0.43		2.44	2.86	0.42		2.79	3.15	0.36		2.92	3.17	0.25	
B23	Assessment of the social and functional support needs of patients	2.69	2.64	-0.05		2.58	2.69	0.11		2.60	2.94	0.34		2.73	2.85	0.12	
Coordination of care across providers and setting in your community																	
B14	The timeliness of clinical information received from EDs following a patient's visit	3.05	3.46	0.41		3.02	3.29	0.27		3.22	3.47	0.25		3.32	3.47	0.15	
B17	The timeliness of clinical information received from hospitals following a patient's visit	3.09	3.44	0.35		2.96	3.22	0.26		3.23	3.46	0.23		3.33	3.44	0.11	
B21	Timely receipt of information about patients after they visit specialists in the community	2.96	3.04	0.08		2.94	2.99	0.05		3.07	3.08	0.01		3.04	3.26	0.22	
B22	The extent to which practice has formal, written agreements with a range of specialists	1.68	1.97	0.29		1.56	1.80	0.24		1.86	2.42	0.56		1.62	2.12	0.50	
F3a	Electronic sharing of patient clinical data with hospitals	2.65	2.74	0.09		2.82	2.73	-0.09		2.85	2.84	-0.01		2.74	2.89	0.15	

Table 4.C.3.b. (continued)

Question ^a		Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
F3b	Electronic sharing of patient clinical data with specialist practices	2.56	2.65	0.09		2.62	2.59	-0.03		2.61	2.70	0.09		2.63	2.65	0.02	
F3c	Electronic sharing of patient clinical data with diagnostic service facilities	2.92	2.92	0.00		3.00	2.90	-0.10		2.96	2.94	-0.02		3.01	3.03	0.02	
Patient and caregiver engagement																	
B25	Extent to which patient comprehension of verbal communication is assessed and addressed	3.11	3.18	0.07		2.94	3.10	0.16		2.94	3.31	0.37		3.06	3.39	0.33	
B27	Assessment and incorporation of patient and family values and preferences in planning and organizing care	3.02	3.24	0.22		2.96	3.13	0.17		2.98	3.43	0.45		3.06	3.31	0.25	
B30	The use of feedback from a patient and family caregiver council to guide practice improvements ⁱ	3.02	3.39	0.37		2.85	3.40	0.55		3.27	3.56	0.29		3.21	3.60	0.39	
Planned care for chronic conditions and population health																	
B32	The availability of registry data to assess and manage care for practice populations	2.74	2.85	0.11		2.61	2.80	0.19		3.14	3.35	0.21		3.05	3.12	0.07	
B33	Extent of pre-visit planning done prior to patient visit	2.78	2.92	0.14		2.74	2.93	0.19		3.03	3.19	0.16		2.94	3.24	0.30	
B34	Availability and use of evidence-based guidelines in care	3.15	3.29	0.14		3.14	3.29	0.15		3.46	3.53	0.07		3.26	3.34	0.08	
B35	The extent to which practices notify patients of their laboratory and radiology results	3.73	3.84	0.11		3.69	3.77	0.08		3.79	3.86	0.07		3.81	3.85	0.04	
Continuous improvement driven by data																	
A12	Practice's use of quality improvement (QI) activities that are continuous and based on proven improvement strategies	3.19	3.45	0.26		2.93	3.30	0.37		3.40	3.65	0.25		3.40	3.63	0.23	
A13	The availability of staff, resources, and time for QI activities	2.61	2.95	0.34		2.58	2.83	0.25		2.83	3.10	0.27		2.94	3.15	0.21	

Table 4.C.3.b. (continued)

Question ^a		Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B38	The use of performance measures to guide QI	3.56	3.74	0.18		3.45	3.68	0.23		3.75	3.87	0.12		3.73	3.87	0.14	
F2	Use of data extracts or reports generated from EHR to guide QI efforts	3.76	3.89	0.13		3.74	3.81	0.07		3.95	3.94	-0.01		3.88	3.95	0.07	
Teamwork																	
A4	Extent of role of nonphysician practice team members in providing clinical care	3.36	3.63	0.27		3.35	3.53	0.18		3.52	3.73	0.21		3.61	3.76	0.15	
B31	Extent to which care team huddles occur	2.65	2.91	0.26		2.47	2.81	0.34		2.89	3.19	0.30		2.77	3.08	0.31	
Questions not included in the M2-PCMH-A domains																	
Questions included in Wave 1 but removed from future survey waves																	
B7 (Wave 1 only)	Extent to which medication reconciliation occurs regularly	3.77	n.a.	n.a.		3.70	n.a.	n.a.		3.80	n.a.	n.a.		3.84	n.a.	n.a.	
B17 (Wave 1 only)	The use of shared decision making aids to help patients and providers jointly decide on treatment options	2.90	n.a.	n.a.		2.91	n.a.	n.a.		2.96	n.a.	n.a.		3.20	n.a.	n.a.	
B25 (Wave 1 only)	The extent to which behavioral health outcomes are measured and tracked	2.71	n.a.	n.a.		2.64	n.a.	n.a.		2.80	n.a.	n.a.		2.65	n.a.	n.a.	
B27 (Wave 1 only)	The use of formal QI approaches or performance science methods	2.55	n.a.	n.a.		2.42	n.a.	n.a.		2.96	n.a.	n.a.		2.86	n.a.	n.a.	
C17 (Wave 1 only)	Pairing of medical assistants and nurses with physicians	3.34	n.a.	n.a.		3.46	n.a.	n.a.		3.51	n.a.	n.a.		3.46	n.a.	n.a.	
Questions that were added in the Wave 2 survey																	
A7	Extent to which care plans for high-risk patients are shared with providers outside the practice site in electronic form	n.a.	2.72	n.a.		n.a.	2.59	n.a.		n.a.	2.87	n.a.		n.a.	2.72	n.a.	

Table 4.C.3.b. (continued)

Question ^a	Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B2	Among practices where same-day appointments for patients are available, same-day appointments are generally available with the physician who treats patient	n.a.	3.45	n.a.	n.a.	3.39	n.a.		n.a.	3.42	n.a.		n.a.	3.48	n.a.	
B7	Among practices that report patients have a specific physician they see, extent to which patients see their specific physician for acute care	n.a.	3.16	n.a.	n.a.	3.34	n.a.		n.a.	3.35	n.a.		n.a.	3.31	n.a.	
B9	Extent to which primary care physicians or staff from the practice site make visits to patients in the hospital	n.a.	1.80	n.a.	n.a.	1.72	n.a.		n.a.	1.76	n.a.		n.a.	1.78	n.a.	
B11	Among practices that provide care management services for high-risk patients, extent to which care managers engage in meetings, huddles, or conversations with the physicians at the practice site about high-risk patients	n.a.	2.85	n.a.	n.a.	2.71	n.a.		n.a.	2.95	n.a.		n.a.	3.16	n.a.	
B12	Extent to which comprehensive medication management (CMM) is conducted for high-risk patients	n.a.	2.42	n.a.	n.a.	2.47	n.a.		n.a.	2.64	n.a.		n.a.	2.65	n.a.	
B13	Extent to which CMM services are provided by a pharmacist who works closely with the care team at the practice site	n.a.	1.42	n.a.	n.a.	1.45	n.a.		n.a.	2.02	n.a.		n.a.	1.84	n.a.	
B16	Extent to which practice staff talk to patients with recent ED visits about the best ways to avoid future ED visits	n.a.	3.19	n.a.	n.a.	3.13	n.a.		n.a.	3.32	n.a.		n.a.	3.37	n.a.	

Table 4.C.3.b. (continued)

Question ^a	Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B19	Extent to which practice staff discuss recommended medication, diet, or activity plans with patients who have had recent hospital stays	n.a.	3.53	n.a.	n.a.	3.44	n.a.		n.a.	3.40	n.a.		n.a.	3.66	n.a.	
B20	Extent to which practice staff talk to patients with recent hospital stays about the best ways to avoid future hospitalizations	n.a.	3.40	n.a.	n.a.	3.24	n.a.		n.a.	3.38	n.a.		n.a.	3.50	n.a.	
B24	Extent to which care managers with behavioral health training screen for and monitor mental health conditions, and provide education and self-management support for patients with mental health needs	n.a.	1.89	n.a.	n.a.	1.78	n.a.		n.a.	2.30	n.a.		n.a.	2.24	n.a.	
B26	After giving medical information to a patient, extent to which physicians and care team members ask patient to explain back information to ensure the patient understands	n.a.	2.80	n.a.	n.a.	2.75	n.a.		n.a.	3.02	n.a.		n.a.	2.87	n.a.	
B28	Extent to which practice site discusses advance care planning with the practice's high-risk patients and patients' preferences are documented and accessible to the care team	n.a.	2.70	n.a.	n.a.	2.88	n.a.		n.a.	2.78	n.a.		n.a.	2.98	n.a.	
B36	Extent to which behavioral health outcomes at the population level are measured, tracked, and reviewed to improve care delivery and outcomes	n.a.	2.95	n.a.	n.a.	2.88	n.a.		n.a.	3.26	n.a.		n.a.	3.27	n.a.	

Table 4.C.3.b. (continued)

Question ^a		Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
		Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B37	Extent to which clinical quality of care metrics at the population level for patients with chronic conditions are measured, tracked, and reviewed to improve care delivery and outcomes	n.a.	3.56	n.a.		n.a.	3.57	n.a.		n.a.	3.83	n.a.		n.a.	3.83	n.a.	
B39	Extent to which patient experience measures (from surveys) are used to guide quality improvement	n.a.	3.54	n.a.		n.a.	3.27	n.a.		n.a.	3.73	n.a.		n.a.	3.52	n.a.	
B40	Extent to which quality of care measures are used to guide quality improvement	n.a.	3.74	n.a.		n.a.	3.73	n.a.		n.a.	3.92	n.a.		n.a.	3.87	n.a.	
B41	Extent to which cost or utilization measures are used to guide quality improvement	n.a.	3.22	n.a.		n.a.	3.11	n.a.		n.a.	3.38	n.a.		n.a.	3.40	n.a.	
Questions about practices' use of a formal screening tool (3-point scale: 1 [least advanced approach] to 3 [most advanced approach])																	
B42a	Extent to which practice site uses a formal screening tool to assess patients for depression (such as PHQ-2 or PHQ-9)	n.a.	2.94	n.a.		n.a.	2.88	n.a.		n.a.	2.96	n.a.		n.a.	2.97	n.a.	
B42b	Extent to which practice site uses a formal screening tool to assess patients for anxiety (such as GAD-7)	n.a.	1.82	n.a.		n.a.	1.85	n.a.		n.a.	2.05	n.a.		n.a.	1.98	n.a.	
B42c	Extent to which practice site uses a formal screening tool to assess patients for dementia (such as the Mini Mental Status Examination or Mini Cog)	n.a.	2.48	n.a.		n.a.	2.42	n.a.		n.a.	2.43	n.a.		n.a.	2.55	n.a.	
B42d	Extent to which practice site uses a formal screening tool to assess patients for substance use (such as AUDIT-C or DAST)	n.a.	1.83	n.a.		n.a.	1.86	n.a.		n.a.	1.95	n.a.		n.a.	2.08	n.a.	

Table 4.C.3.b. (continued)

Question ^a	Track 1 SSP				Track 1 Not SSP				Track 2 SSP				Track 2 Not SSP			
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
B42e Extent to which practice site uses a formal screening tool to assess patients for adult attention-deficit/hyperactivity disorder (such as Adult ADHD self-report tool)	n.a.	1.57	n.a.		n.a.	1.61	n.a.		n.a.	1.68	n.a.		n.a.	1.66	n.a.	

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2). Differences between the Wave 1 and Wave 2 surveys that could change how practices respond to questions are indicated with footnotes.

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys.

^a The question numbering is based on the Wave 2 survey.

^b The sample sizes presented here are the largest sample sizes for each track and group (SSP or not SSP) across all M2-PCMH-A questions. Question-by-question sample sizes can be found in Table 4.C.4.

^c The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

^d To reduce the risk of false positives from multiple comparisons, we did not statistically test differences over time for the individual survey questions.

^e This question was added in the Wave 2 survey to replace C18. We determined that it was close enough to C18 to replace it in the domain score. Therefore, we used C18 in the Wave 1 domain score and this question in the Wave 2 domain score.

^f The wording of this question changed from the Wave 1 survey to the Wave 2 survey. In the Wave 1 survey, the question asked about "Feedback to the practice from patient surveys or from a patient and family advisory council...."

Diff = difference in mean score between Wave 1 and Wave 2; n.a. = not applicable because the question was not asked in that survey wave; SSP = Medicare Shared Savings Program participation status in 2018.

Table 4.C.4. Distribution of CPC+ practice responses to questions about their approaches to care delivery, overall by track and SSP status (2017 Starters)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Care delivery domains^b													
Overall M2-PCMH-A Score													
4	High	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
3 to <4	Medium high	44%	70%	69%	93%	46%	71%	42%	70%	67%	92%	71%	94%
2 to <3	Medium low	55%	30%	31%	7%	53%	29%	56%	30%	33%	8%	29%	6%
1 to <2	Low	1%	0%	0%	0%	1%	0%	2%	1%	0%	0%	0%	0%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A11, B1, B3-5 Access													
4	High	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	1%
3 to <4	Medium high	40%	37%	58%	59%	39%	35%	41%	40%	60%	60%	57%	58%
2 to <3	Medium low	58%	62%	41%	40%	60%	64%	55%	59%	40%	39%	42%	41%
1 to <2	Low	2%	1%	1%	0%	1%	0%	4%	1%	0%	0%	1%	0%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A3, B6, B8 Continuity													
4	High	27%	32%	32%	43%	27%	35%	28%	27%	34%	41%	30%	44%
3 to <4	Medium high	68%	66%	64%	55%	68%	62%	68%	70%	63%	57%	65%	54%
2 to <3	Medium low	4%	2%	4%	2%	4%	2%	5%	3%	3%	2%	4%	1%
1 to <2	Low	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A5-6, A8-9, B10, B15, B18, B29 Care Management													
4	High	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3 to <4	Medium high	39%	75%	69%	93%	40%	76%	37%	73%	67%	93%	70%	94%
2 to <3	Medium low	52%	24%	29%	6%	52%	23%	51%	24%	30%	7%	27%	6%
1 to <2	Low	10%	1%	2%	0%	8%	0%	13%	2%	3%	0%	2%	0%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A10, B23 Comprehensiveness													
4	High	6%	9%	9%	15%	6%	9%	6%	9%	8%	18%	10%	12%
3 to <4	Medium high	26%	38%	36%	48%	27%	36%	24%	39%	28%	42%	42%	53%
2 to <3	Medium low	56%	48%	49%	36%	56%	49%	55%	46%	57%	38%	43%	35%
1 to <2	Low	13%	6%	6%	1%	11%	6%	15%	6%	6%	1%	6%	1%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
B14, B17, B21-22, F3	Coordination of Care Across Providers and Setting in Your Community												
4	High	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
3 to <4	Medium high	35%	42%	48%	52%	33%	45%	38%	39%	49%	53%	48%	52%
2 to <3	Medium low	60%	54%	46%	44%	63%	53%	56%	56%	46%	41%	47%	46%
1 to <2	Low	5%	4%	5%	4%	4%	2%	6%	6%	5%	6%	5%	2%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
B25, B27, B30	Patient and Caregiver Engagement												
4	High	12%	15%	14%	23%	13%	18%	10%	12%	13%	21%	14%	25%
3 to <4	Medium high	47%	57%	52%	63%	48%	55%	46%	60%	47%	67%	56%	59%
2 to <3	Medium low	31%	23%	25%	11%	31%	24%	32%	23%	31%	9%	21%	13%
1 to <2	Low	10%	4%	9%	3%	8%	3%	12%	5%	9%	3%	9%	2%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
B32-35	Planned Care for Chronic Conditions and Population Health												
4	High	6%	8%	12%	13%	7%	9%	5%	6%	17%	13%	8%	12%
3 to <4	Medium high	49%	59%	60%	73%	48%	57%	51%	62%	57%	78%	62%	69%
2 to <3	Medium low	41%	31%	26%	14%	42%	33%	39%	29%	25%	8%	27%	18%
1 to <2	Low	4%	2%	2%	1%	2%	1%	5%	3%	1%	0%	3%	1%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A12-13, B38, F2	Continuous Improvement Driven by Data												
4	High	11%	19%	23%	31%	11%	21%	10%	16%	21%	30%	24%	32%
3 to <4	Medium high	51%	61%	59%	60%	54%	61%	47%	61%	63%	62%	57%	59%
2 to <3	Medium low	35%	19%	17%	9%	32%	16%	39%	22%	16%	8%	17%	9%
1 to <2	Low	3%	1%	1%	0%	3%	1%	4%	1%	0%	0%	2%	0%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A4, B31	Teamwork												
4	High	18%	30%	25%	35%	21%	35%	14%	24%	21%	37%	29%	33%
3 to <4	Medium high	28%	29%	35%	38%	27%	26%	29%	32%	45%	41%	27%	36%
2 to <3	Medium low	45%	34%	33%	26%	46%	32%	45%	37%	29%	21%	37%	29%
1 to <2	Low	9%	7%	7%	1%	7%	7%	12%	7%	5%	1%	8%	1%
	N	1,304	1,304	1,461	1,460	741	741	563	563	629	629	832	831

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
M2-PCMH-A items by domain													
Access													
A11	Patient after-hours access (24 hours, 7 days a week) to a physician, PA/NP, or nurse...												
	...is available via the patient's choice of email or phone directly with the practice team or a practitioner who has real-time access to the patient's electronic medical record.	39%	53%	55%	60%	36%	54%	44%	50%	57%	60%	53%	61%
	...is provided by a coverage arrangement (e.g., answering service) that shares necessary patient data with and provides a summary to the practice.	53%	44%	41%	38%	59%	44%	47%	45%	40%	39%	42%	38%
	...is available from a coverage arrangement (e.g., answering service) that does not offer a standardized communication protocol back to the practice for urgent problems.	6%	3%	4%	1%	6%	2%	7%	4%	3%	1%	4%	1%
	...is not available or is limited to an answering machine.	1%	0%	0%	0%	0%	0%	2%	1%	0%	0%	0%	0%
	N	1,304	1,302	1,461	1,458	741	739	563	563	629	628	832	830
B1	Same-day appointments for patients who need them are available at this practice site for...												
	...most or all of this practice's patients.	74%	78%	81%	81%	74%	77%	74%	79%	81%	78%	80%	83%
	...many of this practice's patients.	16%	19%	15%	17%	15%	21%	17%	15%	15%	21%	15%	14%
	...some of this practice's patients.	10%	4%	4%	2%	11%	2%	9%	6%	4%	2%	4%	2%
	...none of this practice's patients.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	N	1,304	1,303	1,458	1,458	741	741	563	562	628	629	830	829

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
B3	Communicating with the practice team through email, text messaging, or accessing a patient portal occurs for...												
	...most or all of this practice's patients.	27%	20%	33%	31%	27%	18%	27%	24%	35%	32%	32%	31%
	...many of this practice's patients.	32%	39%	37%	43%	34%	40%	29%	37%	33%	42%	39%	43%
	...some of this practice's patients.	38%	40%	29%	26%	37%	42%	40%	37%	31%	26%	28%	26%
	...none of this practice's patients.	3%	2%	1%	0%	3%	1%	4%	2%	1%	0%	1%	0%
	N	1,304	1,298	1,460	1,455	741	736	563	562	629	626	831	829
B4	Scheduled phone or video visits with a physician...												
	...are generally available, and patients are regularly asked about their preferences for in-person versus phone/video visits.	1%	2%	3%	5%	1%	2%	1%	2%	2%	7%	3%	3%
	...are generally available at a patient's request.	8%	10%	13%	18%	7%	12%	9%	8%	19%	19%	9%	16%
	...are available on a limited basis to patients.	13%	12%	16%	20%	12%	9%	15%	15%	16%	18%	16%	22%
	...are not regularly available to patients.	78%	76%	68%	58%	80%	77%	75%	75%	63%	56%	72%	59%
	N	1,303	1,303	1,461	1,459	740	740	563	563	629	628	832	831
B5	Home visits by primary care physicians or staff from this practice site to high-risk or homebound patients... ^c												
	...are generally available, and these patients are regularly asked about their preferences for office visits versus home visits.	n.a.	3%	n.a.	5%	n.a.	3%	n.a.	2%	n.a.	5%	n.a.	5%
	...are generally available at the patient's request.	n.a.	8%	n.a.	13%	n.a.	9%	n.a.	8%	n.a.	14%	n.a.	13%
	...are available on a limited basis.	n.a.	21%	n.a.	29%	n.a.	19%	n.a.	23%	n.a.	30%	n.a.	28%
	...are not regularly available.	n.a.	68%	n.a.	53%	n.a.	69%	n.a.	67%	n.a.	52%	n.a.	54%
	N	n.a.	1,303	n.a.	1,459	n.a.	740	n.a.	563	n.a.	627	n.a.	832

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
C18 (Wave 1 only)	Do physicians or staff at this practice site make home visits to any of your patients? ^d												
Yes	25%	n.a.	31%	n.a.	23%	n.a.	27%	n.a.	28%	n.a.	34%	n.a.	
No	75%	n.a.	69%	n.a.	77%	n.a.	73%	n.a.	72%	n.a.	66%	n.a.	
N	1,301	n.a.	1,455	n.a.	740	n.a.	561	n.a.	626	n.a.	829	n.a.	
Continuity													
A3	Patients...												
	...are assigned to specific practitioner panels and panel assignments are routinely used for scheduling purposes and are continuously monitored to balance supply and demand.	39%	45%	44%	55%	39%	48%	40%	41%	46%	52%	42%	57%
	...are assigned to specific practitioner panels and panel assignments are routinely used by the practice mainly for scheduling purposes.	46%	47%	49%	42%	49%	47%	43%	48%	49%	45%	48%	39%
	...are assigned to specific practitioner panels but panel assignments are not routinely used by the practice for administrative or other purposes.	9%	4%	5%	2%	9%	3%	8%	6%	3%	2%	7%	3%
	...are not assigned to specific practitioner panels.	6%	4%	2%	1%	4%	3%	9%	5%	2%	1%	2%	1%
	N	1,304	1,296	1,461	1,454	741	735	563	561	629	626	832	828
B6	Patients...												
	...have a specific physician, and the patient is almost always scheduled with that physician.	68%	74%	68%	72%	67%	73%	70%	75%	67%	74%	68%	71%
	...have a specific physician, and the patient is frequently scheduled with that physician.	30%	24%	30%	27%	31%	24%	28%	23%	31%	25%	29%	28%
	...have a specific physician, and the patient is sometimes scheduled with that physician.	2%	2%	2%	1%	2%	2%	1%	2%	2%	1%	3%	1%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
...do not have a specific physician that they see at this practice.	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%
N	1,302	1,301	1,458	1,452	740	740	562	561	628	628	830	824
B8	When patients contact the practice with clinical questions or concerns (e.g., a new problem or questions about their treatment) between scheduled encounters...											
...their specific physician or practice care team that has primarily worked with the patient almost always responds.	80%	83%	85%	87%	79%	79%	82%	87%	82%	86%	87%	88%
...their specific physician or practice care team that has primarily worked with the patient frequently responds.	19%	17%	14%	12%	19%	20%	18%	12%	17%	13%	12%	12%
...their specific physician or practice care team that has primarily worked with the patient sometimes responds.	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%
...they do not have a specific physician that they see at the practice, so any member of the practice responds.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
N	1,303	1,300	1,456	1,460	740	738	563	562	626	628	830	832

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Care management													
A5	Care plans for patients... ...are developed collaboratively, include self-management and clinical management goals, are routinely recorded, and guide care at every subsequent point of service.	29%	37%	41%	59%	32%	36%	26%	38%	41%	59%	41%	59%
	...are developed collaboratively with patients and families and include self-management and clinical goals, but they are not routinely recorded or used to guide subsequent care.	27%	41%	37%	35%	25%	44%	31%	36%	40%	36%	35%	34%
	...are developed and recorded but reflect practitioners' priorities only.	28%	14%	14%	5%	30%	12%	24%	17%	13%	4%	15%	6%
	...are not routinely developed or recorded.	16%	8%	8%	1%	14%	9%	19%	8%	7%	1%	10%	1%
	N	1,304	1,300	1,461	1,457	741	738	563	562	629	627	832	830
A6	Sharing of care plans, in paper or electronic form, with high-risk patients...												
	...is usually done.	38%	47%	52%	58%	40%	49%	35%	44%	51%	57%	53%	59%
	...is sometimes done.	32%	32%	29%	33%	31%	34%	33%	29%	30%	35%	28%	32%
	...is rarely done.	17%	13%	11%	5%	17%	10%	17%	18%	14%	4%	10%	6%
	...is not done.	13%	8%	8%	3%	12%	8%	14%	9%	5%	3%	10%	3%
	N	1,304	1,297	1,461	1,457	741	736	563	561	629	628	832	829
A8	A standard method or tool(s) to stratify patients by risk level...												
	...is available, consistently used to stratify all patients, and is integrated into all aspects of care delivery.	14%	40%	35%	62%	15%	40%	13%	41%	31%	60%	39%	63%
	...is available and is consistently used to stratify all patients but is inconsistently integrated into all aspects of care delivery.	33%	48%	33%	34%	34%	50%	30%	46%	36%	36%	31%	33%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	...is available but not consistently used to stratify all patients.	34%	10%	22%	4%	36%	10%	32%	11%	23%	3%	22%	4%
	...is not available.	19%	1%	10%	0%	15%	1%	24%	2%	11%	0%	9%	0%
	N	1,304	1,298	1,461	1,459	741	737	563	561	629	629	832	830
A9	Follow-up by this primary care practice with patients seen in the emergency department (ED) or hospital...												
	...is done routinely because this primary care practice has arrangements in place with the ED and hospital to both track these patients and ensure that follow-up is completed within a few days.	36%	61%	57%	76%	33%	59%	38%	63%	48%	74%	64%	77%
	...occurs because this primary care practice makes proactive efforts to identify patients.	29%	31%	31%	22%	31%	33%	28%	29%	37%	24%	26%	21%
	...occurs only if the ED or hospital alerts this primary care practice.	33%	8%	12%	2%	36%	8%	30%	8%	15%	1%	9%	2%
	...generally does not occur.	2%	0%	0%	0%	1%	0%	4%	0%	0%	0%	0%	0%
	N	1,304	1,303	1,461	1,459	741	741	563	562	629	628	832	831
B10	Care management services for high-risk patients...												
	...are provided by a care manager located at this practice site.	47%	66%	64%	74%	48%	67%	46%	64%	62%	75%	66%	73%
	...are provided by a care manager within this practice's organization who is not physically located at this practice site.	24%	25%	26%	23%	26%	25%	20%	25%	28%	23%	24%	23%
	...are provided by care managers from an outside organization (e.g., a health insurance plan).	13%	5%	6%	2%	11%	3%	15%	7%	5%	1%	6%	2%
	...are not provided at this practice.	16%	4%	4%	1%	15%	5%	19%	4%	5%	0%	4%	1%
	N	1,301	1,299	1,460	1,458	739	738	562	561	629	628	831	830

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
B15	Outreach by this practice site to patients within one week of an ED visit occurs...											
...for most or all of this practice's patients.	37%	62%	51%	68%	34%	60%	40%	64%	40%	58%	59%	75%
...for many of this practice's patients.	23%	27%	23%	26%	23%	29%	23%	25%	26%	32%	20%	22%
...for some of this practice's patients.	35%	10%	25%	6%	39%	9%	30%	11%	31%	9%	20%	3%
...for none of this practice's patients.	5%	1%	2%	0%	4%	2%	7%	0%	3%	1%	1%	0%
N	1,301	1,302	1,457	1,459	739	740	562	562	627	628	830	831
B18	Outreach by this practice site to patients within 3 days of hospital discharge occurs...											
...for most or all of this practice's patients.	45%	65%	63%	75%	44%	64%	45%	67%	49%	65%	74%	83%
...for many of this practice's patients.	31%	31%	25%	22%	35%	34%	26%	27%	36%	32%	17%	15%
...for some of this practice's patients.	22%	4%	11%	3%	20%	2%	26%	6%	14%	3%	9%	2%
...for none of this practice's patients.	2%	0%	0%	0%	1%	0%	3%	0%	0%	0%	0%	0%
N	1,296	1,300	1,451	1,452	737	740	559	560	624	623	827	829
B29	Self-management support is help for patients to better manage their health on a day-to-day basis. At this practice site, self-management support for most patients who have chronic conditions...											
...is provided by practice staff who set specific goals with patients and are trained in assessing how ready patients are to change their health behavior and how to motivate patient behavior change.	27%	41%	41%	56%	29%	41%	24%	39%	48%	58%	36%	54%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
...is provided by practice staff who set specific goals with patients but are not trained in assessing how ready patients are to change their health behavior and how to motivate patient behavior change.	17%	21%	25%	26%	18%	21%	17%	21%	25%	25%	24%	27%
...is provided by practice staff but they do not set specific goals with patients (e.g., they just offer patient education).	33%	26%	25%	14%	30%	25%	38%	28%	20%	12%	28%	15%
...is limited to either (1) the distribution of information (e.g., pamphlets, booklets) with no or little discussion or (2) referral to self-management classes or educators.	22%	13%	9%	5%	23%	13%	21%	12%	7%	5%	11%	5%
N	1,299	1,302	1,455	1,455	737	741	562	561	626	626	829	829
Comprehensiveness												
A10	Linking patients to supportive community-based resources...											
...is accomplished through active coordination between the health system, community service agencies, and patients and accomplished by a designated staff person.	11%	21%	23%	32%	10%	21%	13%	20%	20%	30%	24%	34%
...is accomplished through a designated staff person or resource responsible for connecting patients with community resources.	36%	50%	46%	52%	39%	52%	32%	49%	45%	56%	48%	49%
...is limited to providing patients a list of identified community resources in an accessible format.	41%	26%	26%	15%	40%	24%	42%	28%	29%	13%	23%	16%
...is not done systematically.	12%	3%	5%	1%	11%	3%	14%	3%	6%	1%	5%	0%
N	1,304	1,300	1,461	1,457	741	738	563	562	629	628	832	829

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
B23	This practice site assesses the social and functional support needs (e.g., transportation, home equipment)...												
	...for most or all of this practice's patients.	18%	20%	19%	27%	19%	17%	18%	23%	16%	32%	21%	24%
	...for many of this practice's patients.	32%	31%	31%	35%	35%	34%	28%	28%	29%	31%	33%	37%
	...for some of this practice's patients.	45%	44%	48%	37%	43%	44%	48%	45%	53%	36%	45%	38%
	...for none of this practice's patients.	4%	5%	2%	1%	4%	5%	6%	4%	2%	1%	2%	0%
	N	1,302	1,301	1,457	1,456	739	741	563	560	629	626	828	830
Coordination of care across providers and setting in your community													
B14	Receipt of clinical information (e.g., a discharge summary) from an emergency department (ED) about this practice's patients who had an ED visit...												
	...usually occurs within a day of the visit.	29%	49%	44%	57%	27%	54%	31%	42%	41%	64%	46%	51%
	...usually occurs 1–3 days after the visit.	54%	44%	46%	38%	58%	40%	50%	50%	47%	27%	45%	46%
	...usually occurs more than 3 days after the visit.	9%	4%	3%	1%	8%	5%	10%	3%	3%	1%	3%	1%
	...does not occur consistently.	8%	3%	7%	4%	7%	2%	9%	5%	8%	8%	6%	1%
	N	1,302	1,299	1,459	1,460	739	739	563	560	629	628	830	832
B17	Receipt of clinical information (e.g., a discharge summary) from hospitals about this practice's patients who had a hospital visit...												
	...usually occurs within a day of discharge.	29%	44%	40%	53%	31%	51%	28%	35%	36%	57%	43%	50%
	...usually occurs 1–3 days after discharge.	52%	49%	52%	40%	53%	44%	49%	56%	53%	33%	51%	45%
	...usually occurs more than 3 days after discharge.	12%	4%	6%	5%	10%	4%	14%	4%	9%	7%	3%	3%
	...does not occur consistently.	7%	3%	3%	2%	6%	2%	9%	5%	2%	2%	3%	1%

Table 4.C.4. (continued)

Question ^a	N	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
		Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
B21		1,303	1,300	1,459	1,457	740	741	563	559	628	629	831	828
	Timely receipt of information (e.g., consultation reports, diagnoses, new medications) about your patients after they visit specialists occurs...												
	...for most or all of this practice's patients.	22%	27%	26%	37%	21%	28%	23%	25%	30%	31%	23%	42%
	...for many of this practice's patients.	51%	48%	54%	44%	54%	48%	47%	48%	47%	46%	58%	43%
	...for some of this practice's patients.	26%	25%	20%	19%	25%	24%	29%	26%	23%	23%	19%	16%
	...for none of this practice's patients.	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
	N	1,301	1,301	1,459	1,453	740	740	561	561	628	627	831	826
B22													
	Practices may or may not have agreements with specialists they refer patients to. A formal, written agreement with a specialist describes expectations for timely patient visits, the frequency and type of information communicated between the primary care practice and specialists, and their respective roles. This practice site has formal written agreements with...												
	...most or all medical and surgical specialist groups.	6%	5%	6%	10%	6%	6%	7%	4%	7%	15%	5%	6%
	...many medical and surgical specialist groups.	9%	10%	13%	15%	12%	12%	6%	7%	19%	21%	8%	10%
	...some medical and surgical specialist groups.	24%	54%	30%	67%	26%	54%	23%	55%	26%	56%	33%	75%
	...no medical or surgical specialist groups.	60%	30%	52%	9%	57%	27%	64%	34%	48%	8%	55%	9%
	N	1,302	1,300	1,456	1,453	739	739	563	561	628	626	828	827

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
F3a	With how many hospitals where most of your patients obtain care does this practice site electronically send and receive patient clinical data?											
All	17%	16%	20%	20%	13%	14%	23%	17%	21%	21%	20%	20%
Most	45%	50%	49%	52%	46%	52%	43%	48%	50%	46%	48%	56%
Some	30%	27%	21%	22%	33%	28%	26%	26%	22%	29%	20%	16%
None	7%	7%	10%	6%	8%	6%	7%	9%	7%	4%	13%	7%
N	1,300	1,300	1,458	1,454	740	738	560	562	628	626	830	828
F3b	With how many specialist practices where most of your patients obtain care does this practice site electronically send and receive patient clinical data?											
All	10%	8%	11%	10%	8%	5%	13%	11%	10%	13%	11%	7%
Most	45%	52%	49%	52%	45%	58%	45%	44%	50%	49%	47%	55%
Some	39%	34%	34%	33%	42%	31%	35%	38%	32%	33%	35%	34%
None	6%	6%	7%	5%	5%	5%	8%	7%	8%	5%	6%	4%
N	1,300	1,299	1,455	1,458	741	737	559	562	628	627	827	831
F3c	With how many diagnostic service facilities where most of your patients obtain care does this practice site electronically send and receive patient clinical data?											
All	21%	17%	21%	20%	18%	16%	24%	18%	17%	19%	24%	21%
Most	58%	61%	61%	62%	59%	63%	57%	58%	65%	59%	58%	64%
Some	17%	19%	14%	15%	19%	18%	15%	20%	16%	21%	13%	11%
None	4%	3%	4%	3%	4%	3%	4%	4%	3%	2%	5%	3%
N	1,299	1,300	1,454	1,456	740	739	559	561	625	626	829	830

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Patient and caregiver engagement													
B25	Patients' comprehension of verbal communications... ...is assessed and addressed by staff trained in communicating with patients with different abilities to understand health information needed to make appropriate health decisions.												
	37%	44%	35%	55%	39%	46%	36%	41%	37%	52%	34%	58%	
	...is assessed and addressed by staff who are not trained in communicating with patients with different abilities to understand health information needed to make appropriate health decisions.												
	38%	37%	43%	31%	41%	35%	34%	40%	36%	33%	48%	29%	
	...is assessed but not addressed.												
	15%	10%	10%	7%	13%	11%	19%	8%	12%	10%	9%	6%	
	...is not assessed.												
	9%	10%	12%	6%	7%	8%	12%	11%	16%	6%	10%	7%	
	N	1,299	1,301	1,455	1,457	738	740	561	561	628	626	827	831
B27	Assessing patient and family values and preferences... ...is done and consistently incorporated in planning and organizing care.												
	31%	35%	27%	46%	32%	38%	29%	31%	26%	53%	29%	41%	
	...is done and sometimes incorporated in planning and organizing care.												
	47%	54%	57%	48%	45%	52%	50%	56%	57%	41%	56%	52%	
	...is done but not used in planning and organizing care.												
	13%	8%	7%	3%	15%	8%	10%	8%	7%	2%	8%	3%	
	...is not done.												
	9%	4%	9%	3%	8%	3%	11%	5%	10%	4%	7%	3%	
	N	1,304	1,299	1,459	1,453	741	739	563	560	629	626	830	827
B30	Feedback to the practice from a patient and family advisory council... ^e ...is collected and is consistently used to guide practice improvements.												
	39%	49%	50%	60%	43%	48%	34%	49%	52%	58%	48%	62%	

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
...is collected and is occasionally used to guide practice improvements.	37%	46%	35%	38%	35%	47%	39%	45%	34%	40%	37%	37%	
...is collected but is not used to guide practice improvements.	5%	2%	3%	1%	4%	2%	6%	2%	3%	1%	3%	1%	
...is not collected.	20%	3%	12%	1%	19%	4%	21%	3%	11%	1%	12%	1%	
N	1,301	1,303	1,459	1,457	739	741	562	562	628	628	831	829	
Planned care for chronic conditions and population health													
B32	At this practice site, registry data to assess or manage care for groups of patients...												
	...are available for 6 or more diseases and/or risk states.	35%	37%	46%	49%	38%	36%	31%	37%	50%	53%	43%	46%
	...are available for 3-5 diseases and/or risk states.	26%	30%	28%	34%	25%	31%	27%	28%	24%	34%	31%	33%
	...are available for 1-2 diseases and/or risk states.	12%	13%	14%	8%	11%	14%	13%	12%	14%	7%	13%	8%
	...are not available.	28%	21%	12%	10%	26%	19%	29%	23%	11%	5%	13%	13%
	N	1,302	1,302	1,457	1,453	739	741	563	561	628	624	829	829
B33	Pre-visit planning (gathering and organizing patient information to prepare for the visit) prior to the day of the visit...												
	...is done and includes (1) reviewing test results and consultation reports from specialists, (2) identifying gaps in health care, and (3) conducting outreach before the visit, to ask the patient to obtain needed tests prior to the visit.	21%	25%	27%	37%	23%	24%	19%	27%	28%	29%	26%	42%
	...is done and includes (1) reviewing test results and consultation reports from specialist referrals, and (2) identifying gaps in health care (e.g., a needed flu shot or cancer screenings).	46%	50%	50%	52%	44%	52%	50%	48%	52%	63%	49%	44%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	...is done but primarily focuses on reviewing test results and consultation reports from specialist referrals.	19%	15%	16%	8%	20%	15%	18%	16%	15%	6%	18%	10%
	...is not done.	13%	9%	6%	3%	13%	9%	14%	9%	5%	2%	7%	4%
	N	1,303	1,301	1,460	1,460	740	739	563	562	628	629	832	831
B34	Comprehensive, evidence-based guidelines on preventive care and treatment of chronic illnesses...												
	...are made available to physicians, and inform general protocols or practices to treat a health condition and specific treatment of individual patients at the time of encounter.	37%	43%	52%	52%	35%	42%	39%	43%	58%	55%	48%	49%
	...are made available to physicians and inform general protocols or practices to treat a health condition.	46%	45%	34%	40%	49%	45%	42%	45%	32%	42%	35%	38%
	...are made available to physicians but do not inform general protocols or practices to treat a health condition (e.g., asthma).	13%	10%	11%	7%	12%	10%	14%	10%	8%	2%	13%	11%
	...are not made available to physicians.	4%	2%	3%	1%	4%	2%	5%	2%	2%	0%	4%	1%
	N	1,299	1,297	1,456	1,455	738	737	561	560	627	626	829	829
B35	Notifying patients of their laboratory and radiology test results...												
	...is consistently done for abnormal and normal results.	75%	83%	82%	87%	76%	85%	74%	80%	82%	87%	82%	86%
	...is done for abnormal results and sporadically for normal results.	22%	15%	16%	12%	22%	13%	22%	17%	15%	12%	17%	13%
	...is done for abnormal results only.	3%	2%	2%	1%	3%	2%	3%	3%	3%	1%	1%	1%
	...is not generally done.	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
N	1,303	1,303	1,459	1,458	741	740	562	563	629	628	830	830	
Continuous improvement driven by data													
A12	Quality improvement (QI) activities...												
	...are based on a proven improvement strategy and used continuously in meeting organizational goals.	41%	56%	58%	73%	45%	61%	35%	50%	57%	75%	59%	71%
	...are based on a proven improvement strategy in reaction to specific problems.	29%	27%	25%	19%	31%	24%	26%	31%	27%	16%	23%	21%
	...are conducted on an ad hoc basis in reaction to specific problems.	28%	17%	17%	8%	22%	15%	37%	19%	16%	9%	18%	8%
	...are not organized or supported consistently.	2%	0%	1%	0%	2%	0%	2%	1%	0%	0%	1%	0%
	N	1,304	1,300	1,461	1,455	741	737	563	563	629	628	832	827
A13	Staff, resources, and time for QI activities...												
	...are all fully available in the practice.	15%	22%	25%	35%	15%	24%	15%	19%	23%	34%	27%	36%
	...are generally available and usually at the level needed.	36%	47%	40%	43%	37%	48%	36%	46%	37%	42%	42%	44%
	...are occasionally available but are limited in scope (due to some deficiencies in staff, resources, or time).	43%	30%	33%	21%	43%	27%	42%	33%	39%	23%	29%	20%
	...are not readily available in this practice.	6%	1%	2%	1%	5%	1%	7%	2%	0%	0%	2%	1%
	N	1,304	1,302	1,461	1,457	741	739	563	563	629	627	832	830
B38	Use of performance measures by this practice site to guide quality improvement (QI)...												
	...is usually done.	62%	76%	80%	89%	65%	76%	58%	76%	81%	88%	79%	89%
	...is sometimes done.	30%	21%	16%	10%	28%	23%	33%	18%	14%	11%	18%	10%
	...is rarely done.	4%	2%	3%	1%	4%	1%	5%	3%	5%	1%	2%	1%
	...is not done.	3%	1%	1%	0%	3%	1%	4%	2%	1%	0%	1%	0%
	N	1,302	1,303	1,458	1,459	740	740	562	563	627	629	831	830

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
F2	Does this practice site use data extracts or reports generated from the EHR to guide quality improvement (QI) efforts? ^f											
Yes	92%	96%	97%	98%	92%	97%	91%	94%	98%	98%	96%	99%
No	5%	2%	2%	1%	5%	2%	6%	4%	1%	1%	3%	1%
Don't know	3%	2%	1%	1%	3%	2%	3%	2%	1%	1%	1%	1%
N	1,299	1,293	1,457	1,452	738	736	561	557	628	625	829	827
Teamwork												
A4	Non-physician practice team members...											
...perform key clinical service roles that match their abilities and credentials.	54%	69%	64%	79%	55%	70%	53%	68%	56%	77%	71%	81%
...provide some clinical services such as assessment or self-management support.	29%	22%	29%	18%	28%	24%	30%	20%	39%	20%	21%	16%
...are primarily tasked with managing patient flow and triage.	15%	7%	6%	3%	16%	6%	14%	9%	4%	3%	8%	3%
...play a limited role in providing clinical care.	2%	2%	1%	1%	1%	1%	2%	3%	0%	0%	1%	1%
N	1,304	1,285	1,461	1,448	741	729	563	556	629	623	832	825
B31	Care team huddles are brief meetings among physicians and staff such as nurses and medical assistants. They are typically held before morning or afternoon patient visits, to discuss patient-specific issues and keep the core clinical team informed. At this practice site, care team huddles...											
...occur every day.	26%	36%	33%	41%	31%	40%	20%	30%	30%	43%	36%	40%
...occur most days.	23%	26%	28%	33%	20%	23%	27%	31%	37%	35%	22%	31%
...occur some days.	32%	26%	26%	23%	31%	24%	34%	28%	25%	20%	26%	26%
...do not occur.	19%	12%	13%	2%	18%	12%	20%	10%	8%	2%	16%	3%
N	1,302	1,303	1,459	1,458	739	740	563	563	627	629	832	829
Questions not in M2-PCMH-A domains												

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Questions included in the Wave 1 survey but removed from future surveys													
B7 (Wave 1 only)	Medication reconciliation...												
	...is regularly done for all or most patients during outpatient visits and care transitions.	76%	n.a.	83%	n.a.	78%	n.a.	72%	n.a.	81%	n.a.	85%	n.a.
	...is regularly done for all or most patients during outpatient visits.	23%	n.a.	16%	n.a.	21%	n.a.	26%	n.a.	19%	n.a.	13%	n.a.
	...is intermittently done on an as-needed basis.	1%	n.a.	1%	n.a.	1%	n.a.	1%	n.a.	1%	n.a.	1%	n.a.
	...is not done.	0%	n.a.	0%	n.a.	0%	n.a.	0%	n.a.	0%	n.a.	0%	n.a.
	N	1,300	n.a.	1,460	n.a.	738	n.a.	562	n.a.	629	n.a.	831	n.a.
B17 (Wave 1 only)	Patient decision-making aids used to help patients and providers jointly decide on treatment options...												
	...are provided to and discussed with patients, and patients' decisions are documented.	33%	n.a.	46%	n.a.	32%	n.a.	34%	n.a.	39%	n.a.	52%	n.a.
	...are provided to and discussed with patients, but patients' decisions are not documented.	40%	n.a.	31%	n.a.	42%	n.a.	38%	n.a.	33%	n.a.	30%	n.a.
	...are provided to but not discussed with patients.	11%	n.a.	8%	n.a.	11%	n.a.	11%	n.a.	12%	n.a.	6%	n.a.
	...are not provided to patients.	16%	n.a.	14%	n.a.	15%	n.a.	16%	n.a.	16%	n.a.	13%	n.a.
	N	1,300	n.a.	1,459	n.a.	737	n.a.	563	n.a.	628	n.a.	831	n.a.
B25 (Wave 1 only)	Behavioral health outcomes (such as improvement in depression symptoms)...												
	...are measured and tracked on a population level for the entire practice, with regular reviews and efforts to improve care delivery and outcomes.	10%	n.a.	11%	n.a.	11%	n.a.	10%	n.a.	12%	n.a.	11%	n.a.
	...are measured and tracked on an individual-patient level.	57%	n.a.	59%	n.a.	57%	n.a.	56%	n.a.	63%	n.a.	56%	n.a.

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	...are measured but not tracked to see changes over time.	24%	n.a.	19%	n.a.	25%	n.a.	23%	n.a.	17%	n.a.	21%	n.a.
	...are not measured.	9%	n.a.	10%	n.a.	7%	n.a.	11%	n.a.	7%	n.a.	12%	n.a.
	N	1,303	n.a.	1,461	n.a.	740	n.a.	563	n.a.	629	n.a.	832	n.a.
B27 (Wave 1 only)	At this practice site, formal QI approaches (such as Plan-Do-Study-Act [PDSA] cycles) or performance science methods (such as Lean and Six Sigma)...												
	...are used proactively to identify and improve a range of problems.	25%	n.a.	37%	n.a.	25%	n.a.	24%	n.a.	39%	n.a.	36%	n.a.
	...are used only in reaction to a specific problem or crisis.	32%	n.a.	32%	n.a.	35%	n.a.	27%	n.a.	31%	n.a.	33%	n.a.
	...have been used but are not currently used.	13%	n.a.	14%	n.a.	10%	n.a.	16%	n.a.	15%	n.a.	14%	n.a.
	...have never been used.	31%	n.a.	16%	n.a.	30%	n.a.	33%	n.a.	14%	n.a.	18%	n.a.
	N	1,304	n.a.	1,459	n.a.	741	n.a.	563	n.a.	628	n.a.	831	n.a.
C17 (Wave 1 only)	At this practice site, how are medical assistants or nurses organized to work with the physicians?												
	Each physician is paired with the same medical assistant(s) or nurse(s) most days	80%	n.a.	83%	n.a.	78%	n.a.	82%	n.a.	84%	n.a.	82%	n.a.
	Medical assistants or nurses rotate among the physicians	20%	n.a.	17%	n.a.	22%	n.a.	18%	n.a.	16%	n.a.	18%	n.a.
	N	1,296	n.a.	1,451	n.a.	739	n.a.	557	n.a.	628	n.a.	823	n.a.
Questions that were added in the Wave 2 survey													
A7	Sharing of care plans, in electronic form, with providers outside this practice who serve your high-risk patients...												
	...is usually done.	n.a.	25%	n.a.	29%	n.a.	27%	n.a.	24%	n.a.	32%	n.a.	26%
	...is sometimes done.	n.a.	36%	n.a.	34%	n.a.	38%	n.a.	34%	n.a.	36%	n.a.	33%
	...is rarely done.	n.a.	18%	n.a.	23%	n.a.	17%	n.a.	21%	n.a.	18%	n.a.	27%
	...is not done.	n.a.	20%	n.a.	14%	n.a.	19%	n.a.	22%	n.a.	13%	n.a.	14%
	N	n.a.	1,299	n.a.	1,457	n.a.	737	n.a.	562	n.a.	628	n.a.	829

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
B2	Among practices where same-day appointments for patients are available, same-day appointments for patients who need them...												
	...are generally available through slots reserved for same-day appointments with the physician who treats them regularly.	n.a.	51%	n.a.	50%	n.a.	50%	n.a.	52%	n.a.	46%	n.a.	52%
	...are generally available through slots reserved for same-day appointments with any physician at this practice site.	n.a.	42%	n.a.	47%	n.a.	45%	n.a.	37%	n.a.	50%	n.a.	44%
	...are generally available by squeezing patients in between scheduled appointments.	n.a.	6%	n.a.	3%	n.a.	5%	n.a.	8%	n.a.	4%	n.a.	3%
	...are available only when there are openings for that day.	n.a.	1%	n.a.	0%	n.a.	0%	n.a.	2%	n.a.	0%	n.a.	0%
	N	n.a.	1,288	n.a.	1,459	n.a.	739	n.a.	549	n.a.	629	n.a.	830
B7	Among practices where patients have a specific physician they see, for acute care, they see that physician...												
	...usually or always.	n.a.	45%	n.a.	48%	n.a.	41%	n.a.	51%	n.a.	48%	n.a.	47%
	...frequently.	n.a.	36%	n.a.	38%	n.a.	38%	n.a.	33%	n.a.	39%	n.a.	37%
	...sometimes.	n.a.	16%	n.a.	14%	n.a.	17%	n.a.	16%	n.a.	12%	n.a.	16%
	...never or rarely.	n.a.	3%	n.a.	0%	n.a.	4%	n.a.	1%	n.a.	1%	n.a.	0%
	N	n.a.	1,295	n.a.	1,450	n.a.	734	n.a.	561	n.a.	625	n.a.	825
B9	Visits by primary care physicians or staff from this practice site to patients in the hospital occur...												
	...for most or all of this practice's hospitalized patients.	n.a.	16%	n.a.	15%	n.a.	17%	n.a.	14%	n.a.	13%	n.a.	16%
	...for many of this practice's hospitalized patients.	n.a.	7%	n.a.	5%	n.a.	8%	n.a.	5%	n.a.	6%	n.a.	5%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	...for some of this practice's hospitalized patients.	n.a.	16%	n.a.	23%	n.a.	12%	n.a.	20%	n.a.	24%	n.a.	21%
	...for none of this practice's hospitalized patients.	n.a.	62%	n.a.	58%	n.a.	63%	n.a.	61%	n.a.	57%	n.a.	58%
	N	n.a.	1,299	n.a.	1,459	n.a.	737	n.a.	562	n.a.	629	n.a.	830
B11	Among practices where care management services for high-risk patients are provided, care managers engage in meetings, huddles, or conversations with the physicians at the practice site about the high-risk patients they manage...												
	...daily.	n.a.	31%	n.a.	35%	n.a.	32%	n.a.	31%	n.a.	28%	n.a.	41%
	...weekly.	n.a.	28%	n.a.	42%	n.a.	31%	n.a.	25%	n.a.	46%	n.a.	39%
	...a few times a month.	n.a.	29%	n.a.	17%	n.a.	29%	n.a.	28%	n.a.	20%	n.a.	16%
	...never or rarely.	n.a.	12%	n.a.	5%	n.a.	9%	n.a.	16%	n.a.	7%	n.a.	4%
	N	n.a.	1,243	n.a.	1,443	n.a.	704	n.a.	539	n.a.	625	n.a.	818
B12	Comprehensive medication management (CMM) assesses the patient's medications to determine that each medication is appropriate, effective, safe, and able to be taken by the patient as intended. CMM is intended for high-risk patients who are at risk of medication therapy problems, such as non-compliance or side effects. This practice site conducts CMM for...												
	...most or all of these patients.	n.a.	26%	n.a.	28%	n.a.	26%	n.a.	26%	n.a.	30%	n.a.	27%
	...many of these patients.	n.a.	18%	n.a.	22%	n.a.	17%	n.a.	19%	n.a.	19%	n.a.	24%
	...some of these patients.	n.a.	31%	n.a.	35%	n.a.	31%	n.a.	30%	n.a.	35%	n.a.	35%
	...none of these patients.	n.a.	26%	n.a.	14%	n.a.	26%	n.a.	25%	n.a.	16%	n.a.	13%
	N	n.a.	1,300	n.a.	1,453	n.a.	739	n.a.	561	n.a.	624	n.a.	829

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
B13	Comprehensive medication management services by a pharmacist...												
	...are provided by a pharmacist who works closely and is co-located with the care team at this practice site.	n.a.	7%	n.a.	12%	n.a.	6%	n.a.	7%	n.a.	14%	n.a.	11%
	...are provided by a pharmacist who works closely with the care team at this practice site, but is not routinely located at the practice site.	n.a.	8%	n.a.	21%	n.a.	8%	n.a.	9%	n.a.	22%	n.a.	19%
	...are provided by a pharmacist who works largely independently of the care team at this practice site.	n.a.	7%	n.a.	13%	n.a.	8%	n.a.	7%	n.a.	14%	n.a.	12%
	...are not provided.	n.a.	78%	n.a.	54%	n.a.	78%	n.a.	78%	n.a.	49%	n.a.	57%
	N	n.a.	1,301	n.a.	1,459	n.a.	738	n.a.	563	n.a.	627	n.a.	832
B16	With patients who have had recent ED visits, talking to them about the best ways to avoid future ED visits is done...												
	...for most or all of these patients.	n.a.	44%	n.a.	52%	n.a.	46%	n.a.	40%	n.a.	50%	n.a.	54%
	...for many of these patients.	n.a.	31%	n.a.	31%	n.a.	29%	n.a.	33%	n.a.	33%	n.a.	30%
	...for some of these patients.	n.a.	23%	n.a.	16%	n.a.	22%	n.a.	25%	n.a.	16%	n.a.	16%
	...for none of these patients.	n.a.	2%	n.a.	0%	n.a.	3%	n.a.	1%	n.a.	1%	n.a.	0%
	N	n.a.	1,301	n.a.	1,459	n.a.	740	n.a.	561	n.a.	628	n.a.	831
B19	Discussing recommended medication, diet, or activity plans with patients who have had recent hospital stays is done...												
	...for most or all of these patients.	n.a.	60%	n.a.	64%	n.a.	61%	n.a.	58%	n.a.	55%	n.a.	70%
	...for many of these patients.	n.a.	29%	n.a.	28%	n.a.	30%	n.a.	29%	n.a.	31%	n.a.	25%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	...for some of these patients.	n.a.	11%	n.a.	9%	n.a.	9%	n.a.	13%	n.a.	14%	n.a.	4%
	...for none of these patients.	n.a.	0%	n.a.	0%	n.a.	0%	n.a.	0%	n.a.	0%	n.a.	0%
	N	n.a.	1,298	n.a.	1,458	n.a.	739	n.a.	559	n.a.	628	n.a.	830
B20	With patients who have had recent hospital stays, talking to them about the best ways to avoid future hospitalizations is done...												
	...for most or all of these patients.	n.a.	49%	n.a.	58%	n.a.	52%	n.a.	46%	n.a.	52%	n.a.	62%
	...for many of these patients.	n.a.	35%	n.a.	30%	n.a.	35%	n.a.	34%	n.a.	35%	n.a.	26%
	...for some of these patients.	n.a.	15%	n.a.	13%	n.a.	12%	n.a.	20%	n.a.	14%	n.a.	12%
	...for none of these patients.	n.a.	0%	n.a.	0%	n.a.	0%	n.a.	1%	n.a.	0%	n.a.	0%
	N	n.a.	1,302	n.a.	1,457	n.a.	741	n.a.	561	n.a.	626	n.a.	831
B24	Care managers with behavioral health training screen for and monitor health conditions, and provide education and self-management support....												
	...for most or all of this practice's patients with mental health needs.	n.a.	7%	n.a.	13%	n.a.	6%	n.a.	8%	n.a.	14%	n.a.	12%
	...for many of this practice's patients with mental health needs.	n.a.	15%	n.a.	25%	n.a.	18%	n.a.	12%	n.a.	28%	n.a.	22%
	...for some of this practice's patients with mental health needs.	n.a.	32%	n.a.	38%	n.a.	34%	n.a.	30%	n.a.	30%	n.a.	44%
	...for none of this practice's patients with mental health needs.	n.a.	45%	n.a.	24%	n.a.	42%	n.a.	50%	n.a.	27%	n.a.	22%
	N	n.a.	1,301	n.a.	1,454	n.a.	740	n.a.	561	n.a.	627	n.a.	827

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
B26	After giving medical information to a patient (or caregiver), physicians and care team members may ask the patient to explain back the information to ensure the patient understands. At this practice site...											
	...this is usually or always done.											
	n.a.	25%	n.a.	29%	n.a.	27%	n.a.	22%	n.a.	33%	n.a.	26%
	...this is frequently done.											
	n.a.	32%	n.a.	38%	n.a.	28%	n.a.	39%	n.a.	37%	n.a.	38%
	...this is sometimes done.											
	n.a.	39%	n.a.	31%	n.a.	44%	n.a.	33%	n.a.	28%	n.a.	34%
	...this is never or rarely done.											
	n.a.	4%	n.a.	2%	n.a.	2%	n.a.	7%	n.a.	2%	n.a.	2%
	N											
	n.a.	1,303	n.a.	1,459	n.a.	740	n.a.	563	n.a.	627	n.a.	832
B28	This practice site discusses advance care planning (e.g., for end-of-life care and advance directives for when patients might become too sick to make their own decisions)...											
	...with many or all of this practice's high-risk patients, and patient preferences for end-of-life care are documented and accessible to the care team.											
	n.a.	28%	n.a.	35%	n.a.	24%	n.a.	33%	n.a.	31%	n.a.	39%
	...with many or all of this practice's high-risk patients.											
	n.a.	26%	n.a.	22%	n.a.	24%	n.a.	28%	n.a.	21%	n.a.	23%
	...with some of this practice's high-risk patients.											
	n.a.	42%	n.a.	39%	n.a.	49%	n.a.	33%	n.a.	45%	n.a.	34%
	...with none of this practice's high-risk patients.											
	n.a.	4%	n.a.	4%	n.a.	3%	n.a.	6%	n.a.	4%	n.a.	4%
	N											
	n.a.	1,300	n.a.	1,460	n.a.	739	n.a.	561	n.a.	629	n.a.	831
B36	Behavioral health outcomes at the population level (such as % of patients at the practice with depression who have completed PHQ-9)...											

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	...are measured and tracked, with regular reviews and efforts to improve care delivery and outcomes.	n.a.	32%	n.a.	51%	n.a.	30%	n.a.	35%	n.a.	48%	n.a.	53%
	...are measured and tracked.	n.a.	35%	n.a.	29%	n.a.	40%	n.a.	29%	n.a.	30%	n.a.	28%
	...are measured but not tracked to see changes over time.	n.a.	26%	n.a.	17%	n.a.	26%	n.a.	26%	n.a.	20%	n.a.	14%
	...are not measured.	n.a.	7%	n.a.	4%	n.a.	4%	n.a.	11%	n.a.	1%	n.a.	6%
	N	n.a.	1,300	n.a.	1,459	n.a.	740	n.a.	560	n.a.	627	n.a.	832
B37	Clinical quality of care metrics at the population level for patients with chronic conditions (such as % of patients at the practice with diabetes meeting A1c goals)...												
	...are measured and tracked, with regular reviews and efforts to improve care delivery and outcomes.	n.a.	69%	n.a.	86%	n.a.	68%	n.a.	70%	n.a.	85%	n.a.	87%
	...are measured and tracked.	n.a.	21%	n.a.	11%	n.a.	21%	n.a.	20%	n.a.	13%	n.a.	10%
	...are measured but not tracked to see changes over time.	n.a.	8%	n.a.	2%	n.a.	9%	n.a.	7%	n.a.	2%	n.a.	3%
	...are not measured.	n.a.	2%	n.a.	0%	n.a.	1%	n.a.	3%	n.a.	0%	n.a.	1%
	N	n.a.	1,301	n.a.	1,458	n.a.	740	n.a.	561	n.a.	626	n.a.	832
B39	Use of patient experience measures (from surveys) by this practice site to guide quality improvement...												
	...is done routinely.	n.a.	58%	n.a.	68%	n.a.	63%	n.a.	52%	n.a.	75%	n.a.	62%
	...is done on an ad hoc basis.	n.a.	30%	n.a.	27%	n.a.	31%	n.a.	30%	n.a.	23%	n.a.	30%
	...is rarely done.	n.a.	7%	n.a.	3%	n.a.	5%	n.a.	9%	n.a.	2%	n.a.	4%
	...is not done.	n.a.	5%	n.a.	2%	n.a.	2%	n.a.	8%	n.a.	0%	n.a.	3%
	N	n.a.	1,303	n.a.	1,461	n.a.	741	n.a.	562	n.a.	629	n.a.	832

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
B40	Use of quality of care measures by this practice site to guide quality improvement...												
	...is done routinely.	n.a.	77%	n.a.	90%	n.a.	76%	n.a.	79%	n.a.	92%	n.a.	88%
	...is done on an ad hoc basis.	n.a.	20%	n.a.	10%	n.a.	22%	n.a.	17%	n.a.	8%	n.a.	11%
	...is rarely done.	n.a.	2%	n.a.	1%	n.a.	1%	n.a.	2%	n.a.	0%	n.a.	1%
	...is not done.	n.a.	1%	n.a.	0%	n.a.	1%	n.a.	1%	n.a.	0%	n.a.	0%
	N	n.a.	1,301	n.a.	1,458	n.a.	739	n.a.	562	n.a.	628	n.a.	830
B41	Use of cost or utilization measures by this practice site to guide quality improvement...												
	...is done routinely.	n.a.	43%	n.a.	55%	n.a.	43%	n.a.	43%	n.a.	54%	n.a.	55%
	...is done on an ad hoc basis.	n.a.	37%	n.a.	34%	n.a.	40%	n.a.	32%	n.a.	35%	n.a.	33%
	...is rarely done.	n.a.	14%	n.a.	8%	n.a.	11%	n.a.	18%	n.a.	5%	n.a.	10%
	...is not done.	n.a.	6%	n.a.	4%	n.a.	5%	n.a.	7%	n.a.	6%	n.a.	2%
	N	n.a.	1,302	n.a.	1,460	n.a.	739	n.a.	563	n.a.	629	n.a.	831
Screening for mental health conditions													
B42a	Practice uses a formal screening tool to assess patients for depression (such as PHQ-2 or PHQ-9)												
	We screen at least annually (such as at annual well visits/physicals) and more if needed, with a formal tool.	n.a.	93%	n.a.	97%	n.a.	95%	n.a.	90%	n.a.	97%	n.a.	97%
	We screen only as needed, with a formal tool.	n.a.	6%	n.a.	3%	n.a.	4%	n.a.	8%	n.a.	3%	n.a.	3%
	Never, we do not screen with a formal tool.	n.a.	1%	n.a.	0%	n.a.	1%	n.a.	2%	n.a.	0%	n.a.	0%
	N	n.a.	1,302	n.a.	1,460	n.a.	740	n.a.	562	n.a.	629	n.a.	831
B42b	Practice uses a formal screening tool to assess patients for anxiety (such as GAD-7)												
	We screen at least annually (such as at annual well visits/physicals) and more if needed, with a formal tool.	n.a.	19%	n.a.	24%	n.a.	18%	n.a.	21%	n.a.	23%	n.a.	24%
	We screen only as needed, with a formal tool.	n.a.	45%	n.a.	53%	n.a.	47%	n.a.	43%	n.a.	58%	n.a.	50%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	Never, we do not screen with a formal tool.	n.a.	36%	n.a.	23%	n.a.	35%	n.a.	36%	n.a.	19%	n.a.	26%
	N	n.a.	1,294	n.a.	1,440	n.a.	735	n.a.	559	n.a.	613	n.a.	827
B42c	Practice uses a formal screening tool to assess patients for dementia (such as the Mini Mental Status Examination or Mini Cog)												
	We screen at least annually (such as at annual well visits/physicals) and more if needed, with a formal tool.	n.a.	49%	n.a.	53%	n.a.	51%	n.a.	47%	n.a.	47%	n.a.	58%
	We screen only as needed, with a formal tool.	n.a.	47%	n.a.	44%	n.a.	46%	n.a.	49%	n.a.	49%	n.a.	40%
	Never, we do not screen with a formal tool.	n.a.	4%	n.a.	3%	n.a.	3%	n.a.	5%	n.a.	4%	n.a.	2%
	N	n.a.	1,296	n.a.	1,459	n.a.	736	n.a.	560	n.a.	629	n.a.	830
B42d	Practice uses a formal screening tool to assess patients for substance use (such as AUDIT-C or DAST)												
	We screen at least annually (such as at annual well visits/physicals) and more if needed, with a formal tool.	n.a.	23%	n.a.	30%	n.a.	20%	n.a.	27%	n.a.	25%	n.a.	34%
	We screen only as needed, with a formal tool.	n.a.	39%	n.a.	42%	n.a.	44%	n.a.	32%	n.a.	45%	n.a.	40%
	Never, we do not screen with a formal tool.	n.a.	38%	n.a.	28%	n.a.	36%	n.a.	41%	n.a.	30%	n.a.	26%
	N	n.a.	1,292	n.a.	1,441	n.a.	732	n.a.	560	n.a.	614	n.a.	827
B42e	Practice uses a formal screening tool to assess patients for adult attention-deficit/hyperactivity disorder (such as Adult ADHD self-report tool)												
	We screen at least annually (such as at annual well visits/physicals) and more if needed, with a formal tool.	n.a.	5%	n.a.	9%	n.a.	4%	n.a.	6%	n.a.	8%	n.a.	9%
	We screen only as needed, with a formal tool.	n.a.	49%	n.a.	49%	n.a.	49%	n.a.	49%	n.a.	52%	n.a.	47%

Table 4.C.4. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
Never, we do not screen with a formal tool.	n.a.	46%	n.a.	42%	n.a.	47%	n.a.	45%	n.a.	40%	n.a.	43%
N	n.a.	1,289	n.a.	1,425	n.a.	730	n.a.	559	n.a.	601	n.a.	824

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2). Differences between the Wave 1 and Wave 2 surveys that could change how practices respond to questions are indicated with footnotes.

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys.

^a Question numbers are from the Wave 2 survey.

^b The domain scores are weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score.

^c This question was added in the Wave 2 survey to replace C18. We determined that it was close enough to C18 to replace it in the domain score. Therefore, we used C18 in the Wave 1 domain score and this question in the Wave 2 domain score.

^d To aggregate into the M2-PCMH-A, we converted the responses to a four-point scale where "Yes" equaled 4 and "No" equaled 1.

^e The wording of this question changed from the Wave 1 survey to the Wave 2 survey. In the Wave 1 survey, the question asked about "Feedback to the practice from patient surveys or from a patient and family advisory council...."

^f To aggregate into the M2-PCMH-A, we converted the responses to a four-point scale where "Yes" equaled 4 and "No" and "Don't know" equaled 1.

n.a. = not applicable because the question was not asked in that survey wave; SSP = Medicare Shared Savings Program participation status in 2018.

Table 4.C.5. CPC+ practice characteristics, overall by track and SSP status (2017 Starters)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Practice size and staffing													
A1	Number of full-time equivalent ^b practitioners ^c (primary care and specialty) at the practice site												
	0-1.5	24%	22%	14%	12%	23%	22%	25%	23%	15%	14%	13%	11%
	2-2.5	19%	19%	19%	18%	21%	19%	15%	18%	20%	17%	18%	20%
	3-3.5	15%	16%	16%	16%	16%	18%	14%	13%	14%	16%	17%	16%
	4-6.5	25%	26%	30%	29%	26%	27%	24%	24%	29%	28%	31%	30%
	7+	17%	18%	22%	24%	14%	14%	22%	22%	22%	26%	21%	23%
	N	1,304	1,304	1,461	1,460	741	741	563	563	629	628	832	832
A1a	Number of full-time equivalent ^b physicians (primary care and specialty) at the practice site												
	0-1.5	37%	37%	27%	28%	38%	38%	37%	36%	27%	27%	28%	28%
	2-2.5	22%	23%	21%	21%	25%	23%	20%	22%	21%	18%	22%	23%
	3-3.5	14%	14%	17%	16%	15%	16%	14%	12%	17%	16%	17%	16%
	4-6.5	17%	17%	23%	23%	15%	16%	18%	19%	22%	24%	23%	22%
	7+	9%	9%	12%	13%	8%	7%	11%	11%	13%	14%	11%	12%
	N	1,304	1,304	1,461	1,460	741	741	563	563	629	628	832	832
A1b-e	Number of full-time equivalent ^b non-physician practitioners ^c (primary care and specialty) at the practice site												
	0-1.5	74%	69%	69%	65%	77%	72%	70%	66%	72%	68%	67%	63%
	2-2.5	11%	15%	15%	15%	11%	15%	11%	15%	15%	15%	15%	16%
	3-3.5	6%	6%	5%	7%	5%	5%	8%	7%	3%	6%	6%	8%
	4-6.5	5%	5%	6%	6%	3%	4%	7%	7%	4%	5%	7%	7%
	7+	4%	5%	5%	7%	4%	5%	5%	6%	5%	7%	5%	6%
	N	1,304	1,304	1,461	1,460	741	741	563	563	629	628	832	832
A2	Number of full-time equivalent ^b primary care practitioners ^c with own NPI at the practice site												
	0-1.5	25%	23%	15%	13%	24%	22%	25%	23%	15%	14%	14%	13%
	2-2.5	19%	19%	19%	18%	21%	19%	16%	18%	20%	17%	18%	19%

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	3-3.5	16%	17%	16%	16%	17%	18%	15%	15%	14%	16%	17%	16%
	4-6.5	26%	26%	31%	29%	26%	27%	25%	24%	30%	29%	31%	30%
	7+	15%	16%	20%	22%	12%	13%	18%	19%	20%	23%	19%	22%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A2a	Number of full-time equivalent ^b primary care physicians with own NPI at the practice site												
	0-1.5	38%	38%	28%	28%	39%	39%	38%	37%	28%	28%	28%	29%
	2-2.5	23%	24%	22%	21%	25%	24%	21%	24%	21%	19%	22%	23%
	3-3.5	14%	14%	17%	16%	16%	16%	13%	12%	17%	16%	17%	17%
	4-6.5	17%	17%	23%	24%	16%	16%	20%	18%	23%	26%	23%	22%
	7+	7%	8%	10%	10%	5%	6%	9%	9%	11%	11%	9%	9%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
A2b-e	Number of full-time equivalent ^b non-physician primary care practitioners ^c with own NPI at the practice site												
	0-1.5	75%	71%	71%	67%	77%	73%	72%	69%	74%	70%	68%	65%
	2-2.5	12%	14%	15%	15%	11%	14%	12%	15%	14%	14%	16%	16%
	3-3.5	6%	6%	5%	7%	5%	5%	7%	7%	4%	7%	7%	7%
	4-6.5	4%	4%	5%	6%	3%	3%	6%	6%	4%	4%	6%	7%
	7+	4%	4%	4%	5%	4%	4%	4%	4%	4%	5%	4%	5%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
C10	Number of full-time equivalent ^b care managers/care coordinators ^d who work as part of a care team at the practice site												
	0	30%	8%	13%	4%	28%	7%	34%	10%	13%	4%	13%	3%
	0.5	22%	28%	24%	20%	24%	34%	19%	19%	30%	26%	20%	15%
	1-1.5	34%	38%	39%	41%	39%	40%	28%	36%	35%	36%	43%	45%
	2-2.5	7%	14%	14%	21%	6%	10%	9%	20%	15%	23%	14%	20%
	3+	6%	12%	9%	15%	4%	9%	10%	16%	8%	12%	11%	17%
	N	1,291	1,294	1,455	1,451	731	733	560	561	627	623	828	828
C11	Among practices with a care manager/coordinator, clinical background of care managers/care coordinators (multiple responses possible)												
	Registered nurse (RN)	70%	73%	78%	79%	75%	77%	61%	68%	82%	84%	75%	76%

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	Licensed practical nurse (LPN) or licensed vocational nurse (LVN)	17%	18%	21%	22%	17%	15%	16%	21%	18%	22%	23%	23%
	Medical assistant (MA)	26%	27%	19%	20%	23%	21%	31%	36%	15%	15%	23%	24%
	Social worker	9%	14%	14%	23%	9%	14%	10%	15%	13%	21%	15%	25%
	Other clinical background	10%	11%	10%	13%	5%	6%	16%	17%	8%	9%	11%	16%
	No clinical background	6%	3%	4%	5%	5%	4%	6%	3%	4%	4%	4%	5%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
C11a	Among practices with a care manager/coordinator, care managers and/or care coordinators have behavioral health training												
	Yes	n.a.	37%	n.a.	50%	n.a.	38%	n.a.	36%	n.a.	45%	n.a.	53%
	No	n.a.	63%	n.a.	50%	n.a.	62%	n.a.	64%	n.a.	55%	n.a.	47%
	N	n.a.	1,178	n.a.	1,392	n.a.	678	n.a.	500	n.a.	595	n.a.	797
	Practice site has full- or part-time:												
C8a	Registered nurse (RN)	43%	54%	55%	58%	40%	54%	47%	53%	56%	58%	54%	58%
C8b	Licensed practical nurse (LPN) or licensed vocational nurse (LVN)	42%	41%	49%	50%	40%	39%	45%	43%	48%	47%	49%	52%
C8c	Medical assistant	92%	90%	94%	94%	92%	91%	91%	89%	95%	96%	93%	92%
C9a	Clinical psychologist, psychiatrist, or clinical social worker (behavioral health specialists)	17%	25%	31%	55%	17%	25%	18%	23%	29%	57%	32%	54%
C9b	Referral coordinator or referral specialist	62%	66%	63%	71%	59%	61%	65%	72%	55%	64%	70%	77%
C9c	Quality improvement (QI) specialist	27%	40%	37%	42%	28%	43%	27%	36%	30%	42%	42%	42%
C9d	Health educator, dietitian, or nutritionist	19%	24%	33%	35%	20%	23%	18%	25%	28%	39%	37%	32%
C9e	Clinical pharmacist or doctor of pharmacy	13%	14%	20%	25%	12%	13%	15%	16%	19%	32%	21%	20%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Practice characteristics													
A1 (Wave 1 only)	Practice is a concierge practice, Rural Health Clinic, or Federally Qualified Health Center												
	Yes	2%	n.a.	2%	n.a.	2%	n.a.	2%	n.a.	2%	n.a.	3%	n.a.
	No	98%	n.a.	98%	n.a.	98%	n.a.	98%	n.a.	98%	n.a.	97%	n.a.
	N	1,304	n.a.	1,461	n.a.	741	n.a.	563	n.a.	629	n.a.	832	n.a.
C1	Medical organization that employs physicians at this practice site ^e												
	Independent physician owned	44%	n.a.	39%	n.a.	36%	n.a.	54%	n.a.	30%	n.a.	46%	n.a.
	Solely owned by 1 to 9 practitioners and/or non-practitioners	n.a.	31%	n.a.	20%	n.a.	25%	n.a.	39%	n.a.	15%	n.a.	24%
	Solely owned by 10 or more practitioners and/or non-practitioners	n.a.	8%	n.a.	17%	n.a.	5%	n.a.	13%	n.a.	10%	n.a.	21%
	Co-owned by a group of practitioners and a hospital, hospital system, or medical school	n.a.	2%	n.a.	2%	n.a.	1%	n.a.	4%	n.a.	2%	n.a.	2%
	Hospital, hospital system, or medical school	52%	56%	57%	56%	61%	68%	41%	40%	66%	64%	50%	51%
	HMO - group or staff model	2%	0%	2%	0%	2%	0%	2%	0%	2%	0%	2%	0%
	Health insurance company	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Community health center or clinic	1%	1%	1%	0%	0%	0%	2%	2%	1%	0%	1%	0%
	Other	1%	2%	1%	5%	1%	1%	0%	2%	1%	9%	1%	2%
	N	1,300	1,299	1,460	1,456	738	738	562	561	629	629	831	827
C2	Medical organization that employs physicians at the practice site is a multispecialty group that includes both specialists and primary care physicians												
	Yes	n.a.	59%	n.a.	69%	n.a.	62%	n.a.	56%	n.a.	74%	n.a.	65%
	No	n.a.	41%	n.a.	31%	n.a.	38%	n.a.	44%	n.a.	26%	n.a.	35%
	N	n.a.	1,298	n.a.	1,457	n.a.	738	n.a.	560	n.a.	628	n.a.	829

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
C3 (Wave 1 only)	Practice is affiliated with (multiple responses possible)												
	Independent Practice Association or Clinically Integrated Network	41%	n.a.	45%	n.a.	48%	n.a.	32%	n.a.	51%	n.a.	41%	n.a.
	Physician Hospital Organization	35%	n.a.	42%	n.a.	39%	n.a.	29%	n.a.	58%	n.a.	29%	n.a.
	N	1,304	n.a.	1,461	n.a.	741	n.a.	563	n.a.	629	n.a.	832	n.a.
Practice site autonomy to make decisions^f													
C3a	Staff hiring												
	High autonomy	73%	70%	68%	66%	72%	66%	74%	75%	64%	59%	71%	71%
	Moderate autonomy	17%	18%	20%	23%	18%	22%	16%	14%	20%	24%	20%	23%
	Some autonomy	7%	9%	11%	9%	7%	9%	8%	8%	14%	15%	8%	5%
	Little/no autonomy	3%	3%	2%	2%	3%	3%	3%	3%	1%	2%	2%	1%
	N	1,294	1,296	1,451	1,457	736	739	558	557	623	629	828	828
C3b	Organizational priorities (e.g., choosing a specific quality improvement goal)												
	High autonomy	45%	41%	42%	37%	38%	35%	54%	50%	38%	27%	45%	44%
	Moderate autonomy	28%	30%	26%	25%	31%	31%	24%	27%	23%	25%	28%	25%
	Some autonomy	20%	21%	25%	29%	24%	27%	16%	14%	28%	32%	22%	28%
	Little/no autonomy	6%	8%	7%	9%	7%	7%	6%	9%	10%	16%	4%	4%
	N	1,296	1,295	1,451	1,454	738	734	558	561	626	627	825	827
C3c	Clinical work processes (e.g., process for rooming patients)												
	High autonomy	63%	59%	63%	56%	60%	51%	67%	69%	64%	51%	62%	60%
	Moderate autonomy	20%	24%	22%	26%	20%	27%	19%	20%	23%	22%	22%	28%
	Some autonomy	15%	15%	13%	18%	17%	19%	13%	10%	12%	26%	14%	11%
	Little/no autonomy	2%	2%	1%	1%	3%	2%	1%	2%	1%	1%	1%	1%
	N	1,298	1,302	1,455	1,459	737	739	561	563	625	627	830	832
C3d	Choice of specialists to whom this practice site refers (for patients whose insurance permits referrals to any specialist)												
	High autonomy	63%	68%	62%	59%	59%	64%	68%	74%	58%	49%	65%	66%
	Moderate autonomy	25%	23%	25%	30%	29%	27%	19%	19%	26%	37%	25%	25%
	Some autonomy	9%	8%	11%	10%	9%	9%	9%	6%	14%	13%	8%	9%
	Little/no autonomy	3%	1%	2%	0%	2%	1%	4%	2%	2%	0%	2%	0%
	N	1,299	1,303	1,458	1,460	739	740	560	563	627	629	831	831

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Types of patients seen													
C4a	Percentage of patients insured through Medicaid, including Medicaid managed care in the past year												
	Mean	15.77	14.36	15.54	14.54	13.97	13.19	18.11	15.87	14.35	13.78	16.43	15.11
	Median	10.00	9.00	10.00	10.00	8.00	8.00	10.00	10.00	8.00	9.00	10.00	10.00
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
C4b	Percentage of patients uninsured or self-pay in the past year												
	Mean	5.00	4.41	4.50	3.93	4.48	3.89	5.68	5.09	4.51	3.78	4.50	4.04
	Median	3.00	3.00	3.00	2.00	3.00	2.00	3.00	3.00	3.00	3.00	2.00	2.00
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
Patient dismissal													
C5	Number of patients dismissed in the past two years												
	No patients dismissed	11%	11%	9%	10%	11%	11%	12%	10%	14%	13%	5%	7%
	1–5 patients	36%	38%	29%	33%	37%	39%	35%	37%	25%	30%	32%	35%
	6–10 patients	17%	17%	20%	19%	17%	17%	17%	16%	20%	16%	20%	21%
	11–20 patients	16%	15%	18%	19%	15%	15%	17%	14%	19%	20%	17%	19%
	21–50 patients	11%	10%	14%	11%	12%	10%	9%	11%	14%	12%	15%	10%
	51–99 patients	5%	4%	6%	5%	5%	4%	5%	4%	6%	5%	6%	4%
	More than 99 patients	4%	5%	4%	4%	3%	4%	6%	7%	3%	4%	5%	3%
	N	1,298	1,299	1,459	1,461	736	737	562	562	628	629	831	832
C6	Among practices that dismissed a patient from the practice in the past two years, reason(s) for patient dismissal (multiple responses possible)												
	Patient repeatedly missed appointments	69%	70%	74%	76%	68%	71%	71%	69%	72%	73%	76%	77%
	Patient repeatedly violated bill payment policies	26%	25%	27%	24%	20%	19%	34%	34%	24%	20%	28%	27%
	Patient violated chronic pain/controlled substance policies	71%	66%	71%	60%	70%	67%	73%	63%	68%	58%	73%	60%

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
Patient was extremely disruptive and/or behaved inappropriately toward physicians or staff	79%	82%	81%	81%	75%	81%	83%	83%	77%	82%	83%	81%	
Patient repeatedly did not follow health care recommendations (such as medication regimens or getting lab tests done)	44%	39%	42%	37%	44%	38%	45%	41%	42%	36%	42%	38%	
Patient repeatedly did not follow recommended lifestyle changes (such as diet, exercise, or smoking cessation)	5%	6%	7%	7%	6%	7%	3%	5%	7%	5%	7%	8%	
Patient made frequent visits to the ED and/or frequently self-referred to specialists	4%	5%	6%	5%	4%	5%	4%	4%	4%	7%	6%	4%	
Other	3%	2%	2%	2%	2%	1%	4%	2%	4%	4%	1%	2%	
N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832	
Sources of practice revenue and physician compensation													
G1	Percentage of practice site's revenue that came from fee-for-service (FFS) payments in 2017												
	Mean	n.a.	76.92	n.a.	75.41	n.a.	76.93	n.a.	76.90	n.a.	79.05	n.a.	72.93
	Median	n.a.	88.00	n.a.	81.00	n.a.	90.00	n.a.	85.50	n.a.	85.00	n.a.	80.00
	N	n.a.	1,304	n.a.	1,461	n.a.	741	n.a.	563	n.a.	629	n.a.	832
G2	Percentage of practices reporting a portion of practice site's revenue in the prior year came from the source (multiple responses possible)												
	Fee-for-service payments (calculated using G1)	99%	99%	99%	100%	99%	100%	99%	99%	100%	100%	99%	100%

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
Care management fees (prospective payments to support care management for patients, paid in addition to usual payments for services)	62%	85%	76%	94%	59%	88%	65%	83%	70%	94%	81%	94%
Capitation (per-patient per-month payment for specific patients, intended to cover costs of some or all services provided, regardless of amount or type in lieu of fee-for-service payments)	41%	55%	48%	80%	49%	59%	31%	49%	45%	77%	51%	83%
Episode-based payments (a fixed payment for all services needed for a patient with a particular condition)	10%	17%	16%	18%	9%	17%	10%	16%	21%	20%	12%	16%
Shared savings, in which costs of care are compared to an expenditure target or to costs for another group of practices and a proportion of savings are shared with practices	n.a.	40%	n.a.	59%	n.a.	43%	n.a.	37%	n.a.	66%	n.a.	53%
Financial rewards or bonuses from insurers for improving quality of care, patient experience, and/or controlling costs, not including shared savings	88%	86%	90%	88%	90%	83%	86%	89%	91%	82%	89%	92%
Other payments	18%	10%	17%	11%	15%	6%	22%	16%	22%	8%	12%	12%
N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
G3	Among practices not in the Medicare Shared Savings Program (SSP), the percentage of practice site's 2017 revenue that was tied to cost or quality performance											
	Mean	n.a. 12.23	n.a. 12.17		n.a. 11.91	n.a. 12.63		n.a. 12.15	n.a. 12.19			
	Median	n.a. 8.00	n.a. 7.00		n.a. 6.00	n.a. 10.00		n.a. 7.00	n.a. 7.00			
	N	n.a. 1,304	n.a. 1,461		n.a. 741	n.a. 563		n.a. 629	n.a. 832			
Among practices that are not independent physician-owned with only one physician												
C10 (Wave 1 only)	Source of primary care physician compensation (multiple responses possible)											
	Salary (not based on productivity or the number of patients managed)	65%	n.a. 61%	n.a.	67%	n.a. 63%	n.a.	54%	n.a. 66%	n.a.		
	Payments based on RVUs (relative value units) billed	64%	n.a. 63%	n.a.	68%	n.a. 57%	n.a.	69%	n.a. 58%	n.a.		
	Capitation payments based on the number of patients that the physician managed (regardless of amount or type of services provided)	17%	n.a. 20%	n.a.	18%	n.a. 16%	n.a.	21%	n.a. 19%	n.a.		
	Payments based on performance in the areas of clinical quality, patient experience, cost, or utilization measures	59%	n.a. 68%	n.a.	65%	n.a. 51%	n.a.	70%	n.a. 65%	n.a.		
	Payments based on a share of your organization's profit for the year	20%	n.a. 27%	n.a.	22%	n.a. 18%	n.a.	22%	n.a. 32%	n.a.		
	Other payments	13%	n.a. 17%	n.a.	11%	n.a. 16%	n.a.	19%	n.a. 17%	n.a.		
	N	1,304	n.a. 1,461	n.a.	741	n.a. 563	n.a.	629	n.a. 832	n.a.		
Practice participation in other initiatives												

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
C7	Practice participation in other initiatives, demonstrations, or programs (multiple responses possible)												
	Health Care Innovation Awards (sponsored by CMS)	4%	6%	5%	4%	5%	8%	4%	3%	5%	4%	4%	4%
	Accountable Care Organizations (ACOs) that are not sponsored by Medicare	24%	32%	22%	24%	33%	46%	12%	13%	28%	33%	18%	17%
	State Innovation Model (SIM) ⁹	11%	26%	16%	42%	9%	21%	12%	31%	20%	50%	12%	35%
	Medicaid Health Home	11%	7%	13%	6%	10%	7%	12%	7%	14%	4%	13%	8%
	A state- or community-based quality improvement program or collaborative (for example, Institute for Healthcare Improvement collaborative or EHR users' group)	12%	16%	18%	24%	10%	18%	16%	14%	18%	28%	18%	22%
	An insurer-sponsored program linking payment to performance or value (such as a bonus payment from an insurer for quality)	72%	76%	77%	81%	73%	80%	70%	72%	81%	84%	74%	78%
	N	1,304	1,304	1,461	1,461	741	741	563	563	629	629	832	832
C12 (Wave 1 only)	Practice site has medical home recognition or accreditation												
	Yes	57%	n.a.	72%	n.a.	55%	n.a.	59%	n.a.	76%	n.a.	68%	n.a.
	No	43%	n.a.	28%	n.a.	45%	n.a.	41%	n.a.	24%	n.a.	32%	n.a.
	N	1,293	n.a.	1,457	n.a.	733	n.a.	560	n.a.	628	n.a.	829	n.a.
Data feedback on cost of care to insurers													
D1a	Practice site gets data on what insurers pay for diagnostic or lab services (data can be provided by insurers or other organizations)												

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP		
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	
	Yes, we get data on what all insurers pay	n.a.	46%	n.a.	47%	n.a.	53%	n.a.	37%	n.a.	48%	n.a.	47%
	Yes, we get data on what some insurers pay	n.a.	6%	n.a.	8%	n.a.	6%	n.a.	7%	n.a.	9%	n.a.	6%
	No, we do not get data on what any insurers pay	n.a.	47%	n.a.	45%	n.a.	41%	n.a.	56%	n.a.	43%	n.a.	47%
	N	n.a.	1,294	n.a.	1,452	n.a.	733	n.a.	561	n.a.	623	n.a.	829
D1b	If practice gets data on what insurers pay, how often practice site uses these data to inform where to refer patients for diagnostic or lab services												
	Usually or always	n.a.	10%	n.a.	12%	n.a.	12%	n.a.	5%	n.a.	18%	n.a.	6%
	Frequently	n.a.	16%	n.a.	29%	n.a.	13%	n.a.	21%	n.a.	30%	n.a.	28%
	Sometimes	n.a.	50%	n.a.	40%	n.a.	56%	n.a.	40%	n.a.	42%	n.a.	39%
	Never or rarely	n.a.	24%	n.a.	19%	n.a.	19%	n.a.	34%	n.a.	11%	n.a.	26%
	N	n.a.	686	n.a.	797	n.a.	436	n.a.	250	n.a.	359	n.a.	438
D2a	Practice site gets data on what insurers pay for specialists services (data can be provided by insurers or other organizations)												
	Yes, we get data on what all insurers pay	n.a.	38%	n.a.	41%	n.a.	39%	n.a.	36%	n.a.	40%	n.a.	42%
	Yes, we get data on what some insurers pay	n.a.	3%	n.a.	4%	n.a.	2%	n.a.	3%	n.a.	8%	n.a.	2%
	No, we do not get data on what any insurers pay	n.a.	60%	n.a.	55%	n.a.	59%	n.a.	60%	n.a.	53%	n.a.	56%
	N	n.a.	1,288	n.a.	1,450	n.a.	729	n.a.	559	n.a.	622	n.a.	828
Use of health information technology													
F1	Practice site uses an electronic health record (EHR) system												
	Yes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	No	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	N	1,298	1,293	1,459	1,454	737	735	561	558	628	626	831	828
F4	Practice site participates in state or regional health information exchange												
	Yes	56%	65%	67%	74%	59%	70%	53%	59%	74%	82%	63%	68%
	No	29%	23%	23%	18%	25%	20%	33%	28%	17%	12%	27%	23%

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP					
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)				
Don't know	15%	11%	10%	8%	16%	10%	14%	13%	10%	6%	10%	10%				
N	1,301	1,299	1,460	1,457	740	737	561	562	629	626	831	831				
Completion of the survey																
G1 (Wave 1 only)	Process used to complete the survey															
	Each team member filled out a separate survey, and consensus was reached in a face-to-face meeting				4%	n.a.	4%	n.a.	3%	n.a.	6%	n.a.	2%	n.a.	5%	n.a.
	One team member filled out the survey in consultation with other team members as needed				67%	n.a.	74%	n.a.	66%	n.a.	68%	n.a.	77%	n.a.	71%	n.a.
	One team member filled out the survey based on individual knowledge of the organization				29%	n.a.	21%	n.a.	30%	n.a.	27%	n.a.	18%	n.a.	23%	n.a.
	Other				0%	n.a.	2%	n.a.	0%	n.a.	0%	n.a.	4%	n.a.	0%	n.a.
N	1,304	n.a.	1,456	n.a.	741	n.a.	563	n.a.	628	n.a.	828	n.a.				
K1	Who provided input in completing the survey (multiple responses possible)															
	Practice or office manager				80%	71%	82%	76%	81%	69%	80%	73%	81%	77%	84%	76%
	Lead physician				32%	20%	35%	23%	26%	14%	39%	28%	28%	17%	41%	27%
	Other physicians				6%	3%	7%	5%	5%	3%	6%	4%	5%	2%	9%	6%
	Nurse practitioner (NP), clinical nurse specialist (CNS), or physician assistant (PA)				6%	3%	6%	3%	6%	2%	6%	4%	5%	2%	7%	4%
	Care manager/coordinator				28%	30%	40%	30%	30%	31%	26%	29%	42%	28%	38%	31%
	Nursing staff, including nurse manager or supervisor				13%	7%	11%	5%	10%	5%	16%	10%	11%	4%	12%	5%
	Medical assistant staff				16%	10%	13%	5%	14%	9%	18%	12%	11%	4%	15%	6%
	Quality improvement staff				31%	32%	27%	28%	34%	36%	28%	27%	25%	23%	29%	32%

Table 4.C.5. (continued)

Question ^a	Track 1 Overall		Track 2 Overall		Track 1 SSP		Track 1 Not SSP		Track 2 SSP		Track 2 Not SSP	
	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)	Wave 1 (2017)	Wave 2 (2018)
Administrative support staff (e.g., billing or finance staff, front desk staff)	27%	17%	21%	20%	29%	21%	25%	12%	22%	30%	21%	13%
Non-physician owner of practice	n.a.	0%	n.a.	1%	n.a.	0%	n.a.	1%	n.a.	1%	n.a.	1%
Leadership or staff from larger health care system or medical group	22%	14%	25%	22%	26%	19%	15%	8%	31%	23%	20%	20%
Data analytics staff	n.a.	19%	n.a.	19%	n.a.	22%	n.a.	14%	n.a.	24%	n.a.	16%
CPC+ lead	n.a.	34%	n.a.	33%	n.a.	39%	n.a.	28%	n.a.	40%	n.a.	27%
Patients	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Other	12%	3%	11%	4%	11%	2%	14%	5%	11%	6%	11%	2%
N	1,302	1,300	1,459	1,459	740	738	562	562	629	628	830	831

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2). Differences between the Wave 1 and Wave 2 surveys that could change how practices respond to questions are indicated with footnotes.

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys.

^a The question numbering is based on the Wave 2 survey.

^b Practices entered number of full-time and part-time staff separately. Full-time equivalent (FTE) counts were estimated by counting all full-time staff as 1 FTE and all part-time staff as 0.5 FTE.

^c Practitioners include physicians (MD or DO, not including psychiatrists), physician residents or fellows (trainees), nurse practitioners, physician assistants, and clinical nurse specialists. Non-physician practitioners include all types of practitioners listed but the first.

^d Item wording changed mid-field during the Wave 1 survey to clarify that it was asking about care managers/coordinators who work as part of the practice's care team, regardless of where they physically work.

^e Response options to this question changed significantly from the Wave 1 survey to the Wave 2 survey; therefore, comparisons over time should be evaluated carefully.

^f The item wording changed from the Wave 1 survey to the Wave 2 survey in a way that might change how practices responded to the item. In Wave 1, the item asked respondents to: "Please indicate how much autonomy the leaders of this practice site have in making decisions for this site in the following areas." In Wave 2, the item asked respondents to: "Please indicate how much autonomy this practice site has in making decisions for this site in the following areas."

^g The wording of this question changed from the Wave 1 survey to the Wave 2 survey in a way that might change how practices answered the question. In the Wave 1 survey, practices were asked about their participation in a "State Innovation Model (SIM) (sponsored by CMS; may have a state-specific name." In the Wave 2 survey, the question included the name of the SIM program in the practice's state. To draw appropriate comparisons across waves, the table displays percentages for all practices, not only practices in a region with a SIM program.

n.a. = not applicable because the survey question was not asked in that wave or to the specified group of practices; SSP = Medicare Shared Savings Program participation status in 2018.

Table 4.C.6. CPC+ practices' perceptions of CPC+ and CPC+ supports, overall by track and SSP status (2017 Starters)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP
Learning activities and assistance						
I1	Rating of services from regional learning network organizations in meeting practice site's CPC+-related needs and helping improve primary care					
Excellent	15%	18%	18%	11%	16%	19%
Very good	30%	28%	28%	32%	32%	26%
Good	38%	36%	37%	40%	34%	37%
Fair	14%	17%	15%	14%	17%	16%
Poor	2%	2%	2%	3%	1%	2%
N	1,291	1,452	731	560	625	827
Usefulness of assistance received from CPC+ national learning community and regional learning network						
I2	Percentage of practices reporting that they received this type of assistance from the CPC+ national learning community or regional learning network in the past six months					
Webinars	86%	93%	86%	85%	92%	94%
Health IT Affinity Groups	66%	75%	66%	67%	74%	76%
In-person learning sessions	84%	89%	84%	83%	90%	88%
In-person coaching at the practice site to improve practice processes and workflows	59%	59%	64%	52%	63%	56%
One-on-one telephone/virtual coaching with the practice site to improve practice processes and workflows	65%	71%	68%	61%	77%	66%
CPC+ Connect	92%	94%	91%	94%	93%	94%
CPC+ Implementation Guides	95%	94%	94%	97%	93%	95%
CPC+ Practice Spotlights	89%	90%	87%	91%	90%	91%
CPC+ Support	88%	89%	87%	90%	88%	90%
N	1,304	1,461	741	563	629	832
Among practices that reported receiving each type of assistance, rating of usefulness of assistance in improving primary care						
I2a	Webinars					
Very useful	33%	24%	37%	27%	24%	24%
Somewhat useful	56%	64%	53%	59%	67%	61%
Not very useful	11%	11%	9%	12%	8%	14%
Not at all useful	1%	1%	1%	1%	1%	1%
N	1,118	1,365	637	481	580	785
I2b	Health IT Affinity Groups					
Very useful	38%	19%	45%	29%	17%	20%
Somewhat useful	40%	61%	37%	44%	72%	53%
Not very useful	17%	17%	15%	19%	9%	23%
Not at all useful	5%	3%	2%	8%	2%	3%
N	866	1,095	488	378	465	630

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP	
I2c	In-person learning sessions						
	Very useful	48%	48%	48%	49%	49%	47%
	Somewhat useful	43%	44%	45%	41%	48%	41%
	Not very useful	7%	6%	7%	7%	2%	10%
	Not at all useful	1%	2%	1%	2%	2%	2%
	N	1,094	1,305	626	468	569	736
I2d	In-person coaching at the practice site to improve practice processes and workflows						
	Very useful	55%	54%	55%	55%	51%	57%
	Somewhat useful	33%	34%	35%	31%	33%	35%
	Not very useful	9%	9%	9%	9%	15%	4%
	Not at all useful	2%	3%	1%	5%	1%	4%
	N	768	862	474	294	394	468
I2e	One-on-one telephone/virtual coaching with the practice site to improve practice processes and workflows						
	Very useful	54%	47%	60%	44%	49%	46%
	Somewhat useful	34%	36%	29%	41%	33%	39%
	Not very useful	8%	13%	9%	6%	19%	7%
	Not at all useful	4%	4%	1%	9%	0%	7%
	N	846	1,034	502	344	485	549
I2f	CPC+ Connect						
	Very useful	45%	40%	48%	41%	40%	41%
	Somewhat useful	43%	50%	42%	43%	50%	49%
	Not very useful	10%	8%	9%	13%	8%	8%
	Not at all useful	2%	2%	1%	3%	2%	2%
	N	1,199	1,369	671	528	588	781
I2g	CPC+ Implementation Guides						
	Very useful	54%	65%	55%	53%	68%	62%
	Somewhat useful	37%	31%	38%	36%	27%	35%
	Not very useful	8%	4%	7%	10%	4%	3%
	Not at all useful	1%	0%	0%	1%	1%	0%
	N	1,240	1,376	694	546	586	790
I2h	CPC+ Practice Spotlights						
	Very useful	27%	24%	27%	25%	26%	23%
	Somewhat useful	53%	55%	55%	50%	53%	55%
	Not very useful	19%	20%	16%	22%	19%	20%
	Not at all useful	2%	1%	2%	3%	1%	2%
	N	1,157	1,317	647	510	564	753
I2i	CPC+ Support						
	Very useful	55%	63%	55%	54%	65%	62%
	Somewhat useful	37%	31%	37%	36%	31%	31%
	Not very useful	7%	4%	8%	7%	3%	4%
	Not at all useful	1%	2%	0%	3%	1%	3%
	N	1,153	1,300	645	508	554	746

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP	
Usefulness of assistance received from CPC+ payer partners							
I3	Among practices with CPC+ payer partners (based on responses to H4), percentage of practices reporting that they received each type of assistance from CPC+ payer partners in the past six months						
	On-site care manager provided by the payer	22%	18%	21%	22%	18%	17%
	Telephone-based care manager provided by the payer	29%	33%	29%	29%	39%	28%
	Explanation of payers' CPC+ payment methodologies	51%	51%	44%	60%	37%	61%
	Training on how to access data feedback provided by the payer	55%	55%	47%	64%	49%	59%
	Training on how to use data feedback provided by the payer	55%	52%	47%	64%	45%	58%
	Coaching on how to improve practice processes and workflows	49%	47%	44%	55%	44%	49%
	N	1,304	1,461	741	563	629	832
Among practices that reported receiving each type of assistance from CPC+ payer partners, rating of usefulness of assistance in improving primary care							
I3a	On-site care manager provided by the payer						
	Very useful	48%	40%	45%	52%	40%	41%
	Somewhat useful	33%	41%	35%	30%	54%	32%
	Not very useful	12%	12%	12%	12%	4%	18%
	Not at all useful	8%	7%	9%	6%	2%	10%
	N	212	211	113	99	91	120
I3b	Telephone-based care manager provided by the payer						
	Very useful	28%	30%	25%	33%	43%	17%
	Somewhat useful	44%	47%	50%	38%	44%	51%
	Not very useful	20%	16%	17%	22%	12%	21%
	Not at all useful	8%	6%	8%	7%	2%	10%
	N	285	392	155	130	197	195
I3c	Explanation of payers' CPC+ payment methodologies						
	Very useful	25%	22%	29%	22%	24%	21%
	Somewhat useful	55%	59%	55%	56%	66%	56%
	Not very useful	14%	15%	12%	16%	9%	18%
	Not at all useful	5%	4%	4%	6%	1%	5%
	N	506	616	233	273	188	428
I3d	Training on how to access data feedback provided by the payer						
	Very useful	28%	22%	29%	28%	27%	19%
	Somewhat useful	52%	66%	50%	54%	66%	65%
	Not very useful	17%	9%	19%	15%	2%	13%
	Not at all useful	3%	3%	2%	3%	4%	2%
	N	537	662	248	289	247	415
I3e	Training on how to use data feedback provided by the payer						
	Very useful	28%	23%	28%	27%	32%	19%
	Somewhat useful	54%	61%	59%	50%	59%	62%
	Not very useful	14%	11%	10%	17%	5%	15%
	Not at all useful	4%	4%	2%	5%	4%	4%
	N	537	631	248	289	226	405

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP
I3f						
Coaching on how to improve practice processes and workflows						
Very useful	29%	20%	29%	29%	16%	22%
Somewhat useful	49%	57%	57%	41%	66%	50%
Not very useful	18%	20%	11%	25%	13%	23%
Not at all useful	4%	4%	4%	5%	4%	4%
N	485	564	236	249	223	341
Data feedback on practice site's performance						
E1						
Practice site received data feedback on the performance of the practice or physicians within the practice site in the past 12 months. This data feedback may have been provided by private health insurers, Medicaid, Medicare, practice's own organization, state health agencies, or others.						
Yes	95%	98%	96%	93%	99%	97%
No	5%	2%	4%	7%	1%	3%
N	1,302	1,461	739	563	629	832
E2						
Percentage of practices that reported receiving...						
Data feedback on patient experience (from surveys)	85%	92%	91%	78%	97%	88%
Data feedback on quality of care	91%	95%	94%	88%	98%	94%
Data feedback on cost	88%	90%	91%	86%	89%	91%
Data feedback on utilization	90%	92%	92%	88%	90%	94%
N	1,304	1,461	741	563	629	832
Among practices that reported receiving each type of data feedback, practice site has changed how it delivers care in response to...						
E2a						
Data feedback on patient experience (from surveys)						
Yes, major changes	13%	15%	13%	14%	10%	19%
Yes, minor changes	77%	78%	80%	72%	84%	73%
No change	7%	5%	4%	12%	4%	5%
Don't know if changes were made	2%	2%	2%	3%	2%	3%
N	1,108	1,337	671	437	608	729
E2b						
Data feedback on quality of care						
Yes, major changes	31%	27%	33%	30%	26%	29%
Yes, minor changes	58%	66%	58%	58%	68%	64%
No change	8%	6%	7%	10%	5%	7%
Don't know if changes were made	2%	1%	2%	2%	1%	1%
N	1,192	1,394	696	496	615	779
E2c						
Data feedback on cost						
Yes, major changes	7%	14%	7%	7%	7%	18%
Yes, minor changes	58%	49%	62%	52%	51%	48%
No change	24%	20%	20%	30%	16%	22%
Don't know if changes were made	11%	17%	11%	11%	26%	11%
N	1,154	1,317	671	483	558	759

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP	
E2d	Data feedback on utilization						
	Yes, major changes	19%	23%	19%	18%	21%	25%
	Yes, minor changes	63%	61%	64%	62%	66%	58%
	No change	13%	10%	12%	15%	7%	13%
	Don't know if changes were made	5%	5%	6%	5%	6%	5%
	N	1,177	1,348	682	495	569	779
E3	Among practices that reported receiving data feedback, practice reported receiving...						
	Data feedback for this practice site as a whole (for example, % of patients with diabetes at this practice site who received an HbA1c test)	91%	96%	93%	89%	97%	95%
	Data feedback for each physician at this practice site (for example, % of Dr. Smith's patients with diabetes who received an HbA1c test)	90%	95%	92%	89%	97%	93%
	Data feedback for individual patients (for example, names of individual patients with diabetes who received an HbA1c test)	91%	94%	92%	90%	94%	94%
	N	1,304	1,461	741	563	629	832
Among practices that reported receiving each type of data feedback, practice site changed how it delivers care in response to...							
E3a	Data feedback for this practice site as a whole						
	Yes, major changes	30%	28%	29%	33%	22%	33%
	Yes, minor changes	60%	64%	61%	59%	71%	58%
	No change	7%	7%	7%	7%	6%	7%
	Don't know if changes were made	3%	1%	3%	2%	1%	2%
	N	1,189	1,401	687	502	611	790
E3b	Data feedback for each physician at this practice site						
	Yes, major changes	28%	24%	25%	32%	20%	26%
	Yes, minor changes	61%	68%	64%	58%	73%	64%
	No change	9%	7%	9%	9%	6%	8%
	Don't know if changes were made	2%	2%	3%	1%	1%	2%
	N	1,179	1,382	680	499	608	774
E3c	Data feedback for individual patients						
	Yes, major changes	27%	29%	23%	33%	25%	31%
	Yes, minor changes	60%	64%	62%	58%	69%	59%
	No change	7%	6%	7%	7%	4%	7%
	Don't know if changes were made	5%	2%	7%	2%	2%	3%
	N	1,188	1,378	684	504	594	784
CPC+ payments from Medicare FFS							
H1	Considering the amount of work required by CPC+, the adequacy of the CPC+ payments from Medicare FFS						
	More than adequate	1%	0%	1%	1%	1%	0%
	Adequate	40%	50%	40%	40%	51%	50%
	Less than adequate	47%	39%	43%	52%	37%	41%
	Don't know – not familiar with CPC+ payments from Medicare FFS or costs of doing CPC+ work	12%	10%	16%	7%	12%	8%
	N	1,290	1,444	731	559	617	827

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP	
The Performance-Based Incentive Payment (PBIP) paid prospectively by CMS at the beginning of each program year^b							
H2a	Practice understands how Medicare FFS calculates the proportion of the PBIP the practice will retain and the proportion CMS will recoup						
	Strongly agree	n.a.	n.a.	n.a.	10%	n.a.	12%
	Agree	n.a.	n.a.	n.a.	58%	n.a.	64%
	Disagree	n.a.	n.a.	n.a.	28%	n.a.	21%
	Strongly disagree	n.a.	n.a.	n.a.	4%	n.a.	3%
	N	n.a.	n.a.	n.a.	497	n.a.	700
H2b	Practice feels that Medicare FFS's methodology is fair in how it determines the proportion of the PBIP the practice will retain and the proportion CMS will recoup						
	Strongly agree	n.a.	n.a.	n.a.	4%	n.a.	4%
	Agree	n.a.	n.a.	n.a.	40%	n.a.	42%
	Disagree	n.a.	n.a.	n.a.	18%	n.a.	20%
	Strongly disagree	n.a.	n.a.	n.a.	5%	n.a.	5%
	Don't know	n.a.	n.a.	n.a.	33%	n.a.	29%
	N	n.a.	n.a.	n.a.	506	n.a.	714
The Comprehensive Primary Care Payment (CPCP) is paid quarterly as a lump sum to Track 2 practices for evaluation and management services^c							
H3a	Practice understands how Medicare FFS calculated its CPCPs						
	Strongly agree	n.a.	11%	n.a.	n.a.	11%	12%
	Agree	n.a.	65%	n.a.	n.a.	64%	65%
	Disagree	n.a.	21%	n.a.	n.a.	20%	21%
	Strongly disagree	n.a.	3%	n.a.	n.a.	5%	2%
	N	n.a.	1,381	n.a.	n.a.	585	796
H3b	Practice feels that Medicare FFS's methodology is fair in how it calculates CPCPs						
	Strongly agree	n.a.	4%	n.a.	n.a.	7%	2%
	Agree	n.a.	52%	n.a.	n.a.	58%	48%
	Disagree	n.a.	19%	n.a.	n.a.	11%	25%
	Strongly disagree	n.a.	3%	n.a.	n.a.	3%	2%
	Don't know	n.a.	22%	n.a.	n.a.	22%	23%
	N	n.a.	1,445	n.a.	n.a.	618	827
CPC+ payments from other CPC+ payer partners (not Medicare FFS)							
H4	Practice contracts with CPC+ payer partners (payers other than Medicare FFS) for CPC+						
	Yes	75%	82%	71%	80%	79%	84%
	No	25%	18%	29%	20%	21%	16%
	N	1,270	1,440	720	550	613	827

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP
H4a	Among practices that contract with CPC+ payer partners for CPC+, considering the amount of work required by CPC+, the adequacy of the CPC+ payments from CPC+ payer partners is					
More than adequate	1%	0%	0%	1%	0%	0%
Adequate	30%	33%	28%	32%	45%	24%
Less than adequate	54%	57%	53%	54%	43%	66%
Don't know - not familiar with CPC+ payments from CPC+ payer partners or costs of doing CPC+ work	16%	10%	18%	14%	12%	9%
N	954	1,189	514	440	491	698
H5a	Among practices that contract with CPC+ payer partners for CPC+, practice understands which payments practice receives from CPC+ payer partners for CPC+					
Strongly agree	13%	12%	14%	11%	12%	12%
Agree	61%	67%	53%	70%	73%	63%
Disagree	19%	17%	22%	16%	14%	20%
Strongly disagree	7%	3%	11%	2%	1%	5%
N	849	1,076	457	392	440	636
H5b	Among practices that contract with CPC+ payer partners for CPC+, practice understands how CPC+ payer partners calculated their CPC+ payments					
Strongly agree	9%	8%	13%	5%	10%	7%
Agree	52%	57%	40%	65%	57%	57%
Disagree	31%	30%	37%	24%	31%	30%
Strongly disagree	8%	4%	10%	6%	2%	6%
N	833	1,070	448	385	441	629
H5c	Among practices that contract with CPC+ payer partners for CPC+, practice feels that CPC+ payer partners' methodology to calculate CPC+ payments is fair					
Strongly agree	2%	4%	3%	1%	7%	1%
Agree	33%	35%	31%	35%	44%	28%
Disagree	20%	28%	16%	24%	15%	38%
Strongly disagree	6%	9%	6%	6%	11%	8%
Don't know	39%	24%	43%	33%	23%	25%
N	957	1,193	517	440	494	699
Staff involvement in implementing CPC+						
J1a	Medical director or clinician lead at the practice site					
Very involved	57%	68%	54%	60%	65%	71%
Somewhat involved	33%	26%	33%	33%	30%	23%
Not very involved	7%	4%	9%	5%	4%	4%
Not at all involved	3%	2%	4%	2%	2%	2%
N	1,286	1,448	729	557	624	824

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP	
J1b	Physicians						
	Very involved	39%	46%	35%	44%	34%	54%
	Somewhat involved	49%	46%	51%	46%	58%	38%
	Not very involved	10%	7%	12%	9%	7%	7%
	Not at all involved	2%	1%	2%	2%	1%	1%
	N	1,297	1,449	734	563	625	824
J1c	Nurse practitioners (NPs), clinical nurse specialists (CNSs), or physician assistants (PAs)						
	Very involved	27%	38%	26%	29%	29%	44%
	Somewhat involved	45%	42%	49%	39%	48%	38%
	Not very involved	11%	8%	12%	11%	11%	6%
	Not at all involved	17%	12%	14%	21%	11%	12%
	N	1,204	1,362	683	521	592	770
J1d	Clinical support staff						
	Very involved	42%	53%	38%	47%	45%	59%
	Somewhat involved	51%	42%	54%	48%	50%	36%
	Not very involved	6%	4%	8%	4%	4%	4%
	Not at all involved	1%	1%	0%	2%	1%	2%
	N	1,300	1,453	737	563	626	827
J1e	Clerical support staff						
	Very involved	32%	42%	30%	34%	41%	43%
	Somewhat involved	51%	43%	51%	51%	44%	41%
	Not very involved	14%	12%	16%	13%	12%	12%
	Not at all involved	3%	3%	3%	2%	3%	3%
	N	1,298	1,451	737	561	626	825
J2	System-level leadership (e.g., chief executive officer or chief medical officer)						
	Very involved	41%	60%	42%	40%	68%	54%
	Somewhat involved	23%	18%	23%	24%	15%	21%
	Not very involved	9%	5%	11%	6%	5%	4%
	Not at all involved	4%	1%	5%	3%	1%	1%
	Practice site is independent and not part of a system	23%	16%	19%	28%	11%	20%
	N	1,294	1,455	733	561	627	828
Likelihood practice would participate in CPC+ again							
J3	Given practice's overall experience in CPC+, likelihood practice would participate in CPC+ if practice could do it all over again						
	Very likely	60%	67%	62%	58%	68%	66%
	Somewhat likely	29%	27%	29%	30%	28%	27%
	Not very likely	7%	4%	7%	9%	2%	5%
	Not at all likely	3%	2%	3%	3%	1%	2%
	N	1,299	1,452	736	563	627	825

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP
J4	The extent to which participation in CPC+ improved the quality of care that the practice provides to its patients					
A lot	39%	47%	42%	37%	46%	47%
Somewhat	51%	48%	51%	50%	49%	48%
Not very much	8%	5%	6%	12%	5%	4%
Not at all	1%	0%	2%	1%	0%	1%
N	1,298	1,456	736	562	626	830
Extent to which CPC+ requirements are burdensome						
J5a	Meeting care delivery requirements					
Not at all burdensome	4%	5%	5%	3%	5%	5%
Not very burdensome	30%	26%	29%	32%	26%	26%
Somewhat burdensome	46%	51%	46%	45%	44%	57%
Very burdensome	18%	16%	17%	19%	24%	10%
Don't know	2%	2%	3%	1%	1%	2%
N	1,295	1,458	734	561	628	830
J5b	Completing care delivery reporting requirements					
Not at all burdensome	2%	5%	3%	1%	2%	7%
Not very burdensome	19%	20%	19%	19%	21%	20%
Somewhat burdensome	49%	47%	50%	49%	44%	50%
Very burdensome	28%	25%	27%	29%	31%	21%
Don't know	2%	2%	2%	1%	2%	2%
N	1,296	1,458	734	562	628	830
J5c	Completing financial reporting requirements					
Not at all burdensome	1%	2%	2%	1%	2%	2%
Not very burdensome	13%	12%	13%	12%	12%	12%
Somewhat burdensome	25%	29%	23%	27%	29%	29%
Very burdensome	48%	48%	46%	51%	48%	47%
Don't know	13%	9%	16%	9%	9%	9%
N	1,293	1,457	732	561	627	830
J5d	Meeting health IT requirements					
Not at all burdensome	8%	7%	8%	7%	8%	7%
Not very burdensome	31%	28%	29%	34%	21%	33%
Somewhat burdensome	31%	34%	33%	29%	40%	29%
Very burdensome	20%	21%	17%	23%	23%	20%
Don't know	11%	9%	14%	7%	8%	11%
N	1,295	1,456	734	561	628	828
Usefulness of CPC+ supports in improving primary care (supports from all payers)						
J6a	Financial support					
Very useful	44%	50%	40%	50%	59%	44%
Somewhat useful	30%	31%	32%	29%	25%	35%
Not very useful	10%	6%	13%	7%	5%	7%
Not at all useful	2%	1%	1%	2%	2%	1%
Don't know	13%	12%	14%	12%	9%	14%
N	1,297	1,451	736	561	622	829

Table 4.C.6. (continued)

Question ^a	Track 1 Overall	Track 2 Overall	Track 1 SSP	Track 1 Not SSP	Track 2 SSP	Track 2 Not SSP
J6b						
Learning support						
Very useful	34%	31%	35%	32%	32%	30%
Somewhat useful	51%	57%	49%	52%	57%	57%
Not very useful	7%	5%	6%	9%	5%	5%
Not at all useful	1%	1%	1%	2%	0%	2%
Don't know	7%	5%	8%	5%	5%	5%
N	1,296	1,452	736	560	622	830
J6c						
Data feedback						
Very useful	35%	36%	34%	35%	38%	34%
Somewhat useful	46%	47%	47%	46%	42%	51%
Not very useful	11%	11%	10%	11%	14%	8%
Not at all useful	2%	1%	2%	2%	0%	1%
Don't know	7%	6%	7%	6%	6%	5%
N	1,298	1,449	737	561	620	829
J6d						
Health IT vendor support						
Very useful	16%	18%	15%	17%	23%	15%
Somewhat useful	32%	37%	35%	29%	31%	41%
Not very useful	21%	22%	18%	25%	23%	21%
Not at all useful	8%	3%	5%	12%	2%	4%
Don't know	23%	20%	27%	17%	21%	19%
N	1,298	1,451	736	562	622	829

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in June through September 2018 (Wave 2).

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys.

^a All survey questions in this table were asked in the Wave 2 survey only. Question numbering is from the Wave 2 survey.

^b Practices participating in the Medicare Shared Savings Program (SSP) did not receive the Performance-Based Incentive Payment (PBIP) and therefore were not asked these questions.

^c The Comprehensive Primary Care Payment (CPCP) is a lump sum quarterly payment paid to Track 2 practices based on their historical FFS payment amounts for evaluation and management services. Track 2 practices' FFS payments for these services are reduced to account for the CPCP. Track 1 practices do not receive CPCPs and therefore were not asked these questions.

n.a. = not applicable because the survey question was not asked in that wave or to the specified group of practices; SSP = Medicare Shared Savings Program participation status in 2018.

Table 4.C.7.a. Mean CPC+ practice responses to questions about their approaches to care delivery, overall and by track, by practice characteristics (2017 Starters): CPC+-wide

Question	Track 1 Overall				Track 2 Overall				
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	
M2-PCMH-A domains (scale: 1 [least advanced approach] to 4 [most advanced approach])^a									
	Overall M2-PCMH-A Score	2.94	3.16	0.22	<0.01	3.16	3.36	0.21	<0.01
A11, B1, B3-5	Access	2.88	2.94	0.05	<0.01	3.06	3.11	0.05	<0.01
A3, B6, B8	Continuity	3.61	3.68	0.06	<0.01	3.66	3.73	0.07	<0.01
A5-6, A8-9, B10, B15, B18, B29	Care Management	2.83	3.31	0.49	<0.01	3.24	3.58	0.34	<0.01
A10, B23	Comprehensiveness	2.55	2.78	0.23	<0.01	2.77	3.03	0.26	<0.01
B14, B17, B21-22, F3	Coordination of Care Across Providers and Setting in Your Community	2.78	2.88	0.10	<0.01	2.88	2.98	0.11	<0.01
B25, B27, B30	Patient and Caregiver Engagement	3.00	3.21	0.21	<0.01	3.06	3.40	0.34	<0.01
B32-35	Planned Care for Chronic Conditions and Population Health	3.04	3.18	0.14	<0.01	3.27	3.40	0.13	<0.01
A12-13, B38, F2	Continuous Improvement Driven by Data	3.20	3.44	0.24	<0.01	3.46	3.63	0.17	<0.01
A4, B31	Teamwork	2.94	3.20	0.26	<0.01	3.17	3.42	0.24	<0.01
	N	1,304	1,304			1,461	1,461		

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2).

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys.

^a The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

Diff = difference in mean score between Wave 1 and Wave 2.

Table 4.C.7.b. Mean CPC+ practice responses to questions about their approaches to care delivery, overall and by track, by practice characteristics (2017 Starters): Practice ownership

Question	Track 1 System				Track 1 Independent				Track 2 System				Track 2 Independent				
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	
M2-PCMH-A domains (scale: 1 [least advanced approach] to 4 [most advanced approach])^a																	
A11, B1, B3-5	Overall M2-PCMH-A Score	2.97	3.20	0.22	<0.01	2.90	3.12	0.22	<0.01	3.17	3.39	0.22	<0.01	3.14	3.33	0.19	<0.01
	Access	2.83	2.91	0.08	<0.01	2.95	2.96	0.02	0.50	3.03	3.12	0.09	<0.01	3.09	3.10	0.01	0.73
A3, B6, B8	Continuity	3.61	3.68	0.06	0.01	3.62	3.68	0.06	0.01	3.67	3.73	0.06	0.01	3.65	3.74	0.09	<0.01
A5-6, A8-9, B10, B15, B18, B29	Care Management	2.76	3.30	0.55	<0.01	2.91	3.33	0.42	<0.01	3.23	3.58	0.35	<0.01	3.26	3.58	0.32	<0.01
A10, B23	Comprehensiveness	2.60	2.81	0.21	<0.01	2.50	2.75	0.26	<0.01	2.79	3.06	0.27	<0.01	2.75	2.99	0.24	<0.01
B14, B17, B21-22, F3	Coordination of Care Across Providers and Setting in Your Community	2.84	2.94	0.09	<0.01	2.71	2.81	0.10	<0.01	2.96	3.07	0.11	<0.01	2.77	2.87	0.10	<0.01
B25, B27, B30	Patient and Caregiver Engagement	3.13	3.24	0.10	0.01	2.85	3.18	0.33	<0.01	3.08	3.43	0.35	<0.01	3.04	3.37	0.33	<0.01
B32-35	Planned Care for Chronic Conditions and Population Health	3.09	3.24	0.15	<0.01	2.98	3.11	0.12	<0.01	3.29	3.45	0.16	<0.01	3.23	3.33	0.10	<0.01
A12-13, B38, F2	Continuous Improvement Driven by Data	3.26	3.48	0.22	<0.01	3.13	3.39	0.26	<0.01	3.46	3.62	0.16	<0.01	3.45	3.63	0.19	<0.01
A4, B31	Teamwork	3.04	3.33	0.28	<0.01	2.81	3.06	0.24	<0.01	3.20	3.47	0.28	<0.01	3.14	3.34	0.20	<0.01
	N	694	694			610	610			829	829			632	632		

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2).

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys. Practice ownership comes from the SK&A database, managed by IQVIA, a marketing organization that collects information directly from all health care practices in the United States. IQVIA updates this information on an ongoing basis; we pulled practice ownership information in November 2017. If the database did not report practice ownership as of November 2017, we used November 2016 information.

^a The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

Diff = difference in mean score between Wave 1 and Wave 2.

Table 4.C.7.c. Mean CPC+ practice responses to questions about their approaches to care delivery, overall and by track, by practice characteristics (2017 Starters): Practice size

Question	Track 1 Small (1-2 PCPs)				Track 1 Medium (3-5 PCPs)				Track 1 Large (6+ PCPs)				Track 2 Small (1-2 PCPs)				Track 2 Medium (3-5 PCPs)				Track 2 Large (6+ PCPs)			
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
M2-PCMH-A domains (scale: 1 [least advanced approach] to 4 [most advanced approach])^a																								
Overall M2-PCMH-A Score	2.89	3.11	0.22	<0.01	2.96	3.19	0.23	<0.01	2.99	3.20	0.21	<0.01	3.10	3.34	0.23	<0.01	3.20	3.38	0.18	<0.01	3.15	3.37	0.22	<0.01
A11, B1, B3-5 Access	2.89	2.94	0.05	0.11	2.85	2.92	0.07	0.03	2.90	2.95	0.04	0.24	3.02	3.10	0.07	0.04	3.04	3.10	0.06	0.03	3.11	3.14	0.03	0.27
A3, B6, B8 Continuity	3.65	3.70	0.05	0.07	3.61	3.69	0.09	<0.01	3.57	3.62	0.06	0.08	3.74	3.80	0.06	0.04	3.67	3.72	0.05	0.04	3.59	3.69	0.10	<0.01
A5-6, A8-9, B10, B15, B18, B29 Care Management	2.84	3.29	0.45	<0.01	2.80	3.33	0.53	<0.01	2.85	3.32	0.47	<0.01	3.15	3.54	0.38	<0.01	3.29	3.60	0.31	<0.01	3.25	3.59	0.33	<0.01
A10, B23 Comprehensiveness	2.51	2.70	0.19	<0.01	2.56	2.82	0.27	<0.01	2.61	2.86	0.25	<0.01	2.70	2.97	0.27	<0.01	2.84	3.04	0.20	<0.01	2.76	3.07	0.31	<0.01
B14, B17, B21-22, F3 Coordination of Care Across Providers and Setting in Your Community	2.76	2.83	0.08	0.03	2.76	2.88	0.13	<0.01	2.85	2.94	0.09	0.06	2.80	2.87	0.07	0.07	2.90	3.01	0.12	<0.01	2.92	3.04	0.12	<0.01
B25, B27, B30 Patient and Caregiver Engagement	2.89	3.22	0.33	<0.01	3.12	3.21	0.09	0.04	3.01	3.20	0.19	<0.01	3.05	3.48	0.43	<0.01	3.13	3.42	0.29	<0.01	2.99	3.32	0.33	<0.01
B32-35 Planned Care for Chronic Conditions and Population Health	2.95	3.10	0.14	<0.01	3.07	3.22	0.15	<0.01	3.13	3.23	0.10	0.01	3.21	3.38	0.17	<0.01	3.30	3.40	0.10	<0.01	3.27	3.41	0.14	<0.01
A12-13, B38, F2 Continuous Improvement Driven by Data	3.09	3.35	0.26	<0.01	3.26	3.48	0.22	<0.01	3.28	3.52	0.24	<0.01	3.39	3.59	0.21	<0.01	3.48	3.63	0.15	<0.01	3.49	3.66	0.17	<0.01
A4, B31 Teamwork	2.83	3.05	0.22	<0.01	2.96	3.30	0.34	<0.01	3.06	3.28	0.22	<0.01	3.10	3.36	0.25	<0.01	3.25	3.47	0.22	<0.01	3.14	3.40	0.26	<0.01
N	510	510			473	473			321	321			399	399			572	572			490	490		

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2).

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys. Practice size is determined from the number of primary care practitioners (PCPs) as of December 2017. Practices self-reported this information to CMS in roster files. If practice size was missing, we used the number of PCPs reported on the January 2017 roster files.

Table 4.C.7.c. (continued)

^a The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

Diff = difference in mean score between Wave 1 and Wave 2.

Table 4.C.7.d. Mean CPC+ practice responses to questions about their approaches to care delivery, overall and by track, by practice characteristics (2017 Starters): Geographic location

Question	Track 1 Rural				Track 1 Suburban				Track 1 Urban				Track 2 Rural				Track 2 Suburban				Track 2 Urban				
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	
M2-PCMH-A domains (scale: 1 [least advanced approach] to 4 [most advanced approach])^a																									
	Overall M2-PCMH-A Score	3.05	3.21	0.16	<0.01	2.91	3.17	0.27	<0.01	2.93	3.15	0.22	<0.01	3.07	3.31	0.24	<0.01	3.04	3.30	0.26	<0.01	3.18	3.38	0.20	<0.01
A11, B1, B3-5	Access	2.95	2.97	0.02	0.74	2.78	2.90	0.12	0.01	2.90	2.94	0.04	0.04	2.97	3.07	0.10	0.14	3.01	3.07	0.06	0.13	3.07	3.12	0.05	0.01
A3, B6, B8	Continuity	3.61	3.69	0.07	0.15	3.68	3.73	0.04	0.29	3.60	3.67	0.07	<0.01	3.68	3.77	0.10	0.12	3.61	3.67	0.06	0.22	3.67	3.74	0.07	<0.01
A5-6, A8-9, B10, B15, B18, B29	Care Management	3.02	3.40	0.37	<0.01	2.78	3.30	0.52	<0.01	2.81	3.30	0.49	<0.01	3.13	3.57	0.44	<0.01	3.07	3.53	0.46	<0.01	3.28	3.59	0.31	<0.01
A10, B23	Comprehensiveness	2.69	2.73	0.04	0.66	2.59	2.82	0.23	<0.01	2.52	2.78	0.26	<0.01	2.74	3.02	0.29	0.01	2.62	2.97	0.35	<0.01	2.80	3.04	0.24	<0.01
B14, B17, B21-22, F3	Coordination of Care Across Providers and Setting in Your Community	2.87	2.88	0.02	0.82	2.85	3.01	0.16	<0.01	2.75	2.84	0.09	<0.01	2.80	2.94	0.14	0.09	2.98	2.98	0.01	0.89	2.87	2.99	0.12	<0.01
B25, B27, B30	Patient and Caregiver Engagement	3.12	3.30	0.18	0.05	2.96	3.24	0.28	<0.01	3.00	3.20	0.20	<0.01	2.97	3.31	0.33	<0.01	2.86	3.23	0.38	<0.01	3.10	3.44	0.34	<0.01
B32-35	Planned Care for Chronic Conditions and Population Health	3.12	3.28	0.16	0.02	2.99	3.23	0.24	<0.01	3.04	3.15	0.11	<0.01	3.13	3.31	0.18	0.04	3.14	3.36	0.22	<0.01	3.30	3.41	0.11	<0.01
A12-13, B38, F2	Continuous Improvement Driven by Data	3.23	3.44	0.20	0.01	3.12	3.41	0.29	<0.01	3.21	3.44	0.23	<0.01	3.37	3.52	0.15	0.04	3.39	3.57	0.18	<0.01	3.48	3.65	0.17	<0.01
A4, B31	Teamwork	3.13	3.35	0.22	0.02	2.86	3.12	0.26	<0.01	2.93	3.20	0.27	<0.01	3.09	3.32	0.23	0.02	3.01	3.35	0.35	<0.01	3.21	3.43	0.23	<0.01
	N	124	124			223	223			957	957			116	116			176	176			1,169	1,169		

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2).

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys. Geographic location is derived from the 2015–2016 Department of Health and Human Services' Area Health Resource File (AHRF). The variable used reflects 2013 data. The AHRF provides a 9-point rural-urban continuum code (RUCC) from the USDA Economic Research Service. From these codes, we defined urban as a county in a metro area of more than 250,000 people (RUCC = 1 or 2), suburban as a county in a metro area of less than 250,000 people or that has an urban population of 20,000 or more and is adjacent to a metro area (RUCC = 3 or 4), or rural if it does not meet the urban or suburban classifications (RUCC = 5–9).

Table 4.C.7.d. (continued)

^a The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

Diff = difference in mean score between Wave 1 and Wave 2.

Table 4.C.7.e. Mean CPC+ practice responses to questions about their approaches to care delivery, overall and by track, by practice characteristics (2017 Starters): CPC Classic Participation

Question	Track 1 CPC alumni				Track 1 Not CPC alumni				Track 2 CPC alumni				Track 2 Not CPC alumni			
	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value	Wave 1 (2017)	Wave 2 (2018)	Diff	p-value
M2-PCMH-A domains (scale: 1 [least advanced approach] to 4 [most advanced approach])^a																
Overall M2-PCMH-A Score	3.21	3.25	0.04	0.55	2.92	3.16	0.23	<0.01	3.30	3.40	0.10	<0.01	3.11	3.35	0.24	<0.01
A11, B1, B3-5 Access	3.06	3.08	0.02	0.81	2.87	2.93	0.05	<0.01	3.07	3.14	0.07	0.03	3.05	3.10	0.05	0.02
A3, B6, B8 Continuity	3.73	3.74	0.01	0.85	3.61	3.67	0.07	<0.01	3.68	3.75	0.07	0.01	3.66	3.73	0.07	<0.01
A5-6, A8-9, B10, B15, B18, B29 Care Management	3.51	3.55	0.04	0.58	2.79	3.30	0.51	<0.01	3.57	3.67	0.10	<0.01	3.14	3.55	0.41	<0.01
A10, B23 Comprehensiveness	2.88	2.82	-0.06	0.64	2.53	2.78	0.25	<0.01	2.99	3.09	0.10	0.05	2.70	3.01	0.31	<0.01
B14, B17, B21-22, F3 Coordination of Care Across Providers and Setting in Your Community	2.83	2.87	0.04	0.60	2.78	2.88	0.10	<0.01	2.95	3.05	0.10	0.04	2.86	2.96	0.11	<0.01
B25, B27, B30 Patient and Caregiver Engagement	3.17	3.32	0.15	0.25	2.99	3.21	0.21	<0.01	3.26	3.41	0.16	<0.01	3.00	3.40	0.40	<0.01
B32-35 Planned Care for Chronic Conditions and Population Health	3.16	3.16	-0.01	0.95	3.03	3.18	0.15	<0.01	3.35	3.43	0.08	0.03	3.24	3.38	0.15	<0.01
A12-13, B38, F2 Continuous Improvement Driven by Data	3.46	3.53	0.07	0.40	3.18	3.43	0.25	<0.01	3.52	3.61	0.09	0.01	3.44	3.63	0.20	<0.01
A4, B31 Teamwork	3.20	3.28	0.08	0.56	2.92	3.19	0.27	<0.01	3.33	3.46	0.13	0.01	3.12	3.40	0.28	<0.01
N	70	70			1,234	1,234			352	352			1,109	1,109		

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2).

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys. We considered a practice to have participated in CPC Classic if it enrolled in CPC Classic and did not drop out within the first five months of the model.

^a The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

Diff = difference in mean score between Wave 1 and Wave 2.

Table 4.C.7.f. Mean CPC+ practice responses to questions about their approaches to care delivery, overall and by track, by practice characteristics (2017 Starters): Prior primary care transformation

Question	Track 1 Participant in CPC Classic, MAPCP, or has medical home recognition				Track 1 Not a participant in CPC Classic, MAPCP, and does not have medical home recognition				Track 2 Participant in CPC Classic, MAPCP, or has medical home recognition				Track 2 Not a participant in CPC Classic, MAPCP, and does not have medical home recognition				
	Wave 1 (2017)	Wave 2 (2018)	Diff	p- value	Wave 1 (2017)	Wave 2 (2018)	Diff	p- value	Wave 1 (2017)	Wave 2 (2018)	Diff	p- value	Wave 1 (2017)	Wave 2 (2018)	Diff	p- value	
M2-PCMH-A domains (scale: 1 [least advanced approach] to 4 [most advanced approach])^a																	
	Overall M2-PCMH-A Score	3.21	3.25	0.04	0.55	2.92	3.16	0.23	<0.01	3.30	3.40	0.10	<0.01	3.11	3.35	0.24	<0.01
A11, B1, B3-5	Access	3.06	3.08	0.02	0.81	2.87	2.93	0.05	<0.01	3.07	3.14	0.07	0.03	3.05	3.10	0.05	0.02
A3, B6, B8	Continuity	3.73	3.74	0.01	0.85	3.61	3.67	0.07	<0.01	3.68	3.75	0.07	0.01	3.66	3.73	0.07	<0.01
A5-6, A8-9, B10, B15, B18, B29	Care Management	3.51	3.55	0.04	0.58	2.79	3.30	0.51	<0.01	3.57	3.67	0.10	<0.01	3.14	3.55	0.41	<0.01
A10, B23	Comprehensiveness	2.88	2.82	-0.06	0.64	2.53	2.78	0.25	<0.01	2.99	3.09	0.10	0.05	2.70	3.01	0.31	<0.01
B14, B17, B21-22, F3	Coordination of Care Across Providers and Setting in Your Community	2.83	2.87	0.04	0.60	2.78	2.88	0.10	<0.01	2.95	3.05	0.10	0.04	2.86	2.96	0.11	<0.01
B25, B27, B30	Patient and Caregiver Engagement	3.17	3.32	0.15	0.25	2.99	3.21	0.21	<0.01	3.26	3.41	0.16	<0.01	3.00	3.40	0.40	<0.01
B32-35	Planned Care for Chronic Conditions and Population Health	3.16	3.16	-0.01	0.95	3.03	3.18	0.15	<0.01	3.35	3.43	0.08	0.03	3.24	3.38	0.15	<0.01
A12-13, B38, F2	Continuous Improvement Driven by Data	3.46	3.53	0.07	0.40	3.18	3.43	0.25	<0.01	3.52	3.61	0.09	0.01	3.44	3.63	0.20	<0.01
A4, B31	Teamwork	3.20	3.28	0.08	0.56	2.92	3.19	0.27	<0.01	3.33	3.46	0.13	0.01	3.12	3.40	0.28	<0.01
	N	70	70			1,234	1,234			352	352			1,109	1,109		

Source: CPC+ Practice Survey administered to the 2017 Starter CPC+ practices in March through September 2017 (Wave 1) and June through September 2018 (Wave 2).

Notes: The data presented in this table represent responses from the practices that began CPC+ in 2017 (2017 Starters) and responded to both waves of the survey, regardless of whether they were still participating in CPC+. We further restricted the sample to practices with complete surveys. We determined a practice to have prior transformation experience if the practice participated in CPC Classic (as described in footnote 4), CMMI's Multi-payer Advanced Primary Care Practice (MAPCP) initiative, or had medical home recognition. We considered a practice to be an MAPCP participant if it participated in any year, 2011–2014 for 2017 Starters, as determined by a file from CMS. A practice was considered to have medical home recognition if at least one of its primary care providers was listed as having recognition at some point in 2014–2017 from a state, the Accreditation Association for Ambulatory Health Care (AAAH), The Joint Commission (TJC), the National Community for Quality Assurance (NCQA), or the Utilization Review Accreditation Commission (URAC), as determined by the June 2016 (for 2017 Starters) NCQA PCMH file and data extracted from the websites of TJC, AAAHC, URAC, and state-specific sources between October 2016 and February 2017.

Table 4.C.7.f. (continued)

^a The domain scores are regression-adjusted weighted averages of practices' response to all questions in a given domain. The weights were derived from a factor analysis conducted on the responses of 2017 Starter CPC+ practices to the Wave 1 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. Similarly, the overall M2-PCMH-A scores are weighted averages of the domain scores, where the weights reflect the reliability of the domain in measuring the overall score. We used ordinary least squares regression with practice fixed effects and cluster-robust standard errors, clustering at the practice level.

Diff = difference in mean score between Wave 1 and Wave 2.

Table 4.C.8. Differences in the wording of questions and response categories between Wave 1 and Wave 2

Question number		Variable name	Wave 1 question stem	Wave 1 response categories	Wave 2 question stem	Wave 2 response categories	Wave 2 modified question stem	Wave 2 modified response category
Wave 1	Wave 2							
A2	A1	NumPractitionersFT_1:5 NumPractitionersPT_1:5	This question is about all practitioners at this practice site, regardless of specialty. How many total practitioners work full time (35 hours or more per week) and part time (fewer than 35 hours per week) at this practice site? Please include all practitioners who work at this practice site, regardless of who employs them. Please enter "0" if there are no such practitioners at this practice site.	Total Practitioners a. Physician (MD or DO), not including psychiatrist b. Physician resident or fellow (trainee) c. Nurse practitioner (NP) d. Physician assistant (PA) e. Clinical Nurse Specialist (CNS)	This question is about all practitioners at this practice site, regardless of specialty [CPC+ PRACTICES ONLY: or whether they are involved in CPC+] . ^a How many total practitioners work full time (35 hours or more per week) and part time (fewer than 35 hours per week) at this practice site? Please include all practitioners who work at this practice site, regardless of who employs them. Please enter "0" if there are no such practitioners at this practice site.	Total Practitioners a. Physician (MD or DO), not including psychiatrist b. Physician resident or fellow (trainee) c. Nurse practitioner (NP) d. Physician assistant (PA) e. Clinical nurse specialist (CNS)	Yes	No
B19	B30	PFACFeedback_1	Feedback to the practice from patient surveys or a patient and family advisory council ...	...is not collected. ...is collected but is not used to guide practice improvements. ...is collected and is occasionally used to guide practice improvements. ...is collected and is consistently used to guide practice improvements.	Feedback to the practice from a patient and family advisory council (PFAC)... A PFAC is a formal committee of patients, family, and caregivers that provides patient feedback to the practice. ^a		Yes	No
B25	B36	BehHealthPopulation_1	Behavioral health outcomes (such as improvement in depression symptoms) ...	...are not measured. ...are measured but not tracked to see changes over time. ...are measured and tracked on an individual-patient level. ...are measured and tracked on a population level for the entire practice, with regular reviews and efforts to improve care delivery and outcomes.	Behavioral health outcomes at the population level (such as % of patients at the practice with depression who have a completed PHQ-9) ... By "population-level," we mean measured as a percentage of a group of patients (for example, those with a particular health condition, or all the patients at the practice). ^a	...are not measured. ...are measured but not tracked to see changes over time. ...are measured and tracked. ...are measured and tracked, with regular reviews and efforts to improve care delivery and outcomes. ^a	Yes	Yes

Table 4.C.8. (continued)

Question number		Variable name	Wave 1 question stem	Wave 1 response categories	Wave 2 question stem	Wave 2 response categories	Wave 2 modified question stem	Wave 2 modified response category
Wave 1	Wave 2							
C1	C1	EmploysPracticeSite	Which of the following best describes the organization that employs the physicians at this practice site?	<ol style="list-style-type: none"> 1. Independent physician owned 2. Group- or staff-model HMO 3. Hospital, hospital system, or medical school 4. Health insurance company 5. Community health center or clinic 99. Other (specify) 		<ol style="list-style-type: none"> 1. Solely owned by 1 to 9 practitioners and/or non-practitioners 2. Solely owned by 10 or more practitioners and/or non-practitioners 3. Co-owned by a group of practitioners and a hospital, hospital system, or medical school 4. Hospital, hospital system, or medical school 5. HMO – group or staff model 6. Health insurance company 7. Community health center or clinic 99. Other (specify) ^a 	No	Yes
C2	C2	Multispecialty	Is this organization a multispecialty group that includes both specialists and primary care physicians?	Yes/No	Is the organization that employs physicians at this practice site ^a a multispecialty group that includes both specialists and primary care physicians? Please do not include behavioral health workers as specialists. ^a		Yes	No
C4	C3	Autonomy_1:4	<p>Please indicate how much autonomy the leaders of this practice site have in making decisions for this site in the following areas.</p> <ol style="list-style-type: none"> a. Staff hiring b. Organizational priorities (e.g., choosing a specific quality improvement goal) c. Clinical work processes (e.g., a process for rooming patients) d. Choice of specialists to whom this practice site refers (for patients whose insurance permits referrals to any specialist) 	<p>Little/no autonomy</p> <p>Some autonomy</p> <p>Moderate autonomy</p> <p>High autonomy</p>	<p>Please indicate how much autonomy this practice site has^a in making decisions for this site in the following areas.</p> <ol style="list-style-type: none"> a. Staff hiring b. Organizational priorities (e.g., choosing a specific quality improvement goal) c. Clinical work processes (e.g., a process for rooming patients) d. Choice of specialists to whom this practice site refers (for patients whose insurance permits referrals to any specialist) 		Yes	No

Table 4.C.8. (continued)

Question number		Variable name	Wave 1 question stem	Wave 1 response categories	Wave 2 question stem	Wave 2 response categories	Wave 2 modified question stem	Wave 2 modified response category
Wave 1	Wave 2							
C8	G1-G2	FFSRevenue_1	<p>During the 2016 calendar year, did any portion of this practice site's revenue come from the following sources?</p> <ul style="list-style-type: none"> a. Fee-for-service payments (payments for specific services billed to insurers)^a b. Care management fees (per-patient per-month payments to support care management for patients) c. Capitation (per-patient per-month payment for specific patients, intended to cover costs of all services provided regardless of amount or type). Do not include the care management fees described in b above d. Episode-based payments (a fixed payment for all services needed for a patient with a particular condition, such as a hip fracture) e. Financial rewards or bonuses from insurers for improving quality of care, patient experience, and/or controlling costs f. Other payments (please describe) 	Yes/No/Don't know	<p>G1. During the 2017 calendar year, what percentage of this practice site's revenue came from fee-for-service (FFS) payments? Please include FFS payments from all insurers. Your best estimate is fine.</p> <p>G2. During the 2017 calendar year, did any portion of this practice site's revenue come from the following sources?</p> <ul style="list-style-type: none"> a. Care management fees (prospective payments to support care management for patients, paid in addition to usual payments for services). b. Capitation (per-patient per-month payment for specific patients, intended to cover costs of some or^a all services provided, regardless of amount or type, in lieu of fee-for-service payments).^a Do not include the care management fees described in item a above. [T2 CPC+ PRACTICES ONLY: Please include the CPC+ Comprehensive Primary Care Payment (CPCP) here.]^a c. Episode-based payments (a fixed payment for all services needed for a patient with a particular condition, such as an upper respiratory infection or urinary tract infection). d. Shared savings, in which costs of care are compared to an expenditure target or to costs for another group of practices and a proportion of any savings are shared with practices.^a e. Financial rewards or bonuses from insurers for improving quality of care, patient experience, and/or controlling costs, not including shared savings. [NON-SSP CPC+ PRACTICES ONLY: Please include the CPC+ Performance-Based Incentive Payment (PBIP) here.]^a f. Other payments (please describe). 	<p>G1. Open response</p> <p>G2. Yes/No/Don't know</p>	Major change - question stem and response categories	<p>G1. Yes</p> <p>G2. No</p>

Table 4.C.8. (continued)

Question number		Variable name	Wave 1 question stem	Wave 1 response categories	Wave 2 question stem	Wave 2 response categories	Wave 2 modified question stem	Wave 2 modified response category
Wave 1	Wave 2							
C11	C7	ParticipateInitiatives_1:6	<p>[CPC+ practices: Other than CPC+, does]/[Comparison practices: Does] this practice site currently participate in any of the following initiatives, demonstrations, or programs?</p> <ul style="list-style-type: none"> a. Health Care Innovation Awards (sponsored by CMS) b. Accountable Care Organizations (ACOs) that are not sponsored by Medicare c. State Innovation Model (SIM) (sponsored by CMS; may have a state-specific program name) d. Medicaid Health Home e. A state- or community-based quality improvement program or collaborative (for example, Institute for Healthcare Improvement collaborative or EHR users' group) f. An insurer-sponsored program linking payment to performance or value (such as a bonus payment from an insurer for quality) 	Yes/No	<p>[CPC+ practices: Other than CPC+, does]/[Comparison practices: Does] this practice site currently participate in any of the following initiatives, demonstrations, or programs?</p> <ul style="list-style-type: none"> a. Health Care Innovation Awards (sponsored by CMS) b. Accountable Care Organizations (ACOs) that are not sponsored by Medicare c. [Name of program] (a State Innovation Model (SIM) sponsored by CMS^a) d. Medicaid Health Home e. A state- or community-based quality improvement program or collaborative (for example, Institute for Healthcare Improvement collaborative or EHR users' group) f. An insurer-sponsored program linking payment to performance or value (such as a bonus payment from an insurer for quality) 		Yes	No
C18	B5	HomeVisiting_1	Do physicians or staff at this practice site make home visits to any of your patients?	Yes/No	Home visits by primary care physicians or staff from this practice site to high-risk or homebound patients ...^a	<p>...are not regularly available. ...are available on a limited basis. ...are generally available at the patient's request. ...are generally available, and these patients are regularly asked about their preferences for office visits versus home visits.^a</p>	Yes	Yes

Table 4.C.8. (continued)

Question number		Variable name	Wave 1 question stem	Wave 1 response categories	Wave 2 question stem	Wave 2 response categories	Wave 2 modified question stem	Wave 2 modified response category
Wave 1	Wave 2							
F1	J1	StaffInvolveCPCPlus	<p>Thinking of the different types of staff at this practice site, how involved is each staff type in implementing CPC+?</p> <p>a. Clinical leadership b. Physicians c. Clinical support staff d. Administrative support staff</p>	<p>Very involved Somewhat involved Not very involved Not at all involved</p>	<p>Thinking of the different types of staff at this practice site, how involved is each type of staff in implementing CPC+?</p> <p>a. Medical director or clinician lead at this practice site^a b. Physicians c. Nurse practitioners (NPs), clinical nurse specialists (CNSs), or physician assistants (PAs)^a d. Clinical support staff e. Clerical support staff^a</p>		Yes	No

Table 4.C.8. (continued)

Question number		Variable name	Wave 1 question stem	Wave 1 response categories	Wave 2 question stem	Wave 2 response categories	Wave 2 modified question stem	Wave 2 modified response category
Wave 1	Wave 2							
G4	K4	SurveyInput_1:99	Who provided input in completing this survey?	<ol style="list-style-type: none"> 1. Practice manager 2. Lead physician 3. Other physicians 4. Nurse practitioner (NP), Clinical Nurse Specialist (CNS), or physician assistant (PA) 5. Care manager/ coordinator 6. Staff from our larger health care system or medical group 7. Quality improvement staff 8. Nursing staff 9. Medical assistant staff 10. Administrative support staff (e.g., billing staff, front desk staff) 11. Patients 99. Other (specify) 	Who filled out this survey or provided input to complete this survey? ^a	<ol style="list-style-type: none"> 1. Practice or office manager (e.g., clinic manager, office coordinator, office supervisor)^a 2. Lead physician 3. Other physicians 4. Nurse practitioner (NP), clinical nurse specialist (CNS), or physician assistant (PA) 5. Care manager or coordinator 6. Nursing staff, including nurse manager or supervisor^a 7. Medical assistant staff 8. Quality improvement staff (e.g., quality manager or coach, population health staff)^a 9. Administrative support staff (e.g., billing or finance staff, front desk staff) 10. Non-physician owner of practice 11. Leadership or staff from our larger health care system or medical group (e.g., CEO, CMO) 12. Data analytics staff (e.g., EMR analyst, health IT team) 13. CPC+ lead^a 14. Patients 99. Other (specify) 	Yes	Yes

^a Red, bolded text indicates differences in question wording between the Wave 1 and Wave 2 surveys.

2018 Comprehensive Primary Care Plus (CPC+)

First Year Follow-up Practice Survey

FINAL - April 26, 2018

Sponsored by
The Centers for Medicare & Medicaid Services
(CMS)

Citation: Mathematica Policy Research. "Evaluation of the Comprehensive Primary Care Plus (CPC+) Model 2018 Practice Survey - First Year Follow-Up." Princeton, NJ: Mathematica Policy Research, administered starting May 2018.

[INSTRUCTIONS FOR TREATMENT PRACTICES]

The 2018 Comprehensive Primary Care Plus (CPC+) Practice Survey is a critical component of the independent evaluation sponsored by the Centers for Medicare & Medicaid Services (CMS), and its completion is a condition of your participation in CPC+.

The practice manager should complete the survey. **We strongly encourage you to get input from others in your practice;** for example, you may ask others to review answers to questions and discuss the survey at a practice meeting. The survey will be most helpful to you—and most accurate—if it represents a consensus view of your practice site’s clinical and support staff, arriving at the best answers after discussion.

Please complete all questions in the survey to the best of your knowledge and that of others in the practice from whom you seek input.

- For practices that have more than one physical location/practice site that participates in CPC+, we will contact each site to complete the survey.
- If this practice has multiple locations/practice sites, please respond only about the site identified in the cover letter or email, and be as accurate as possible.

We encourage your candid responses and remind you that there is no “passing grade” for this survey. This survey was developed to understand how practices provide patient care and is different from the quarterly care delivery reporting you complete for CMS in the CPC+ Practice Portal.

Your responses to this survey will never be tied to your name or your practice in any report to CMS, other payers, or the public. Your responses will only be reported in aggregate (with all CPC+ practices combined). Your responses will not have any consequences for payment or for your participation in CPC+. We are genuinely interested in your candid observations of how your practice operates today.

For the purposes of providing learning support, both nationally and in your region, your practice’s name and answers will be shared with the CPC+ learning team who will not share this information with CMS or other payers. This information will also be shared with independent researchers to study the effects of CPC+.

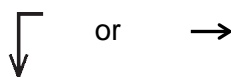
Questions? Contact CPC+ Support at CPCPlus@telligen.com or by telephone (toll free) at 1-888-372-3280.

IMPORTANT

- ✓ If this practice has multiple physical locations/practice sites, please respond only about the site identified in the cover letter or email, and be as accurate as possible.
- ✓ We use the term “physician” in this survey. If your practice has nurse practitioners, physician assistants, and/or clinical nurse specialists who also act as lead clinicians with patients, please consider them as well in your responses to questions that refer to physicians.

INSTRUCTIONS TO COMPLETE THE SURVEY

- ✓ Answer all questions to the best of your ability.
- ✓ If you answer “Other” for a question, please write what you mean on the “specify” line.
- ✓ When answering questions that require marking a check box, please use an X.
- ✓ For each item, please mark only one answer unless instructions say to “MARK ALL THAT APPLY.”
- ✓ Some check boxes are followed by a directional arrow. Please proceed to the appropriate question as indicated by the arrow.



- ✓ Follow all “GO TO” instructions after marking a box. If no such instruction is provided, you should continue to the next question.
- ✓ You may use either a pen or pencil.

A. INFORMATION ABOUT THIS PRACTICE

This section focuses on background information about this practice site.

PRACTITIONERS AT THIS PRACTICE SITE

A1. This question is about all practitioners at this practice site, regardless of specialty [CPC+ PRACTICES ONLY: or whether they are involved in CPC+]. How many total practitioners work full-time (35 hours or more per week) and part-time (fewer than 35 hours per week) at this practice site?

Please include all practitioners who work at this practice site, regardless of who employs them. Please enter "0" if there are no such practitioners at this practice site.

Total Practitioners	NUMBER FULL-TIME AT PRACTICE SITE	NUMBER PART-TIME AT PRACTICE SITE
a. Physician (MD or DO), not including psychiatrist	|_|_|_|_|	|_|_|_|_|
b. Physician resident or fellow (trainee)	|_|_|_|_|	|_|_|_|_|
c. Nurse practitioner (NP)	|_|_|_|_|	|_|_|_|_|
d. Physician assistant (PA)	|_|_|_|_|	|_|_|_|_|
e. Clinical nurse specialist (CNS)	|_|_|_|_|	|_|_|_|_|

A2. This question focuses on the primary care practitioners at this practice site. A primary care practitioner is defined as a physician (MD or DO), nurse practitioner (NP), physician assistant (PA), or clinical nurse specialist (CNS) who has a primary specialty designation of family medicine, internal medicine, or geriatric medicine, and who practices under their own National Provider ID (NPI).

How many primary care practitioners work full-time (35 hours or more per week) and part-time (fewer than 35 hours per week) at this practice site?

Please include all primary care practitioners who work at this practice site, regardless of who employs them. Please enter “0” if there are no such primary care practitioners at this practice site.

Primary Care Practitioners with Own NPI	NUMBER <u>FULL-TIME</u> AT PRACTICE SITE	NUMBER <u>PART-TIME</u> AT PRACTICE SITE
a. Physician (MD or DO)	|_|_|_|	|_|_|_|
b. Physician resident or fellow (trainee)	|_|_|_|	|_|_|_|
c. Nurse practitioner (NP)	|_|_|_|	|_|_|_|
d. Physician assistant (PA)	|_|_|_|	|_|_|_|
e. Clinical nurse specialist (CNS)	|_|_|_|	|_|_|_|

KEY APPROACHES TO PROVIDING PRIMARY CARE

General Instructions. In this section, each row pertains to a particular aspect of primary care. The four response boxes in each row represent different approaches to providing a specific aspect of primary care.

For each row, **please mark the box** that best describes the level of care that this practice site currently provides.

A3. Patients ...	...are not assigned to specific practitioner panels. <input type="checkbox"/>	...are assigned to specific practitioner panels but panel assignments are <u>not routinely used</u> by the practice for administrative or other purposes. <input type="checkbox"/>	...are assigned to specific practitioner panels and panel assignments are <u>routinely used</u> by the practice mainly for scheduling purposes. <input type="checkbox"/>	...are assigned to specific practitioner panels and panel assignments are routinely used for scheduling purposes and are <u>continuously monitored</u> to balance supply and demand. <input type="checkbox"/>
A4. Non-physician practice team members ...	...play a limited role in providing clinical care. <input type="checkbox"/>	...are primarily tasked with managing patient flow and triage. <input type="checkbox"/>	...provide <u>some</u> clinical services such as assessment or self-management support. <input type="checkbox"/>	...perform <u>key</u> clinical service roles that match their abilities and credentials. <input type="checkbox"/>
A5. Care plans for patients ...	...are not routinely developed or recorded. <input type="checkbox"/>	...are developed and recorded but reflect practitioners' priorities only. <input type="checkbox"/>	...are developed collaboratively with patients and families and include self-management and clinical goals, but they <u>are not routinely</u> recorded or used to guide subsequent care. <input type="checkbox"/>	...are developed collaboratively, include self-management and clinical management goals, <u>are routinely</u> recorded, and guide care at every subsequent point of service. <input type="checkbox"/>
A6. Sharing of care plans, in paper or electronic form, with high-risk patients ...	...is not done. <input type="checkbox"/>	...is <u>rarely</u> done. <input type="checkbox"/>	...is <u>sometimes</u> done. <input type="checkbox"/>	...is <u>usually</u> done. <input type="checkbox"/>
A7. Sharing of care plans, in electronic form, with <u>providers outside this practice site</u> who serve your high-risk patients ... <i>Providers include anyone providing health care services, such as specialists, hospitals, and home health agencies.</i>	...is not done. <input type="checkbox"/>	...is <u>rarely</u> done. <input type="checkbox"/>	...is <u>sometimes</u> done. <input type="checkbox"/>	...is <u>usually</u> done. <input type="checkbox"/>

A8. A standard method or tool(s) to stratify patients by risk level ...	...is not available. <input type="checkbox"/>	...is available but not consistently used to stratify all patients. <input type="checkbox"/>	...is available and is consistently used to stratify all patients, but is <u>inconsistently integrated</u> into all aspects of care delivery. <input type="checkbox"/>	...is available, consistently used to stratify all patients, and is <u>integrated</u> into all aspects of care delivery. <input type="checkbox"/>
A9. Follow-up by this primary care practice with patients seen in the emergency department (ED) or hospital ...	...generally does not occur. <input type="checkbox"/>	...occurs only if the ED or hospital alerts this primary care practice. <input type="checkbox"/>	...occurs because this primary care practice makes proactive efforts to identify patients <input type="checkbox"/>	...is done routinely because this primary care practice has arrangements in place with the ED and hospital to both track these patients and ensure that follow-up is completed within a few days. <input type="checkbox"/>
A10. Linking patients to supportive community-based resources ...	...is not done systematically. <input type="checkbox"/>	...is limited to <u>providing patients a list</u> of identified community resources in an accessible format. <input type="checkbox"/>	...is accomplished through a <u>designated staff person or resource</u> responsible for connecting patients with community resources. <input type="checkbox"/>	...is accomplished through <u>active coordination</u> between the health system, community service agencies, and patients, and accomplished by a designated staff person. <input type="checkbox"/>
A11. Patient after-hours access (24 hours, 7 days a week) to a physician, PA/NP, or nurse ...	...is not available or is limited to an answering machine. <input type="checkbox"/>	...is available from a coverage arrangement (e.g., answering service) that <u>does not</u> offer a standardized communication protocol back to the practice for urgent problems. <input type="checkbox"/>	...is provided by a coverage arrangement (e.g., answering service) that shares necessary patient data with and provides a summary to the practice. <input type="checkbox"/>	...is available via the patient's choice of email or phone directly with the practice team or a practitioner who has real-time access to the patient's electronic medical record. <input type="checkbox"/>
A12. Quality improvement (QI) activities ...	...are not organized or supported consistently. <input type="checkbox"/>	...are conducted on an ad hoc basis in reaction to specific problems. <input type="checkbox"/>	...are based on a proven improvement strategy in reaction to specific problems. <input type="checkbox"/>	...are based on a proven improvement strategy and used continuously in meeting organizational goals. <input type="checkbox"/>
A13. Staff, resources, and time for QI activities...	...are not readily available in this practice. <input type="checkbox"/>	...are occasionally available but are limited in scope (due to some deficiencies in staff, resources, or time). <input type="checkbox"/>	...are generally available and usually at the level needed. <input type="checkbox"/>	...are all fully available in the practice. <input type="checkbox"/>

B. CURRENT APPROACHES TO PROVIDING PRIMARY CARE

General Instructions. In this section, each row pertains to a particular aspect of primary care. The four response boxes in each row represent different approaches to providing a specific aspect of primary care.

For each row, **please mark the box** that best describes the level of care that this practice site currently provides.

ACCESS

B1. Same-day appointments for patients who need them are available at this practice site for ...	...none of this practice's patients. <input type="checkbox"/>	... <u>some</u> of this practice's patients. <input type="checkbox"/>	... <u>many</u> of this practice's patients. <input type="checkbox"/>	... <u>most or all</u> of this practice's patients. <input type="checkbox"/>
B2. [IF B1 = 2 - 4] Same-day appointments for patients who need them ... <input type="checkbox"/> Not applicable – same day appointments are not available	...are available <u>only</u> when there are openings for that day. <input type="checkbox"/>	...are generally available by squeezing patients in between scheduled appointments. <input type="checkbox"/>	...are generally available through slots reserved for same-day appointments with <u>any physician</u> at this practice site. <input type="checkbox"/>	...are generally available through slots reserved for same-day appointments with <u>the physician who treats them regularly</u> . <input type="checkbox"/>
B3. Communicating with the practice team through email, text messaging, or accessing a patient portal occurs for ...	...none of this practice's patients. <input type="checkbox"/>	... <u>some</u> of this practice's patients. <input type="checkbox"/>	... <u>many</u> of this practice's patients. <input type="checkbox"/>	... <u>most or all</u> of this practice's patients. <input type="checkbox"/>
B4. Scheduled phone or video visits with a physician ...	...are not regularly available to patients. <input type="checkbox"/>	...are available on a <u>limited</u> basis to patients. <input type="checkbox"/>	...are <u>generally available</u> at a patient's request. <input type="checkbox"/>	...are generally available, and <u>patients are regularly asked about their preferences</u> for in-person versus phone/video visits. <input type="checkbox"/>
B5. Home visits by primary care physicians or staff from this practice site to high-risk or homebound patients ...	...are not regularly available. <input type="checkbox"/>	...are available on a <u>limited</u> basis. <input type="checkbox"/>	...are <u>generally available</u> at the patient's request. <input type="checkbox"/>	...are generally available, and these <u>patients are regularly asked about their preferences</u> for office visits versus home visits. <input type="checkbox"/>

CONTINUITY

<p>B6. Patients ...</p>	<p>...do not have a specific physician that they see at this practice.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...have a specific physician, and the patient is <u>sometimes</u> scheduled with that physician.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...have a specific physician, and the patient is <u>frequently</u> scheduled with that physician.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...have a specific physician, and the patient is <u>almost always</u> scheduled with that physician.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B7. [IF B6 = 2-4] Patients have a specific physician, but for <u>acute care</u>, they see that physician ...</p> <p><input type="checkbox"/> Not applicable - patients do not have a specific physician</p>	<p>...never or rarely.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>sometimes</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>frequently</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>usually or always</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B8. When patients contact the practice with clinical questions or concerns (e.g., a new problem or questions about their treatment) between scheduled encounters ...</p>	<p>...they do not have a specific physician that they see at the practice, so any member of the practice responds.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...their specific physician or practice care team that has primarily worked with the patient <u>sometimes</u> responds.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...their specific physician or practice care team that has primarily worked with the patient <u>frequently</u> responds.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...their specific physician or practice care team that has primarily worked with the patient <u>almost always</u> responds.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B9. Visits by primary care physicians or staff from this practice site <u>to patients in the hospital</u> occur for ...</p>	<p>...none of this practice's hospitalized patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>some</u> of this practice's hospitalized patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>many</u> of this practice's hospitalized patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>most or all</u> of this practice's hospitalized patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>

CARE MANAGEMENT

Care management is a set of activities designed to assist patients and their caregivers in managing medical conditions and related psychosocial problems. Care management activities include providing support and education to high-risk patients to monitor and manage their chronic condition(s), working with patients during primary care visits and between visits (e.g., by phone), and monitoring transitions in care such as after a hospitalization.

<p>B10. Care management services for high-risk patients ...</p>	<p>...are not provided at this practice.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are provided by care managers from an <u>outside organization</u> (e.g., a health insurance plan).</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are provided by a care manager <u>within this practice's organization</u> who is not physically located at this practice site.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are provided by a care manager <u>located at this practice site</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B11. [IF B10 = 2-4] Care managers engage in meetings, huddles, or conversations with the physicians at this practice site about the high-risk patients they manage ...</p> <p><input type="checkbox"/> Not applicable – care management services for high-risk patients are not provided</p>	<p>...never or rarely.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...a few times a month.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...weekly.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...daily.</p> <p style="text-align: center;"><input type="checkbox"/></p>

<p>B12. Comprehensive medication management (CMM) assesses the patient's medications to determine that each medication is appropriate for the patient, effective for the medical condition, safe (given comorbidities and other medications taken), and able to be taken by the patient as intended. CMM includes action plans, individualized therapy goals, and planned follow-up with the patient.</p> <p>CMM is intended for high-risk patients who are at risk of medication therapy problems, such as non-compliance or side effects. This practice site conducts CMM for ...</p>	<p>...none of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>some</u> of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>many</u> of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>most or all</u> of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B13. Comprehensive medication management services by a pharmacist ...</p>	<p>...are not provided.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are provided by a pharmacist who works largely independently of the care team at this practice site.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are provided by a pharmacist <u>who works closely with the care team at this practice site</u>, but is not routinely located at the practice site.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are provided by a pharmacist who works closely <u>and</u> is co-located with the care team at this practice site.</p> <p style="text-align: center;"><input type="checkbox"/></p>

COORDINATION OF CARE ACROSS PROVIDERS AND SETTINGS IN YOUR COMMUNITY

Please answer the questions in this section based on the providers that serve most of your patients.

<p>B14. Receipt of clinical information (e.g., a discharge summary) from an <u>emergency department</u> (ED) about this practice's patients who had an <u>ED visit</u> ...</p>	<p>...does not occur consistently.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...usually occurs <u>more than 3 days</u> after the visit.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...usually occurs <u>1-3 days</u> after the visit.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...usually occurs <u>within a day</u> of the visit.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B15. Outreach by this practice site to patients within <u>one week of an ED visit</u> occurs for ...</p>	<p>...none of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>some</u> of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>many</u> of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>most or all</u> of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B16. With patients who have had recent ED visits, talking to them about the best ways to <u>avoid future ED visits</u> is done for...</p>	<p>...none of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>some</u> of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>many</u> of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>most or all</u> of these patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B17. Receipt of clinical information (e.g., a discharge summary) from <u>hospitals</u> about this practice's patients who had a <u>hospital visit</u> ...</p>	<p>...does not occur consistently.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...usually occurs <u>more than 3 days</u> after discharge.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...usually occurs <u>1-3 days</u> after discharge.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...usually occurs <u>within a day</u> of discharge.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B18. Outreach by this practice site to patients within <u>3 days of hospital discharge</u> occurs for ...</p>	<p>...none of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>some</u> of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>many</u> of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>most or all</u> of this practice's patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>

B19. Discussing recommended medication, diet, or activity plans with patients who have had recent hospital stays is done for ...	...none of these patients. <input type="checkbox"/>	... <u>some</u> of these patients. <input type="checkbox"/>	... <u>many</u> of these patients. <input type="checkbox"/>	... <u>most or all</u> of these patients. <input type="checkbox"/>
B20. With patients who have had recent hospital stays, talking to them about the best ways to avoid future hospitalizations is done for ...	...none of these patients. <input type="checkbox"/>	... <u>some</u> of these patients. <input type="checkbox"/>	... <u>many</u> of these patients. <input type="checkbox"/>	... <u>most or all</u> of these patients. <input type="checkbox"/>
B21. Timely receipt of information (e.g., consultation reports, diagnoses, new medications) about your patients after they visit specialists occurs for...	...none of this practice's patients. <input type="checkbox"/>	... <u>some</u> of this practice's patients. <input type="checkbox"/>	... <u>many</u> of this practice's patients. <input type="checkbox"/>	... <u>most or all</u> of this practice's patients. <input type="checkbox"/>
B22. Practices may or may not have agreements with specialists they refer patients to. A formal, written agreement with a specialist describes expectations for timely patient visits, the frequency and type of information communicated between the primary care practice and specialist, and their respective roles. This practice site has formal, written agreements with ...	...no medical or surgical specialist groups. <input type="checkbox"/>	... <u>some</u> medical and surgical specialist groups. <input type="checkbox"/>	... <u>many</u> medical and surgical specialist groups. <input type="checkbox"/>	... <u>most or all</u> medical and surgical specialist groups. <input type="checkbox"/>
B23. This practice site assesses the social and functional support needs (e.g., transportation, home equipment) for ...	...none of this practice's patients. <input type="checkbox"/>	... <u>some</u> of this practice's patients. <input type="checkbox"/>	... <u>many</u> of this practice's patients. <input type="checkbox"/>	... <u>most or all</u> of this practice's patients. <input type="checkbox"/>
B24. Care managers with behavioral health training screen for and monitor mental health conditions, and provide education and self-management support for...	... <u>none</u> of this practice's patients with mental health needs. <input type="checkbox"/>	... <u>some</u> of this practice's patients with mental health needs <input type="checkbox"/>	... <u>many</u> of this practice's patients with mental health needs. <input type="checkbox"/>	... <u>most or all</u> of this practice's patients with mental health needs. <input type="checkbox"/>

PATIENT AND CAREGIVER ENGAGEMENT

<p>B25. Patient comprehension of verbal communications ...</p>	<p>...is not assessed.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is assessed but not addressed.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is assessed and addressed by staff who are <u>not</u> trained in communicating with patients with different abilities to understand health information needed to make appropriate health decisions.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is assessed and addressed by staff <u>trained</u> in communicating with patients with different abilities to understand health information needed to make appropriate health decisions.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B26. After giving medical information to a patient (or caregiver), physicians and care team members may ask the patient to explain back the information to ensure the patient understands. At this practice site, this ...</p>	<p>...is never or rarely done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>sometimes</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>frequently</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>usually or always</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B27. Assessing patient and family values and preferences ...</p>	<p>...is not done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done but not used in planning and organizing care.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done and <u>sometimes</u> incorporated in planning and organizing care.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done and <u>consistently</u> incorporated in planning and organizing care.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B28. This practice site discusses advance care planning (e.g., for end-of-life care and advanced directives for when patients might become too sick to make their own decisions) with ...</p>	<p>...none of this practice's high-risk patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>some</u> of this practice's high-risk patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>many or all</u> of this practice's high-risk patients.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...<u>many or all</u> of this practice's high-risk patients, and patient preferences for end-of-life care are documented and accessible to the care team.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B29. Self-management support is help for patients to better manage their health on a day-to-day basis.</p> <p>At this practice site, self-management support for most patients who have chronic conditions ...</p>	<p>...is limited to either (1) the distribution of information (e.g., pamphlets, booklets) with no or little discussion or (2) referral to self-management classes or educators.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is provided by practice staff but they do <u>not</u> set specific goals with patients (e.g., they just offer patient education).</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is provided by practice staff <u>who set specific goals</u> with patients but are not trained in assessing how ready patients are to change their health behavior and how to motivate patient behavior change.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is provided by practice staff who set specific goals with patients and are <u>trained</u> in assessing how ready patients are to change their health behavior and how to motivate patient behavior change.</p> <p style="text-align: center;"><input type="checkbox"/></p>

B30. Feedback to the practice from a patient and family advisory council (PFAC)...

A PFAC is a formal committee of patients, family, and caregivers that provides patient feedback to the practice.

...is not collected.

...is collected but is not used to guide practice improvements.

...is collected and is occasionally used to guide practice improvements.

...is collected and is consistently used to guide practice improvements.

PLANNED CARE FOR CHRONIC CONDITIONS AND POPULATION HEALTH

<p>B31. Care team huddles are brief meetings among physicians and staff such as nurses and medical assistants. They are typically held before morning or afternoon patient visits, to discuss patient-specific issues and keep the core clinical team informed.</p> <p>At this practice site, care team huddles ...</p>	<p>...do not occur.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...occur <u>some</u> days.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...occur <u>most</u> days.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...occur <u>every</u> day.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B32. A registry is a data system that identifies and tracks patients with specific health conditions, risk states, or medications.</p> <p>At this practice site, registry data to assess or manage care for groups of patients ...</p>	<p>...are not available.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are available for <u>1–2</u> diseases and/or risk states.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are available for <u>3–5</u> diseases and/or risk states.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are available for <u>6 or more</u> diseases and/or risk states.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B33. Pre-visit planning (gathering and organizing patient information to prepare for the visit) <u>prior to the day of the visit</u> ...</p>	<p>...is not done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done but primarily focuses on reviewing test results and consultation reports from specialist referrals.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done and includes (1) reviewing test results and consultation reports from specialist referrals, and (2) <u>identifying gaps in health care (e.g., a needed flu shot or cancer screenings)</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done and includes (1) reviewing test results and consultation reports from specialists, (2) identifying gaps in health care, and (3) <u>conducting outreach before the visit</u>, to ask the patient to obtain needed tests prior to the visit.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B34. Comprehensive, evidence-based guidelines on preventive care and treatment of chronic illnesses ...</p>	<p>...are not made available to physicians.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are <u>made available</u> to physicians but do not inform general protocols or practices to treat a health condition (e.g., asthma).</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are made available to physicians and <u>inform general protocols or practices</u> to treat a health condition.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are made available to physicians, and inform general protocols or practices to treat a health condition and <u>specific treatment of individual patients</u> at the time of encounter.</p> <p style="text-align: center;"><input type="checkbox"/></p>

<p>B35. Notifying patients of their laboratory and radiology test results ...</p>	<p>...is not generally done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done for <u>abnormal results only</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is done for abnormal results and <u>sporadically</u> for normal results.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>consistently</u> done for abnormal and normal results.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B36. Behavioral health outcomes <u>at the population level</u> (such as % of patients at the practice <u>with depression</u> who have a completed PHQ-9) ...</p> <p><i>By "population-level", we mean measured as a percentage of a group of patients (for example, those with a particular health condition, or all the patients at the practice).</i></p>	<p>...are not measured.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are measured but <u>not tracked</u> to see changes over time.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are measured and tracked.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are measured and tracked, with regular reviews and efforts to improve care delivery and outcomes.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B37. Clinical quality of care metrics <u>at the population level</u> for patients with chronic conditions (such as % of patients at the practice with diabetes meeting A1c goals) ...</p>	<p>...are not measured.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are measured but <u>not tracked</u> to see changes over time.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are measured and tracked.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...are measured and tracked, with regular reviews and efforts to improve care delivery and outcomes.</p> <p style="text-align: center;"><input type="checkbox"/></p>

CONTINUOUS IMPROVEMENT DRIVEN BY DATA

<p>B38. Use of performance measures by this practice site to guide quality improvement (QI) ...</p>	<p>...is not done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>rarely</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>sometimes</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>usually</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B39. Use of patient experience measures (from surveys) by this practice site to guide quality improvement ...</p>	<p>...is not done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>rarely</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>done on an ad hoc basis</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>done routinely</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B40. Use of quality of care measures by this practice site to guide quality improvement ...</p> <p><i>An example is the % of patients with diabetes at the practice who received an HbA1c test.</i></p>	<p>...is not done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>rarely</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>done on an ad hoc basis</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>done routinely</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>
<p>B41. Use of cost or utilization measures by this practice site to guide quality improvement ...</p> <p><i>Examples are average cost of care for all of your patients across all providers, average cost of hospitalizations, or average number of ED visits.</i></p>	<p>...is not done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>rarely</u> done.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>done on an ad hoc basis</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>	<p>...is <u>done routinely</u>.</p> <p style="text-align: center;"><input type="checkbox"/></p>

SCREENING FOR MENTAL HEALTH CONDITIONS

B42. When does this practice site use a formal screening tool to assess patients for each of the following conditions?

	Never, we do not screen <u>with a formal tool</u>	We screen only as needed, <u>with a formal tool</u>	We screen at least annually (such as at annual well visits/physicals) and more if needed, <u>with a formal tool</u>
a. Depression (such as PHQ-2 or PHQ-9)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
b. Anxiety (such as GAD-7)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
c. Dementia (such as the Mini Mental Status Examination or Mini Cog)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
d. Substance use (such as AUDIT-C or DAST)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
e. Adult attention-deficit/hyperactivity disorder (such as Adult ADHD self-report tool)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

C. PRACTICE SITE'S CHARACTERISTICS

PRACTICE OWNERSHIP AND AFFILIATIONS

C1. Which of the following best describes the organization that employs the physicians at this practice site?

MARK ONE ONLY

- 1 Solely owned by 1 to 9 practitioners and/or non-practitioners
 - 2 Solely owned by 10 or more practitioners and/or non-practitioners
 - 3 Co-owned by a group of practitioners and a hospital, hospital system, or medical school
 - 4 Hospital, hospital system, or medical school
 - 5 HMO – group or staff model
 - 6 Health insurance company
 - 7 Community health center or clinic
 - 99 Other (*specify*)
-

C2. Is the organization that employs physicians at this practice site a multispecialty group that includes both specialists and primary care physicians? Please do not include behavioral health workers as specialists.

- 1 Yes
- 0 No

C3. Please indicate how much autonomy this practice site has in making decisions for this site in the following areas.

MARK ONE RESPONSE PER ROW

	LITTLE/NO AUTONOMY	SOME AUTONOMY	MODERATE AUTONOMY	HIGH AUTONOMY
a. Staff hiring	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
b. Organizational priorities (e.g., choosing a specific quality improvement goal)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
c. Clinical work processes (e.g., a process for rooming patients)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
d. Choice of specialists to whom this practice site refers (for patients whose insurance permits referrals to any specialist)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

THIS PRACTICE SITE'S PATIENTS

C4. Among this practice site's patients seen during the past 12 months, what percentage of patients were in the following two categories? Your best estimate is fine.

Please enter "0" if there are no such patients at this practice site.

a. Insured through Medicaid, including Medicaid managed care

PERCENTAGE OF PATIENTS

_ _ _ _ %

b. Uninsured or self-pay patients

_ _ _ _ %

C5. During the past two years, approximately how many patients has this practice site dismissed? By dismissing patients, we mean directing patients to leave this practice site and seek primary care elsewhere. Your best estimate is fine.

MARK ONE ONLY

- 0 No patients dismissed → GO TO C7
- 1 1–5 patients
- 2 6–10 patients
- 3 11–20 patients
- 4 21–50 patients
- 5 51–99 patients
- 6 More than 99 patients

C6. Please indicate the reasons this practice site has dismissed patients from this practice site during the past two years.

MARK ALL THAT APPLY

- 1 Patient repeatedly missed appointments
- 2 Patient repeatedly violated bill payment policies
- 3 Patient violated chronic pain/controlled substance policies
- 4 Patient was extremely disruptive and/or behaved inappropriately toward physicians or staff
- 5 Patient repeatedly did not follow health care recommendations (such as medication regimens or getting lab tests done)
- 6 Patient repeatedly did not follow recommended lifestyle changes (such as diet, exercise, or smoking cessation)
- 7 Patient made frequent visits to the ED and/or frequently self-referred to specialists
- 99 Other (*specify*) _____

PARTICIPATION IN INITIATIVES

C7. [CPC+ practices: Other than CPC+, does]/[Comparison practices: Does] this practice site currently participate in any of the following initiatives, demonstrations, or programs?

MARK ONE RESPONSE PER ROW

	YES	NO
a. Health Care Innovation Awards (sponsored by CMS)	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Accountable Care Organizations (ACOs) that are <u>not</u> sponsored by Medicare	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. [Name of program] (a State Innovation Model (SIM) sponsored by CMS)	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. Medicaid Health Home	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. A state- or community-based quality improvement program or collaborative (for example, Institute for Healthcare Improvement collaborative or EHR users' group)	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. An insurer-sponsored program linking payment to performance or value (such as a bonus payment from an insurer for quality)	1 <input type="checkbox"/>	0 <input type="checkbox"/>

PRACTICE STAFF AND ROLES

C8. How many of the following staff work full-time (35 hours or more per week) and part-time (fewer than 35 hours per week) in primary care at this practice site?

Please include all staff who work at this practice site, regardless of who employs them. Please enter "0" if there are no such staff at this practice site.

	NUMBER FULL-TIME AT PRACTICE SITE	NUMBER PART-TIME AT PRACTICE SITE
a. Registered nurse (RN)	|_|_|_|_|	|_|_|_|_|
b. Licensed practical nurse (LPN) or licensed vocational nurse (LVN)	|_|_|_|_|	|_|_|_|_|
c. Medical assistant (MA)	|_|_|_|_|	|_|_|_|_|

C9. Does this practice site have individuals working full-time or part-time in any of the following job roles? Please include all staff who work at this practice site, regardless of who employs them.

MARK ONE RESPONSE PER ROW

	YES	NO
a. Clinical psychologist, psychiatrist, or clinical social worker (behavioral health specialists)	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Referral coordinator or referral specialist (someone who obtains prior authorizations, helps patients obtain appointments with specialists, and/or tracks referrals to specialists)	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. Quality improvement (QI) specialist	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. Health educator, dietitian, or nutritionist	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Clinical pharmacist or doctor of pharmacy	1 <input type="checkbox"/>	0 <input type="checkbox"/>

C10. This question is about care managers/care coordinators who work as part of a practice's care team, regardless of who employs them or where they are located. A care manager/care coordinator works with high-risk patients between and during visits to provide ongoing support and education on chronic care management, and coordinates care from other providers. A care team consists of staff who regularly work together to provide patient care.

How many full-time and part-time care manager(s) and care coordinator(s) work as part of a care team at this practice site to address the needs of its patients? Please include all staff who work at this practice site, regardless of who employs them. Please enter "0" if no care managers or care coordinators work as part of a care team at this practice site.

	NUMBER OF STAFF
a. Full-time care managers and care coordinators	|_|_|_|_|
b. Part-time care managers and care coordinators	|_|_|_|_|

C11. What is the clinical background of the care managers or care coordinators at this practice site?

MARK ALL THAT APPLY

- 1 Registered nurse (RN)
- 2 Licensed practice nurse (LPN) or licensed vocational nurse (LVN)
- 3 Medical assistant (MA)
- 4 Social worker
- 5 Other clinical background
- 6 No clinical background
- 7 No care manager or care coordinator at this practice site

C11a. Do any care managers and/or care coordinators at this practice site have behavioral health training (such as screening for and monitoring of mental health conditions, and providing education and self-management support)?

- 1 Yes
- 0 No

D. DATA FEEDBACK ON COST OF CARE TO INSURERS

D1a. Does this practice site get data on what insurers pay for diagnostic or lab services? These data may be provided by insurers or other organizations.

Please consider the costs to the insurer, not the cost to the patient.

MARK ONE ONLY

- 1 Yes, we get data on what all insurers pay
- 2 Yes, we get data on what some insurers pay
- 0 No, we do not get data on what any insurers pay → **Skip to D2a**

D1b. How often does this practice site use these data on what insurers pay for diagnostic or lab services to inform where to refer patients for diagnostic or lab services?

MARK ONE ONLY

- 1 Never or rarely
- 2 Sometimes
- 3 Frequently
- 4 Usually or always

D2a. Does this practice site get data on what insurers pay for specialist services? These data may be provided by insurers or other organizations.

Please consider the costs to the insurer, not the cost to the patient.

MARK ONE ONLY

- 1 Yes, we get data on what all insurers pay
- 2 Yes, we get data on what some insurers pay
- 0 No, we do not get data on what any insurers pay → **Skip to Section E**

D2b. How often does this practice site use these data on what insurers pay for specialist services to inform where to refer patients for specialist services?

MARK ONE ONLY

- 1 Never or rarely
- 2 Sometimes
- 3 Frequently
- 4 Usually or always

E. DATA FEEDBACK ON PRACTICE SITE'S PERFORMANCE

Practices may receive data feedback on the performance of the practice, including feedback on patient experience, quality, cost, or utilization. This data feedback may be provided by private health insurers, Medicaid, Medicare, your own organization, state health agencies, or others.

E1. In the past 12 months, has this practice site received any data feedback on the performance of the practice or physicians within the practice site?

- 1 Yes
 0 No → GO TO SECTION F

E2. For each type of data feedback that this practice site may have received in the past 12 months, please indicate if this practice site has changed how it delivers care in response to this feedback.

MARK ONE RESPONSE PER ROW

	DID PRACTICE SITE CHANGE HOW IT DELIVERS CARE IN RESPONSE TO DATA FEEDBACK?				
	DID NOT RECEIVE THIS TYPE OF DATA FEEDBACK	YES, MAJOR CHANGES	YES, MINOR CHANGES	NO CHANGE	DON'T KNOW IF CHANGES WERE MADE
a. Patient experience (from surveys)	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>
b. Quality of care	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>
c. Cost	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>
d. Utilization	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>

E3. Practices may receive data feedback for this practice site as a whole, for individual physicians, or for individual patients. For each type of data feedback this practice site may have received in the past 12 months, please indicate if this practice site has changed how it delivers care in response to this feedback.

MARK ONE RESPONSE PER ROW

	DID PRACTICE SITE CHANGE HOW IT DELIVERS CARE IN RESPONSE TO DATA FEEDBACK?				
	DID NOT RECEIVE THIS TYPE OF DATA FEEDBACK	YES, MAJOR CHANGES	YES, MINOR CHANGES	NO CHANGE	DON'T KNOW IF CHANGES WERE MADE
a. Data feedback for this practice site as a whole (for example, <u>% of patients with diabetes at this practice site who received an HbA1c test</u>)	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>
b. Data feedback for each physician at this practice site (for example, <u>% of Dr. Smith's patients with diabetes who received an HbA1c test</u>)	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>
c. Data feedback for individual patients (for example, <u>names of individual patients with diabetes who received an HbA1c test</u>)	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>

F. HEALTH INFORMATION TECHNOLOGY

F1. Does this practice site use an Electronic Health Record (EHR) system?

- 1 Yes
 0 No → **GO TO F4**

F2. Does this practice site use data extracts or reports generated from the EHR to guide quality improvement (QI) efforts?

- 1 Yes
 0 No
 d Don't know

F3. For each of the following types of providers, please think of the specific providers where most of your patients obtain care. With how many of these providers does this practice site electronically send and receive patient clinical data?

MARK ONE RESPONSE PER ROW

	ELECTRONICALLY SENDS AND RECEIVES PATIENT CLINICAL DATA WITH...				
	NONE	SOME	MOST	ALL	DON'T KNOW
a. Hospitals	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>
b. Specialist practices	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>
c. Diagnostic service facilities (lab or imaging)	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	d <input type="checkbox"/>

F4. Does this practice site currently participate in a state or regional health information exchange?

- 1 Yes
 0 No
 d Don't know

G. PRACTICE SITE REVENUES

G1. During the 2017 calendar year, what percentage of this practice site's revenue came from fee-for-service (FFS) payments? Please include FFS payments from all insurers.

Your best estimate is fine.

|_|_|_|% PERCENTAGE OF 2017 PRACTICE REVENUE FROM FEE-FOR-SERVICE

G2. During the 2017 calendar year, did any portion of this practice site's revenue come from the following sources?

MARK ONE RESPONSE PER ROW

	YES	NO	DON'T KNOW
a. <u>Care management fees</u> (prospective payments to support care management for patients, paid in addition to usual payments for services)	1 <input type="checkbox"/>	0 <input type="checkbox"/>	d <input type="checkbox"/>
b. <u>Capitation</u> (per-patient per-month payment for specific patients, intended to cover costs of some or <u>all</u> services provided, regardless of amount or type, in lieu of fee-for-service payments). Do <u>not</u> include the care management fees described in <u>item a.</u> above. [T2 CPC+ PRACTICES ONLY: Please include the CPC+ Comprehensive Primary Care Payment (CPCP) here.]	1 <input type="checkbox"/>	0 <input type="checkbox"/>	d <input type="checkbox"/>
c. <u>Episode-based payments</u> (a fixed payment for all services needed for a patient with a particular condition, such as an upper respiratory infection or urinary tract infection)	1 <input type="checkbox"/>	0 <input type="checkbox"/>	d <input type="checkbox"/>
d. <u>Shared savings</u> , in which costs of care are compared to an expenditure target or to costs for another group of practices and a proportion of any savings are shared with practices.	1 <input type="checkbox"/>	0 <input type="checkbox"/>	d <input type="checkbox"/>
e. <u>Financial rewards or bonuses from insurers</u> for improving quality of care, patient experience, and/or controlling costs, <u>not including</u> shared savings. [T NON-SSP CPC+ PRACTICES ONLY: Please include the CPC+ Performance-Based Incentive Payment (PBIP) here.]	1 <input type="checkbox"/>	0 <input type="checkbox"/>	d <input type="checkbox"/>
f. Other payments (<i>please describe</i>) _____	1 <input type="checkbox"/>	0 <input type="checkbox"/>	d <input type="checkbox"/>

G3. During the 2017 calendar year, what portion of this practice site's revenue was tied to cost or quality performance?

Insurers may refer to payments tied to cost or quality performance as "performance bonuses," "merit based incentive payments," "shared savings or shared losses," or "payment withholds."

[T NON-SSP CPC+ PRACTICES ONLY: Please consider CMS's Performance-Based Incentive Payments (PBIPs) as revenue that is tied to cost or quality performance.]

Your best estimate is fine.

|_|_|_|% PERCENTAGE OF 2017 PRACTICE REVENUE TIED TO COST OR QUALITY PERFORMANCE

H. CPC+ PAYMENTS

These questions are about this practice site’s CPC+ payments from Medicare FFS and CPC+ payer partners. Please note that we will NOT share practice-identifiable responses to this section (or any of your other responses to this survey) with CMS or CPC+ payer partners. [Sections H, I, and J are only for CPC+ practices]

H1. [FOR T SSP PRACTICES in TRACK 1: This question]/[FOR T SSP PRACTICES IN TRACK 2 OR T NON-SSP PRACTICES: The first set of questions] is about CPC+ payments from Medicare fee-for-service (FFS).

Overall, considering the amount of work required by CPC+, how adequate or inadequate are the CPC+ payments from Medicare FFS?

- 1 More than adequate
- 2 Adequate
- 3 Less than adequate
- 4 Don’t know– not familiar with CPC+ payments from Medicare FFS or costs of doing CPC+ work

H2. [FOR T NON-SSP PRACTICES ONLY]: The Performance-Based Incentive Payment (PBIP) is paid by CMS prospectively at the beginning of each program year. After each program year ends, CMS retrospectively reconciles the amount of PBIP that a practice earned based on how well the practice performed on patient experience of care measures, clinical quality measures, and utilization measures that drive total cost of care.

Thinking about this practice’s experience with the PBIP payments from Medicare FFS for CPC+, please indicate how much you agree or disagree with the following statements.

MARK ONE RESPONSE PER ROW

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW
a. Our practice understands how Medicare FFS calculates the proportion of the Performance-Based Incentive Payment (PBIP) my practice will retain and the proportion CMS will recoup	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	
b. Our practice feels that Medicare FFS’s methodology <u>is fair</u> in how it determines the proportion of the Performance-Based Incentive Payment (PBIP) my practice will retain and the proportion CMS will recoup	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>

H3. [FOR TRACK 2 CPC+ PRACTICES ONLY]: The Comprehensive Primary Care Payment (CPCP) is a lump sum quarterly payment paid to Track 2 practices based on their historical FFS payment amounts for evaluation and management (E&M) services. Track 2 practices' FFS payments for these services are reduced to account for the CPCP.

Thinking about this practice's experience with the CPCP payments from Medicare FFS for CPC+, please indicate how much you agree or disagree with the following statements.

MARK ONE RESPONSE PER ROW

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW
a. Our practice <u>understands</u> how Medicare FFS calculated its Comprehensive Primary Care Payments (CPCPs)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	<input type="checkbox"/>
b. Our practice feels that Medicare FFS' methodology <u>is fair</u> in how it calculates Comprehensive Primary Care Payments (CPCPs)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>

H4. CPC+ payer partners are payers other than Medicare FFS that participate in CPC+. The next set of questions is about CPC+ payments from CPC+ payer partners. These payers include private health insurers, Medicare Advantage, Medicaid FFS, and Medicaid Managed Care.

Does this practice contract with CPC+ payer partners for CPC+?

1 Yes

0 No → **GO TO SECTION I**

H4a. Overall, considering the amount of work required by CPC+, how adequate or inadequate are the CPC+ payments across the CPC+ payer partners you work with on CPC+?

CPC+ payments from these payers could include care management fees; full or partial capitated, global, or bundled payments; or payments that reward cost or quality performance.

1 More than adequate

2 Adequate

3 Less than adequate

d Don't know– not familiar with CPC+ payments from CPC+ payer partners or costs of doing CPC+ work

H5. Thinking across all of the CPC+ payer partners you work with on CPC+, please indicate how much you agree or disagree with the following statements about this practice's experience with CPC+ payments from these CPC+ payer partners.

MARK ONE RESPONSE PER ROW

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW
a. Our practice <u>understands which payments</u> we receive from CPC+ payer partners for CPC+	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	
b. Our practice <u>understands how</u> CPC+ payer partners calculated their CPC+ payments	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	
c. Our practice feels that the CPC+ payer partners' methodology to calculate CPC+ payments is <u>fair</u>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	

I. LEARNING ACTIVITIES AND ASSISTANCE IN CPC+

These questions are about the learning activities and assistance that the CPC+ National Learning Community and Regional Learning Network [CPC CLASSIC PRACTICES ONLY: (known as regional learning faculty in CPC Classic)] provided to this practice site as part of CPC+. Please note, we will NOT share practice-identifiable responses to these questions with the National Learning Community or Regional Learning Network. [Sections H, I, and J are only for CPC+ practices]

I1. Overall, how would you rate the quality of all services from [NAMES OF REGIONAL LEARNING NETWORK ORGANIZATIONS] in meeting this practice site's CPC+-related needs and helping improve primary care?

MARK ONE ONLY

- 1 Excellent
- 2 Very good
- 3 Good
- 4 Fair
- 5 Poor

I2. The CPC+ National Learning Community and Regional Learning Network offer assistance to practices in a variety of ways. For each of the following types of assistance that this practice site may have received in the past six months, please rate how useful this assistance has been to this practice site in improving primary care.

MARK ONE RESPONSE PER ROW

	NOT AT ALL USEFUL	NOT VERY USEFUL	SOMEWHAT USEFUL	VERY USEFUL	NEVER RECEIVED OR ATTENDED
a. Webinars (for example, Action Groups or Practices in Action meetings)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
b. Health IT Affinity Groups (groups enabling CPC+ practices to network with their health IT vendors or other practices that use the same health IT)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
c. In-person learning sessions	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
d. In-person coaching at this practice site to improve practice processes and workflows	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
e. One-on-one telephone/virtual coaching with this practice site to improve practice processes and workflows	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

MARK ONE RESPONSE PER ROW

	NOT AT ALL USEFUL	NOT VERY USEFUL	SOMEWHAT USEFUL	VERY USEFUL	NEVER RECEIVED OR ATTENDED
f. CPC+ Connect (the online information resource and collaboration website for CPC+)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
g. CPC+ Implementation Guides	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
h. CPC+ Practice Spotlights (articles highlighting the work of individual CPC+ practices)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
i. CPC+ Support (CPC+ help desk managed by Telligen)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

13. [FOR PRACTICES WITH CPC+ PAYER PARTNERS]: In addition to the support from the CPC+ National Learning Community and Regional Learning Network, CPC+ payer partners may provide their own support and assistance. For each of the following types of assistance that this practice site may have received from CPC+ payer partners in the past six months, please rate how useful this assistance has been to this practice site in improving primary care.

CPC+ payer partners are payers other than Medicare FFS that participate in CPC+.

MARK ONE RESPONSE PER ROW

	NOT AT ALL USEFUL	NOT VERY USEFUL	SOMEWHAT USEFUL	VERY USEFUL	NEVER RECEIVED OR ATTENDED
a. On-site care manager provided by the payer	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
b. Telephone-based care manager provided by the payer	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
c. Explanation of payers' CPC+ payment methodologies	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
d. Training on how to access data feedback provided by the payer	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
e. Training on how to use data feedback provided by the payer	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
f. Coaching on how to improve practice processes and workflows	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

J. PRACTICE SITE INVOLVEMENT AND PERCEPTIONS OF CPC+

[Sections H, I, and J are only for CPC+ practices]

J1. Thinking of the different types of staff at this practice site, how involved is each type of staff in implementing CPC+?

MARK ONE RESPONSE PER ROW

	VERY INVOLVED	SOMEWHAT INVOLVED	NOT VERY INVOLVED	NOT AT ALL INVOLVED
a. Medical director or clinician lead at this practice site	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
b. Physicians	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
c. Nurse practitioners (NPs), clinical nurse specialists (CNSs), or physician assistants (PAs)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
d. Clinical support staff	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
e. Clerical support staff	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

J2. Thinking about this practice organization, how involved are system-level leadership (e.g., chief executive officer (CEO) or chief medical officer (CMO)) in implementing CPC+?

- 0 Practice site is independent and not part of a system
- 1 Very involved
- 2 Somewhat involved
- 3 Not very involved
- 4 Not at all involved

J3. In answering this question, please consider the:

- Improvements made to the practice site’s care delivery,
- CPC+ participation requirements (including care delivery, health IT, and reporting requirements), and
- CPC+ supports (payments, learning activities, data feedback, and health IT vendor support).

Given this practice’s overall experience participating in CPC+, how likely is it that this practice would participate in CPC+ if this practice could do it all over again?

MARK ONE ONLY

- 1 Very likely
- 2 Somewhat likely
- 3 Not very likely
- 4 Not at all likely

J4. How much has participation in CPC+ improved the quality of care that this practice currently provides to its patients?

MARK ONE ONLY

- 1 A lot
- 2 Somewhat
- 3 Not very much
- 4 Not at all

J5. How burdensome are the following requirements in CPC+?

MARK ONE RESPONSE PER ROW

	NOT AT ALL BURDENSOME	NOT VERY BURDENSOME	SOMEWHAT BURDENSOME	VERY BURDENSOME	DON'T KNOW
a. Meeting care delivery requirements	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>
b. Completing care delivery reporting requirements	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>
c. Completing financial reporting requirements	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>
d. Meeting health IT requirements	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>

J6. How useful are the following supports provided by CPC+ in improving primary care? Please consider supports from all payers participating in CPC+.

MARK ONE RESPONSE PER ROW

	NOT AT ALL USEFUL	NOT VERY USEFUL	SOMEWHAT USEFUL	VERY USEFUL	DON'T KNOW
a. Financial support	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>
b. Learning support	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>
c. Data feedback	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>
d. Health IT vendor support	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	d <input type="checkbox"/>

K. PRACTICE SITE CONTACT INFORMATION AND SURVEY COMPLETION

K1. Please provide the following information for this practice site.

Practice Site Name: _____

Physical Street Address: _____

City: _____ State: _____ Zip Code: _____

Practice Site Telephone Number: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

K2. Please provide the name, title, email, and phone number of the person who completed this survey so we know who to contact if we have any questions.

Name: _____

Title: _____

Email: _____

Telephone Number: _____

K3. Please confirm the name and address of the person who should receive the check for completing the survey. You may enter your practice name in the "Name of Check Recipient" field if you prefer that the check be made out to your practice. If you are unable to accept payment, please mark the box that says, "Do not send payment" and leave the remaining fields blank. [Only for comparison practices]

Do not send payment

Name of Check Recipient: _____

Address: _____

City: _____ State: _____ Zip Code: _____

K4. Who filled out this survey or provided input to complete this survey?

MARK ALL THAT APPLY

- 1 Practice or office manager (e.g., Clinic manager, office coordinator, office supervisor)
 - 2 Lead physician
 - 3 Other physicians
 - 4 Nurse practitioner (NP), clinical nurse specialist (CNS), or physician assistant (PA)
 - 5 Care manager or coordinator
 - 6 Nursing staff, including nurse manager or supervisor
 - 7 Medical assistant staff
 - 8 Quality improvement staff (e.g., quality manager or coach, population health staff)
 - 9 Administrative support staff (e.g., billing or finance staff, front desk staff)
 - 10 Non-physician owner of practice
 - 11 Leadership or staff from our larger health care system or medical group (e.g., CEO, CMO)
 - 12 Data analytics staff (e.g., EMR analyst, health IT team)
 - 13 CPC+ lead
 - 14 Patients
 - 99 Other (*specify*)
-

K5. Please add any comments about this survey here.



Thank you for completing the survey!

INSTRUCTIONS TO SUBMIT THE COMPLETED SURVEY

If you complete a paper survey, please return your **completed** survey to:

BY MAIL: Mathematica Policy Research – CPC Plus
P.O. Box 2393
Princeton, NJ 08543-9809

BY EMAIL: CPCPlusPracticeSurvey@mathematica-mpr.com

BY FAX: 1-609-799-0005
Attn: CPC Plus Practice Survey

4.D. Methods used for the deep-dive practice study

In the first annual CPC+ report, we described methods for selecting the 81 practices included in that report's deep-dive practice study (Anglin et al. 2019). The 81 practices chosen were similar to all CPC+ practices in terms of track, participation in the SSP, whether they were independent or owned by a system or hospital or part of a multi-practice group, and size. We used 10 interview modules to guide our in-person discussions with practices about their PY 1 experiences: one each covering the five CPC+ functions, one each on payment and learning supports, two special topics modules on the use of specialists and teamwork, and one module to obtain health care systems' perspectives on CPC+. To ensure that we covered topics in each module in depth, we administered only three or four modules to each deep-dive practice, allowing us to gather detailed information for each module from about 30 diverse practices.

In this section, we describe how we updated the baseline approach to conduct telephone interviews with 59 representative practices about their PY 2 experiences using eight modules.

4.D.1. Selection of deep-dive practices

We made two key changes to the PY 1 data collection strategy before finalizing the sample of deep-dive practices to recruit for in-depth data collection about PY 2 experiences (collected from practices in spring 2019). First, to reduce burden on practices and because we were achieving saturation of themes before completing the full 81 practices' interviews, we reduced the sample of 81 deep-dive practices that we selected the previous year to 60. Second, with respect to the modular data collection approach, which was designed to collect comprehensive and in-depth data about the multiple aspects of CPC+, we reduced the number of data collection modules from 10 to 8. In PY 2, we planned to explore new special topics related to nuances about care plans and continuous quality improvement. Rather than creating separate modules for these topics, we added questions on these topics into existing modules (Functions 2 and 5, respectively). Below, we describe the steps we used to systematically reduce the sample of 81 deep-dive practices to 60 and change the modules assigned to practices while maintaining continuity in the practices' module assignments as much as possible.

To reduce the sample of 81 deep-dive practices to 60, we first dropped 1 practice that withdrew from CPC+ and the 12 practices that received both the PY 1 special topics modules (use of specialists and teamwork), because we do not plan to continue to study these special topics. We then dropped the 8 practices that received both the Care Management and Comprehensiveness and Coordination modules, because after we expanded these modules they were much longer than the other modules; therefore, it would not be possible to cover both in the one-hour interview allotted for the PY 2 interviews. After dropping these practices, 60 practices remained in the deep-dive sample.

In the sample of 60 deep-dive practices, the number of practices in each of the 14 regions that started in 2017 remained proportional to the total number of participating practices in each region. The sample included four to seven practices from each of the three regions with the largest number of participating practices (Michigan, New Jersey, and Ohio & Northern Kentucky), and three to five practices from each of the eight medium-sized regions (Arkansas, Colorado, Greater Kansas City, Greater Philadelphia, Hawaii, North Hudson-Capital, Oklahoma, and Oregon), and two to three practices from each of the three regions with the smallest number of participating practices (Montana, Rhode Island, and Tennessee).

The final sample included 59 practices (we dropped one practice due to time constraints toward the end of our data collection period). The characteristics of these 59 practices were similar to those of the 2,716 practices participating in CPC+ as of December 2018 in terms of their CPC+ track, SSP participation, whether they were independent or part of a system, and practice size (number of primary care practitioners) (see Table 4.D.1). Four of the original deep-dive practices declined to participate in interviews about PY 2 and we replaced those practices with alternate practices identified in our original sample with the same characteristics.

Table 4.D.1. Characteristics of deep-dive practices and all CPC+ practices that started in 2017, and were interviewed about PY 2 experiences

Practice characteristic	Deep-dive practices (N = 59)	All practices (N = 2,716)
Track 1	44%	47%
Track 2	56%	53%
Participated in CPC Classic	10%	15%
SSP	41%	50%
Non-SSP	59%	50%
Independent practice	22%	26%
System or group	78%	74%
Practice size (number of primary care practitioners)		
Small (1–2)	31%	30%
Medium (3–5)	31%	39%
Large (6+)	39%	31%

Source: Mathematica's analysis of 2017 CPC+ practice tracking data provided by CMS.

Notes: The system variable reflects system status in November 2016, as reported in each practice's CPC+ application. SSP status is updated annually; the analyses for SSP and non-SSP status reflect the status for 2018. Practice size is updated monthly; the analyses reflect practice status in December 2018.

The percentages in this table for all CPC+ practices are largely similar to the percentages shown in Chapter 2, Figure 2.6, which shows the percentage of practices owned by a health system or hospital, includes only practices that are owned by a hospital or health system, whereas for the deep-dive sample, the definition of "system or group" practices includes those owned by *any* larger health care organization, including group practices.

4.D.2. Protocol for deep-dive site visits

The eight data collection modules we used to guide our interviews with the deep-dive practices covered the following topics: the five CPC+ functions (Access and Continuity, Care Management, Comprehensiveness and Coordination, Patient and Caregiver Engagement, and Planned Care and Population Health); one module on CPC+ payments; one on CPC+ learning supports; and one on health system or group practice implementation of CPC+. Findings on how practices experienced and perceived all of the CPC+ supports are reported in Chapter 3. Findings about how CPC+ supports contributed to implementation of specific care delivery requirements and primary care functions are reported in Chapter 4.

To ensure that we covered the topics in each module in depth, we used two to five of the eight modules with any given deep-dive practice. Due to reducing the sample to 59 practices and dropping two modules between 2018 and 2019, we needed to reassign modules to practices. We first identified practices for which module assignments did not need to change because we wanted to ask the same deep-dive practices about their experiences with the same topics for PY 1

and PY 2. We then randomly reassigned modules to the remaining 31 practices and compared the distribution of practice characteristics between the 2018 and 2019 sample of deep-dive practices to ensure we maintained a similar distribution. Finally, we compared the distribution of practice characteristics across modules for the final 2019 sample to the distribution of practice characteristics across all practices that began participating in CPC+ in 2017. As shown in Table 4.D.2, this approach resulted in using each module in roughly 22 practices, with the exception of the health system and group practice module, which was used in all 46 practices that were owned by a hospital or health system or were part of a large group practice.

Table 4.D.2. Number of deep-dive practices providing data for each module, by practice characteristic

Practice characteristic	Access and continuity	Care management	Comprehensiveness and coordination	Patient and caregiver engagement	Planned care and population health ^a	Learning supports	Payments ^b	Health system or group practice
Track								
Track 1	12	13	8	9	8	7	7	20
Track 2	12	10	12	14	16	14	17	26
CPC Classic status								
CPC Classic	3	2	1	3	3	3	6	5
Non-CPC Classic	21	21	19	20	21	18	18	41
SSP Status								
SSP	10	10	9	10	9	5	14	20
Non-SSP	14	13	11	13	15	16	10	26
Ownership								
Independent practice	5	6	4	4	6	5	7	0
System or group	19	17	16	19	18	16	17	46
Practice size (number of primary care practitioners)								
Small (1–2)	10	7	7	7	6	4	5	12
Medium (3–5)	5	6	8	7	7	7	7	14
Large (6+)	9	10	5	9	11	10	12	20
Totals	24	23	20	23	24	21	24	46

Note: We explored practices' experiences with health IT support with questions in each of the primary care function modules.

^a The planned care and population health module included questions about data feedback supports.

^b To ensure that we collected enough information to adequately describe practices' experiences moving away from visit-based Medicare FFS payments, we oversampled practices that selected higher Comprehensive Primary Care Payment (CPCP) levels (25, 40, or 65 percent) for the deep-dive payment module. Specifically, for PY 2, we collected qualitative information on payment from 7 Track 1 practices, 11 Track 2 practices with a 25 percent CPCP, and 6 Track 2 practices with a higher CPCP.

4.D.3. Analysis of the deep-dive interview data

We transcribed all interview recordings and then used a trained team of researchers to code interview transcripts. To organize data for analysis, we used codes aligned with the CPC+ care delivery requirements, payment, and learning supports. We also used the Consolidated Framework for Implementation Research to code factors that practices described as barriers or facilitators to CPC+ implementation (such as a practice's internal quality improvement resources or the presence of other primary care initiatives) (Damschroder et al. 2009). Finally, we used codes aligned with the evaluation's research questions related to health system and group practice support for implementation and sustainability. We used NVivo software to code and organize the data for cross-practice analysis.

CHAPTER 5 APPENDIX

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This Appendix describes the beneficiary survey used to assess patient experience among Medicare fee-for-service (FFS) beneficiaries in practices that began CPC+ in 2017 and comparison practices. It details survey fielding (Section A), sampling methods (Section B), survey content and measures (Section C), analytic methods (Section D), and data tables (Section E).

5.A. Survey fielding

Timing of survey administration

We administered the first CPC+ beneficiary survey from May through December 2018, 17 to 24 months after CPC+ began (Table 5.1). We fielded the survey to three samples: (1) beneficiaries in CPC+ practices,¹⁰ (2) beneficiaries in a preliminary set of comparison practices, and (3) beneficiaries in the final set of comparison practices.¹¹

Table 5.1. Survey administration dates

	May 2018	June 2018	July 2018	Aug. 2018	Sept. 2018	Oct. 2018	Nov. 2018	Dec. 2018
CPC+ sample	X	X	X	X				
Preliminary comparison sample group		X	X	X	X			
Final comparison sample group						X	X	X

Survey mode, length, incentive, fielding procedures, and fielding plan

The CPC+ beneficiary survey was administered by mail as a paper survey. We identified mailing addresses for sampled CPC+ and comparison beneficiaries from the Medicare Enrollment Database. We also sent all beneficiary mailing addresses through the National Change of Address database prior to mailing to ensure that they were current. The survey was designed to take 15 to 20 minutes to complete. No incentive was offered to complete the survey.

We followed the standard Clinician and Group—Consumer Assessment of Healthcare Providers and Systems (CAHPS) fielding procedures (AHRQ 2016b). The recommended mail protocol for the CAHPS includes (1) setting up a toll-free number staffed by trained personnel, (2) sending a questionnaire mailing with a cover letter and postage-paid envelope, (3) sending a postcard reminder to nonrespondents 10 days after the initial questionnaire mailing, and (4) sending a second questionnaire with a reminder letter and a postage-paid envelope to nonrespondents three

¹⁰ American Institutes for Research (AIR), a separate contractor, administered the Wave 1 survey to the CPC+ Medicare FFS beneficiary sample using the same instrument and fielding plan as Mathematica did for the comparison samples.

¹¹ The first sample of comparison beneficiaries—surveyed in June through September 2018—was drawn from a preliminary set of comparison practices for the 2017 Starters in each track. After the first fielding, the final set of comparison practices for the 2017 Starters in each track was selected for the evaluation. Thus, we drew an additional sample of beneficiaries that came from the practices in the evaluation’s final comparison group that were not in the preliminary set of comparison practices to ensure we surveyed beneficiaries from a sample drawn from all comparison practices. For more information about sampling, please refer to Section B: Sampling methods.

weeks after the initial mailing. We fielded the beneficiary survey over a 13-week period, consistent with the CAHPS fielding procedures, which recommend a 10–14 week fielding period. Although we followed the CAHPS fielding procedures, we slightly modified the timing of the mailings (Table 5.2). Specifically, we accelerated the timing of the first postcard reminder to 7 rather than 10 days after the initial mailing, and we delayed the second questionnaire mailing by two weeks to allow more time for response.¹² We also added a step: we sent a third questionnaire four weeks after the second questionnaire, to increase the response rate and ensure we reached the goal of a 40 percent yield rate.¹³

Table 5.2. Fielding plan

Week of field period	Fielding activity	Modification from CAHPS procedures
Week 1	Initial questionnaire mailing	No modification
Week 2	Mail reminder postcard	Accelerated by three days
Week 6	Second questionnaire mailing	Delayed by two weeks
Week 9	Third questionnaire mailing	Added; mailed four weeks after second questionnaire
End of Week 13	Beneficiary survey data collection ended	No modification

5.B. Sampling methods

Sampling methods

Sample frames. We surveyed Medicare FFS beneficiaries from CPC+ and comparison practices from three sampling frames. The sampling frames for the CPC+ and comparison practices consisted of Medicare FFS beneficiaries who were attributed to CPC+ or comparison practices using an algorithm applied to Medicare claims data. Medicare beneficiaries were attributed to the primary care practice from which they received their most recent visit for chronic care management or had received the largest share (plurality) of selected primary care services over the prior two years. (See Appendix 6.B for more information on patient attribution.) We selected a single sample of patients attributed to the CPC+ practices. Patients attributed to the comparison practices were selected from two different sampling frames in two stages. The first sample was drawn from the preliminary set of comparison practices that was identified before the final comparison group was selected. The second sample was drawn from the practices that were included in the final comparison group but were not part of the preliminary group. To ensure that the sample of comparison patients ultimately drawn from the two combined samples is as similar as possible to the sample that would have been selected if we had the final set of comparison practices at the start, we took the following steps:

¹² We delayed this second mailing because our sample was so large that it took two weeks to print and mail surveys. Therefore, to send a reminder mailing three weeks after the first mailing, we would have needed the mailing file of nonrespondents only one week after the first mailing, which would not allow sufficient time for us to receive completed surveys.

¹³ Yield rate is equal to the number of completed surveys divided by the total sample.

1. We combined the two samples of patients that were selected from each of the two sampling frames, and removed any patients that were drawn from preliminary comparison group practices that were ultimately not included in the final comparison group.
2. We applied a weighting adjustment to the sample drawn from the preliminary comparison group to reflect the practice-level weights those practices have in the final comparison group.

Sampling CPC+ beneficiaries. We sampled Medicare FFS beneficiaries from all practices that had ever participated in CPC+, regardless of whether the practice was still participating in CPC+ at the time of the survey. We had a target of 4,000 CPC+ respondents per track to meet precision targets. With an assumed yield rate of 40 percent, we aimed to release surveys to 10,000 patients per track, so we could achieve 4,000 completes. However, we selected an augmented sample of 12,000 patients per track in anticipation of needing to de-duplicate our sample against the samples of two other large Medicare beneficiary surveys that were being fielded during the same approximate time frame.¹⁴ The additional 2,000 patients selected per track were to replace any patients in our main sample who had already been sampled for these other surveys.

To select the sample of beneficiaries, we first split the sample frame by track and then stratified the sample frame within track by (1) whether the beneficiary's practice participated in the Medicare Shared Savings Plan (SSP) in 2016 (at baseline), and (2) whether the patient was considered high risk for needing medical services. Beneficiaries were considered high risk if they had a hierarchical condition category (HCC) score (Pope et al. 2004) in the top quartile of the HCC score distribution within their track. If beneficiaries' HCC score was missing, we considered them to be high risk if they had end stage renal disease (ESRD). We did this stratification for two reasons. First, the analysis is stratified by the practice's track and Medicare SSP status. Second, to increase the likelihood that survey respondents would be able to answer questions about care received after visiting the emergency department or an in-hospital stay, we oversampled high-risk patients, selecting half of the sample from the high-risk group. All patients within each stratum were selected with equal probability.

After selecting the augmented sample of 24,000 CPC+ patients (12,000 patients per track), and before de-duplicating with the other survey administrations, we randomly chose 20,000 beneficiaries (10,000 beneficiaries per track) for the main sample release and then randomly assigned the remaining 4,000 patients into replicates of size 5 within stratum, resulting in about 100 replicate samples per track. We used these replicate samples to randomly replace patients selected in the main sample release who were also selected for one of the two other coincident beneficiary survey data collections. We had to de-duplicate after selecting the sample so the final de-duplicated sample would be a random sample representing the full population of CPC+ patients. We matched patients selected for the CPC+ survey with those already selected for the other two surveys; any patients who were also selected for one of the other surveys was removed from the main sample release, and we drew from the replicate samples to replace them. After this

¹⁴ The two surveys we assessed for this sample overlap were the (1) CAHPS Survey for Accountable Care Organizations (ACOs), which is used by accountable care organizations participating in the Medicare Shared Savings Program and Next Generation ACO Model to meet their requirement to measure patient experience of care; and (2) 2017–2018 CPC+ Patient Experience of Care Survey, a CAHPS-based survey AIR fielded as part of the CPC+ model to calculate recoupments of Performance-based Incentive Payments to CPC+ practices.

de-duplication and replacement, there were 20,001 total selected patients, 10,006 in CPC+ Track 1 and 9,995 in CPC+ Track 2.¹⁵

Sampling comparison beneficiaries. The goal of the comparison patient sample was to select a sample of patients that looked as similar as possible to the CPC+ patient sample on a range of practice-level and patient-level characteristics. Because the goal was to select a set of comparison practice patients that provided a good counterfactual to the CPC+ patients, rather than to select a set of comparison patients that represented all comparison patients, we were able to conduct the de-duplication process described above before sample selection, thereby removing the need to select any backup sample. As with the CPC+ patients, we selected separate samples by track and stratified by SSP participation and patient-level high-risk status, again selecting half of the sample from the high-risk group. However, because the goal was to draw a sample similar to the CPC+ patients, we selected patients with probability proportional to their practice matching weight. We assigned selection probabilities to patients in direct proportion to their practice's matching weight, so larger numbers of patients were drawn from practices with larger matching weights. Because the matching weights are designed to maximize the weighted balance of comparison practices with CPC+ practices across a range of baseline practice-level characteristics, this method improved the balance, or similarity, of the comparison patient sample with the CPC+ patient sample.¹⁶ In the case of comparison practices matched to CPC+ practices in both Tracks 1 and 2, patients in those practices were eligible for selection in both the Track 1 and Track 2 samples. To reconcile these two independent samples into a single sample of patients, we used the larger of the two track-specific samples for those practices.

We used this sampling approach to draw the two comparison samples, one from a preliminary group of comparison practices and one from a final group of comparison practices. A total of 26,907 comparison patients were selected, 15,248 from the preliminary group and 11,659 from the the final group of comparison practices.

Eligibility and weighting

Determining eligibility. After we received completed questionnaires, we used the following process to determine the eligibility status of all survey responses:

- Survey responses were determined to be **eligible** if the respondent reported having received care from the selected primary care practice in the previous six months in at least one of seven selected eligibility items:
 - Q02. Whether the patient reported having received any care at all from the selected practice.

¹⁵ The final de-duplicated counts per track were not exactly 10,000 due to small differences in the number of patients de-duplicated and the size of the replicate samples.

¹⁶ Practice matching weights were calculated during comparison group selection. They ranged from 0.10 to 10.0, with higher values indicating the practice had a larger weight in the Medicare claims-based impact analysis; hence they are more important in the evaluation. Appendix 6.C provides more information on comparison group selection and the construction of the matching weights.

- Q03. Whether the patient reported having received any of the following types of care from the selected practice: scheduled appointment, same-day appointment, home visit, video appointment, or group medical appointment.
 - Q05. Whether the patient contacted the doctor's office for immediate care.
 - Q07. Whether the patient made an appointment for a check-up or routine care.
 - Q09. Whether the patient contacted the doctor's office with a health question during regular office hours.
 - Q12. Whether the patient contacted the doctor's office with a health question outside of regular office hours (e.g., evenings, weekends, holidays).
 - Q14. Whether the patient used email, patient portal, or text messaging to ask the doctor's office about a health question.
- Survey responses were determined to be **ineligible** if the respondent did not provide eligible responses to the questions listed above and reported *not* having received care from the selected primary care practice in the preceding six months in at least one of the seven selected eligibility items. Surveys were also considered ineligible if we received information that the respondent was deceased or if the respondent indicated that he or she had not received care from the selected practice in the past six months.
 - Survey responses were determined to have **unknown eligibility** if we did not have sufficient evidence to determine whether the respondent had or had not received care from the selected practice in the preceding six months. Surveys that were completed in reference to someone other than the selected respondent¹⁷ or completed in reference to care received from a different practice were also determined to have unknown eligibility.

Completed surveys. After determining eligibility, we reviewed the data to confirm completion status of the survey records. Based on the CAHPS guidelines, we considered a survey to be complete if it had answers for at least 19 of 38 key items and 1 of 39 reportable items (AHRQ 2016b). Key items are survey questions that all eligible respondents could have answered, that is, questions would not be skipped for any eligible respondent based on the survey logic. Key items include questions confirming eligibility for the survey, the screeners for the questions included in the core composite measures, the question about patients' rating of the primary care doctors and staff, and demographic and other background items. Reportable items are questions included in the core composite and rating measures. If a survey had responses to fewer than 19 of the key items or 1 of the reportable items (i.e., the survey was not complete), or if the survey response was found to be ineligible or to have unknown eligibility, we excluded it from the analysis.

Calculating weights for CPC+ respondents. CPC+ patients were assigned sample weights equal to the inverse of their probability of selection within the sampling strata (i.e., the practice's track and SSP status) and to account for the oversampling of high-risk patients. To reduce the potential of bias resulting from survey non-completion, we adjusted the weights to account for patterns among non-completers (i.e., those with known and unknown eligibility who did not complete the survey). More than half of the total sample of patients did not return a survey, so

¹⁷ Surveys completed via proxy—that is, completed in reference to the selected respondent by someone else—could still be determined eligible.

we could not determine their eligibility. To adjust for this, we estimated logistic regression models to predict having a known eligibility status using a set of practice- and patient-level characteristics (Table 5.3). We selected practice- and patient-level characteristics for inclusion in the regression models using a stepwise model selection procedure in SAS, where the p -value associated with a particular effect was required to be less than or equal to 0.15 to enter the model and had to remain less than or equal to 0.20 to stay in each subsequent fitted model. This ensured that the characteristic had at least a moderately strong relationship with the probability of having a known eligibility. Any characteristics not meeting either criterion were not included in the weighting adjustments. Because these models were run separately by track, the set of characteristics that predicted known eligibility varied by track. We then grouped patients with similar propensities for known eligibility status into classes and calculated adjustments within each class. Because there were so few beneficiaries who returned a survey indicating they visited their primary care practice in the previous 6 months and were therefore eligible, but did not answer enough survey items to be considered a complete response, we did not use logistic modeling to adjust the weights for non-completion among eligible beneficiaries, and instead used only weighting classes defined via a Chi-Square Automatic Interaction Detection program. We then post-stratified the weights to known population totals within strata.

Table 5.3. Characteristics used in adjusting for CPC+ patient survey non-completion

Characteristics	Track 1	Track 2
Patient characteristics		
Patient age	X	X
Patient gender		X
Patient race	X	X
Patient dual eligibility status	X	X
Original reason for Medicare eligibility was old age	X	X
Whether patient received long-term institutionalized care	X	X
Indicators for patient county of residence	X	X
Indicators for patient state of residence	X	X
Practice-level characteristics at baseline		
SSP status	X	
Health professionals shortage area – primary care		X
Practice-level number of assigned beneficiaries	X	X
County mean income		X
CPC+ region	X	X
Hospital ownership	X	
County-level Medicare Advantage		X
Rural-urban categorization	X	

Calculating weights for comparison respondents. As with the sampling, we used a different weighting approach for the comparison patients than we did for the CPC+ patients, as the goal of this sample was not to represent the population of comparison patients, but rather to serve as a valid counterfactual for the CPC+ respondents. Therefore, we calculated weights to align the CPC+ and comparison respondents on a range of practice- and patient-level characteristics, not simply to adjust for nonresponse among the comparison patient sample. We calculated these weights in two stages.

First, we applied an adjustment for the oversampling or undersampling of patients from practices that were part of the preliminary comparison group. This adjustment applied only to patients selected from the preliminary comparison group practices.

Second, we created weighting adjustments that, to the greatest extent possible, balanced the comparison respondents with the CPC+ respondents on a set of practice- and patient-level characteristics. The practice-level characteristics were the high-priority variables used in selecting the final comparison group for the evaluation (see Appendix 6.C), and the patient-level characteristics included age, race, sex, and the indicator for whether the patient was considered high risk. We calculated these balancing weights differently by track. In Track 1, we used inverse propensity score weights to balance the comparison respondents with the CPC+ respondents. We estimated these propensity scores via the ‘twang’ package in R, which uses boosted regression to flexibly model the probability of being a CPC+ respondent (Ridgeway et al. 2017). After applying the inverse propensity score adjustments, we poststratified the adjusted weights to the CPC+ population totals within strata. For Track 2, we poststratified the comparison respondents to the CPC+ population totals within strata. We did not use inverse propensity score adjustments, as we found these provided little improvement in balance while substantially increasing the variation in the weights, thereby reducing power. After poststratification, we trimmed the adjusted weights in both tracks so no individual had undue influence on the results (specifically, so no weight was greater than 300). We confirmed that this level of trimming made little difference to the balance achieved by the weights.

Sample sizes and response rates

We invited about 20,000 of the roughly 1.8 million Medicare FFS beneficiaries attributed to CPC+ practices (10,006 in Track 1 and 9,995 in Track 2), and about 27,000 of the approximately 3.6 million beneficiaries attributed to comparison practices (24,140 in Track 1 and 19,212 in Track 2 [these counts are not mutually exclusive¹⁸]) to respond to the beneficiary survey.

Using survey responses, we then identified attributed Medicare beneficiaries who reported having received care from the practice at least once in the six months before the start of the survey wave to include in the analytic sample. For Track 1, we obtained response rates¹⁹ of 41.2 and 42.9 percent for CPC+ and comparison beneficiaries, respectively. Our analytic sample includes 3,924 CPC+ beneficiaries attributed to 1,121 (or 82 percent) of the 1,373 CPC+ practices and 7,320 beneficiaries attributed to 2,476 (or 48 percent) of the 5,209 Track 1 comparison practices. For Track 2, we obtained response rates of 41.9 and 42.8 percent for CPC+ and comparison beneficiaries, respectively. Our analytic sample includes 3,989 CPC+

¹⁸ Comparison practices can be matched to CPC+ practices in both tracks. Therefore, the beneficiaries in practices matched to CPC+ practices in both tracks were surveyed once but are counted twice, once in Track 1 and once in Track 2. Of the 26,907 comparison beneficiaries in the sample, 16,445 were attributed to comparison practices matched to both Track 1 and Track 2 CPC+ practices.

¹⁹ 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 based on the rate of eligibility among those with known eligibility. This approach follows the guidelines of the American Association for Public Opinion Research (AAPOR 2016). This differs from the yield rate, which is just the number of completed surveys divided by the total sample regardless of eligibility.

beneficiaries attributed to 1,210 (or 80 percent) of the 1,515 CPC+ practices and 7,056 beneficiaries attributed to 2,012 (or 54 percent) of the 3,754 Track 2 comparison practices. Among practices with at least one respondent in the analytic sample, each CPC+ practice had a median of three respondents (Track 1) and two respondents (Track 2) and each comparison practice, regardless of track, had a median of two respondents. Table 5.4 below details the survey sample and response rates by research group and track.

Table 5.4. Attributed Medicare FFS beneficiary survey sample and response rates by treatment status and track

	CPC+			Comparison		
	Track 1	Track 2	Total	Track 1	Track 2	Total ^a
Number of beneficiaries						
In sampling frame	811,775	986,220	1,797,995	2,582,796	2,205,969	3,580,360
Sent surveys	10,006	9,995	20,001	24,140	19,212	26,907
Returned surveys	4,633	4,647	9,280	10,435	8,232	11,516
Returned eligible survey response	3,935	3,999	7,934	8,973	7,065	9,879
Returned eligible and complete survey response	3,926	3,989	7,915	7,325	7,059	9,854
In analysis sample	3,924	3,989	7,913	7,320	7,056	9,849
In analysis sample per practice (minimum/median/maximum) ^b	1/3/31	1/2/26	1/2/31	1/2/95	1/2/95	1/2/95
Response rate (percentage, unweighted) ^c	41.2	41.9	41.5	42.9	42.8	42.6
Number of practices						
In sampling frame	1,373	1,515	2,888	5,209	3,754	6,874
With completed surveys	1,121	1,210	2,331	2,478	2,013	3,225
With completed surveys in our analysis sample	1,121	1,210	2,331	2,476	2,012	3,223

^a The total represents the number of unique beneficiaries or practices. Some beneficiaries and practices appear in both Track 1 and Track 2.

^b Number of beneficiaries in analysis sample per practice reported for practices with at least one respondent in the analytic sample.

^c 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 the American Association for Public Opinion Research (AAPOR 2016).

5.C. Survey content and measures

Survey content

The CPC+ beneficiary survey instrument primarily contains questions based on the core CAHPS survey version 3.0 (AHRQ 2015). Other items were based on the CAHPS versions 2.0 and 3.0 Patient-Centered Medical Home (PCMH) supplemental modules (AHRQ 2016a) and the CAHPS 2.0 Health Information Technology supplemental module (AHRQ 2012). The CAHPS survey gauges patients' experiences with the primary care practice, including the primary care providers and other office staff over the previous six months across five domains of primary care: (1) patients' ability to get timely appointments, care, and information; (2) providers' communication with patients; (3) providers' use of information to coordinate patient care; (4) helpful, courteous,

and respectful office staff; and (5) patients' overall rating of their primary care provider. Additionally, the CPC+ survey includes questions on patient demographics such as race, education, and physical and mental health status.

Although we based the survey design and many of the questions on the CAHPS survey, we also created new questions and modified existing survey items to better reflect innovative aspects of the CPC+ model, such as team-based care and alternative visit types. To develop our survey instrument, we engaged experts on patient experience within Mathematica, the CMS CPC+ program team, and the CAHPS consortium.²⁰ Then we conducted three rounds of cognitive pretesting interviews with a total of 34 respondents. Four of these interviews also included a full-survey administration test to determine administration time.

Measures

To help summarize patient experiences, we created summary composite measures. We first grouped the 39 items that asked about patient experience based on what each care delivery function covers, according to the implementation guide. We then conducted a confirmatory factor analysis (CFA) using responses to the survey from patients in CPC+ practices to confirm that the questions fit well into the assigned domain. We conducted the CFA separately by track to ensure the composite measures had adequate reliability for both tracks. This resulted in 10 composite measures created from 37 questions that were both theoretically and statistically correlated. Two questions were excluded from the composite measures because they were not statistically related to the other questions and did not map to a care delivery function. The resulting composite measures consisted of between 1 and 11 questions. Reflecting the combination of limited survey items and questions needing to fit together both theoretically and statistically, four composite measures contain only 1 question. For the remaining six composite measures formed from the responses to multiple questions, we assessed how well questions within each composite measure produced consistent results by calculating the internal consistency reliability of each composite. Each of the six composite measures had adequate reliability with McDonald's omega values between 0.82 and 0.96 (Nunnally and Bernstein 1994; Lance 2006).

In addition to the 39 questions that ask about patients' experience at the practice, the survey included 10 additional questions that preceded 10 of the 39 patient experience questions and asked respondents whether the experience applied to them. The survey included an additional five questions on demographics, one question used to screen the respondent for eligibility, and two questions that were used to provide explanation about the survey content. Table 5.5 lists the survey questions, sources, and domains.

²⁰ The CAHPS Consortium consists of the Agency for Healthcare Research and Quality (AHRQ) and other organizations that are responsible for conceiving, developing, testing, and refining CAHPS surveys and conducting research on the various uses of the CAHPS survey data.

Table 5.5. CPC+ beneficiary survey questions

Question number	CPC+ question text	Source	Modified from original source	Domain
Q01	<p>Intro text: This is a survey about health care you received from primary care doctors and their staff.</p> <p>Primary care doctors treat preventive and wellness needs, common illnesses (such as a cold or the flu), and ongoing conditions (such as diabetes or high blood pressure). Primary care doctors do not do surgery and do not treat just one kind of health problem such as a heart condition.</p> <p>Specialists are doctors like surgeons, heart doctors, eye doctors, skin doctors, and other doctors who specialize in one area of health care. Please do NOT include specialist care when answering questions about the primary care you received from this doctor's office.</p>	Mathematica: CPC+	Yes	n.a.
Q02	<p>Our records show that you got health care from the primary care doctor's office listed on the cover page (you may know this doctor's office by another name).</p> <p>The person you got care from at this doctor's office might be a doctor, nurse practitioner (NP), physician assistant (PA), or their staff that work with them.</p> <p>In the last 6 months, did you get any kind of health care from the primary care doctors or their staff from the office listed on the cover page? [Y/N]</p>	CAHPS v3.0	Yes	n.a.
Q03	<p>Patients can get health care in different ways. How did you get care in the last 6 months from primary care doctors and their staff who work at this doctor's office? (Mark one or more.)</p> <ol style="list-style-type: none"> Had a scheduled appointment at this doctor's office Received help from this doctor's office to fill prescriptions, set up medical tests, or schedule appointments Discussed your health with your doctor or someone from this doctor's office via phone, email, text messaging, or a patient portal Had a same-day appointment or walk-in visit at this doctor's office Your doctor or someone from this doctor's office came to see you in the hospital Your doctor or someone from this doctor's office came to see you at another location besides this doctor's office or the hospital to provide health care (such as at your home or a senior center) Had a video appointment with your doctor or someone from this doctor's office Attended a group medical appointment arranged by this doctor's office with other patients who have similar medical issues 	Mathematica: CPC+	Yes	Access, Continuity of care outside of the primary care office ^a
Q04	<p>Intro text: As you answer the questions in this survey, please think about all of these ways you got health care in the last 6 months from primary care doctors and their staff who work at this doctor's office.</p>	Mathematica: CPC+	Yes	n.a.
Q05	<p>In the last 6 months, did you contact this doctor's office to get care for an illness, injury, or condition that needed care right away? [Y/N]</p>	CAHPS v3.0	Yes	n.a.
Q06	<p>In the last 6 months, when you contacted this doctor's office for care you needed right away, how often did you get care as soon as you needed? [Never, Sometimes, Usually, Always]</p>	CAHPS v3.0	Yes	Access
Q07	<p>In the last 6 months, did you make any appointments for a check-up or routine care with this doctor's office? [Y/N]</p>	CAHPS v3.0	Yes	n.a.

Table 5.1. (continued)

Question number	CPC+ question text	Source	Modified from original source	Domain
Q08	In the last 6 months, when you made an appointment for a check-up or routine care with this doctor's office, how often did you get care as soon as you needed? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Access
Q09	In the last 6 months, did you contact this doctor's office with a health question during regular office hours? [Y/N]	CAHPS v3.0	Yes	n.a.
Q10	In the last 6 months, when you contacted this doctor's office during regular office hours, how often did you get an answer to your health question that same day? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Access
Q11	Has this doctor's office given you information about what to do if you need care during evenings, weekends, or holidays? [Y/N]	CAHPS v3.0 Supplemental PCMH	Yes	Access
Q12	In the last 6 months, did you contact this doctor's office with a health question outside of regular office hours, for example, on evenings, weekends, or holidays? [Y/N]	CAHPS v3.0	Yes	n.a.
Q13	In the last 6 months, when you contacted this doctor's office outside of regular office hours, how often did you get an answer to your health question as soon as you needed? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Access
Q14	In the last 6 months, did you use email, a patient portal, or text messaging to contact this doctor's office with a health question? [Y/N]	CAHPS v2.0 Supplemental HIT	Yes	n.a.
Q15	In the last 6 months, when you used email, a patient portal, or text messaging to contact this doctor's office with a health question, how often did you get an answer to your health question as soon as you needed? [Never, Sometimes, Usually, Always]	CAHPS v2.0 Supplemental HIT	Yes	Access
Q16	In the last 6 months, how often did your appointment(s) with this doctor's office start within 15 minutes of your appointment time? [Never, Sometimes, Usually, Always, Not applicable, Did not have scheduled appointment(s) with this doctor's office in the last 6 months]	CAHPS v3.0	Yes	Access
Q17	In the last 6 months, did you take any prescription medicine? [Y/N]	CAHPS v3.0	No	n.a.
Q18	In the last 6 months, did your doctor or someone from this doctor's office ask you about all the prescription medicines you were taking? [Y/N]	CAHPS v3.0	Yes	Care management
Q19	In the last 6 months, did you have a blood test, x-ray, or other test that was ordered by your doctor or someone from this doctor's office? [Y/N]	CAHPS v3.0	Yes	n.a.
Q20	In the last 6 months, when you had a blood test, x-ray, or other test that was ordered by your doctor or someone from this doctor's office, how often did you get your test results? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Patient and family caregiver engagement
Q21	In the last 6 months, how often did people from this doctor's office, including your doctor, explain medical things in a way that was easy to understand? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Patient and family caregiver engagement
Q22	In the last 6 months, how often did people from this doctor's office, including your doctor, listen carefully to you? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Patient and family caregiver engagement
Q23	In the last 6 months, how often did people from this doctor's office, including your doctor, seem to know the important information about your medical history? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Comprehensiveness

Table 5.1. (continued)

Question number	CPC+ question text	Source	Modified from original source	Domain
Q24	In the last 6 months, how often did people from this doctor's office, including your doctor, show respect for what you had to say? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Patient and family caregiver engagement
Q25	In the last 6 months, how often did people from this doctor's office, including your doctor, spend enough time with you? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Patient and family caregiver engagement
Q26	In the last 6 months, did your doctor or someone from this doctor's office talk with you about how to be healthy enough to do the things you like to do? [Y/N]	CAHPS v3.0 Supplemental PCMH	Yes	Patient and family caregiver engagement
Q27	In the last 6 months, did your doctor or someone from this doctor's office ask you if there are things that make it hard for you to take care of your health? [Y/N]	CAHPS v3.0 Supplemental PCMH	Yes	Care management
Q28	In the last 6 months, did your doctor or someone from this doctor's office ask you if you had any problems with physical pain or discomfort? [Y/N]	Mathematica: CPC+	Yes	Comprehensiveness
Q29	In the last 6 months, did your doctor or someone from this doctor's office ask you if there was a period of time when you felt sad, empty, or depressed? [Y/N]	CAHPS v2.0 Supplemental PCMH	Yes	Comprehensiveness
Q30	In the last 6 months, did your doctor or someone from this doctor's office talk with you about things in your life that worry you or cause you stress? [Y/N]	CAHPS v3.0 Supplemental PCMH	Yes	Comprehensiveness
Q31	In the last 6 months, did your doctor or someone from this doctor's office ask you about any non-medical problems you might need help with? These might include things like problems paying for or finding a place to live, not having enough food, lack of reliable transportation, or trouble paying utility bills. [Y/N]	Mathematica: CPC+	Yes	Comprehensiveness
Q32	In the last 6 months, did your doctor or someone from this doctor's office ask you if you have any problems with abuse or violence at home or in your neighborhood?[Y/N]	Mathematica: CPC+	Yes	Comprehensiveness
Q33	An advance care plan describes a patient's wishes for end-of-life care in case the patient becomes too sick to make his or her own decisions. In an advance care plan, patients can choose family members or friends to make medical decisions for them, including health care that patients may not want. Advance care plans are often recorded in a document such as an advance directive, a do not resuscitate (DNR) order, health care power of attorney, or a living will. Do you have any kind of advance care plan? [Yes, No, I don't know]	Mathematica: CPC+	Yes	Patient and family caregiver engagement
Q34	Has your doctor or someone from this doctor's office asked you about your end-of-life care wishes or creating an advance care plan? [Yes, No, I don't know]	Mathematica: CPC+	Yes	Patient and family caregiver engagement
Q35	Specialists are doctors like surgeons, heart doctors, eye doctors, skin doctors, and other doctors who specialize in one area of health care. In the last 6 months, did you get any health care from a specialist? [Y/N]	CAHPS v3.0 Supplemental PCMH	Yes	n.a.

Table 5.1. (continued)

Question number	CPC+ question text	Source	Modified from original source	Domain
Q36	Remember, when we say “this doctor’s office,” we are referring to the primary care doctor’s office listed on the cover page. In the last 6 months, how often did the primary care doctors and their staff from this doctor’s office and your specialist(s) seem to work well together to care for you? [Never, Sometimes, Usually, Always]	Mathematica: CPC+	Yes	Coordination
Q37	The questions below ask about health care you got from the primary care doctors and their staff from the doctor’s office listed on the cover page, after going to an emergency department or being in a hospital. In the last 6 months, have you gone to an emergency room or emergency department for care? Please do not include visits to an urgent care center. [Y/N]	Mathematica: CPC Classic	Yes	n.a.
Q38	Did your doctor or someone from this doctor’s office contact you to discuss your health needs within one week after your most recent emergency room or emergency department visit? [Y/N]	Mathematica: CPC Classic	Yes	Care management
Q39	In the last 6 months, have you been a patient in a hospital overnight or longer? [Y/N]	Mathematica: CPC Classic	Yes	n.a.
Q40	Did your doctor or someone from this doctor’s office contact you to discuss your health needs within 3 days after your most recent hospital stay? [Y/N]	Mathematica: CPC Classic	Yes	Care management
Q41	In the last 6 months, how often did the primary care doctors and their staff from this doctor’s office work well together to care for you? [Never, Sometimes, Usually, Always]	Mathematica: CPC+	Yes	Teamwork
Q42	In the last 6 months, when you got care from a primary care doctor from this doctor’s office, how often was this doctor the person you think of as your regular doctor in this office? By doctor, we mean a doctor, nurse practitioner (NP), or physician assistant (PA). [Never, Sometimes, Usually, Always]	Mathematica: CPC+	Yes	Continuity within the primary care office
Q43	In the last 6 months, how often were clerks and receptionists at this doctor’s office as helpful as you thought they should be? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Patient experience: Helpful courteous, and respectful office staff
Q44	In the last 6 months, how often did clerks and receptionists at this doctor’s office treat you with courtesy and respect? [Never, Sometimes, Usually, Always]	CAHPS v3.0	Yes	Patient experience: Helpful courteous, and respectful office staff
Q45	Using any number from 0 to 10, where 0 is the worst care possible and 10 is the best care possible, what number would you use to rate the care you have received from the primary care doctors and their staff from this doctor’s office? [0-10]	CAHPS v3.0	Yes	Patient experience: Patients’ rating of the primary care doctors and staff
Q46	In general, how would you rate your overall health? [Excellent, Very good, Good, Fair, Poor]	CAHPS v3.0	No	n.a.
Q47	In general, how would you rate your overall mental or emotional health? [Excellent, Very good, Good, Fair, Poor]	CAHPS v3.0	No	n.a.

Table 5.1. (continued)

Question number	CPC+ question text	Source	Modified from original source	Domain
Q48	What is the highest grade or level of school that you have completed? <ul style="list-style-type: none"> - 8th grade or less - Some high school, but did not graduate - High school graduate or GED - Some college or 2-year degree - 4-year college graduate - More than 4-year college degree 	CAHPS v3.0	No	n.a.
Q49	Are you of Hispanic or Latino origin or descent? [Y/N]	CAHPS v3.0	No	n.a.
Q50	What is your race? (Mark one or more.) <ul style="list-style-type: none"> - White - Black or African American - Asian - Native Hawaiian or Other Pacific Islander - American Indian or Alaskan Native - Other 	CAHPS v3.0	No	n.a.

Note: n.a. = not applicable; the question is not included in a domain because it either does not measure 1 of the 10 domains or is a screener question that allows respondents to skip questions if the situation does not apply to them.

^a Under Question 03, sub-items 1 and 2 are not in any domain; sub-items 4, 7, and 8 are in the access domain; and sub-items 3, 5, and 6 are in the continuity outside of the office domain.

CAHPS = Consumer Assessment of Healthcare Providers and Systems; GED = general educational development; HIT = health information technology; PCMH = patient-centered medical home; Y/N = yes/no.

5.D. Analysis methods

Statistical estimation and testing

Analytic comparisons. For each of the 39 survey questions that measured patient experience and the 10 composite measures created using a subset of those questions, we compared ratings between patients in CPC+ practices and those in comparison practices to observe differences in patient experience between the two groups two years into CPC+. Because we were not able to collect data before CPC+ began, differences in any of the years may reflect preexisting differences between CPC+ and comparison practices.

Estimation. For each of the 39 questions that measure patient experience, we calculated the proportion of Medicare FFS beneficiaries who gave the *best* (most favorable) responses (response scales included 2 points [yes/no], 4 points [always, usually, sometimes, never], and 11 points [0 to 10 global rating scale]). 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 6 months, yes, the doctor's office gave the patient information about what to do if he or she needs care during the evenings, weekends, or holidays; and (3) the patient's rating of the care he or she received from the primary care doctors and their staff (where 0 is the worst level of care possible and 10 is the best level of care possible). We also calculated *average* responses on a standardized 0 to 1 scale.

Best and average responses. We analyzed both the best and average responses because there are trade-offs to both methods of defining patient experience. Reporting the proportion of beneficiaries who gave the *best* responses allows us to compare CPC+ and comparison practices within each year and over time in a way that is easier to understand and interpret. However, this analysis—which focuses only on shifting the proportion of beneficiaries who selected the best response category—ignores any shifts in the other response categories (for example, a shift in the proportion of responses from the third- to second-best response option). An analysis using *average* responses better reflects the range of beneficiary responses by averaging responses across all response options. However, this measure is also imperfect. Calculating average responses uses the survey's ordinal scale, in which 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 in the meaning of different response options.

Regression adjustment. We first calculated the likelihood (predicted probability) that beneficiaries would respond to a question with the best response using logistic regressions with recycled predictions. For each outcome, we estimated six separate regressions. We estimated outcomes separately for Track 1 and Track 2, and within each track, separately by SSP participation status at the start of CPC+ (January 1, 2017, for practices that started CPC+ in 2017). All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Table 5.6 lists the control variables. The control variables used in this analysis are the same as those used in the claims-based impact analysis in Chapter 6 (see Appendix E, Table 6.E.3) with the following exceptions: (1) the impact analysis uses practice fixed effects and therefore does not

include practice-level control variables, and (2) this analysis additionally controls for the beneficiary's baseline Medicare FFS expenditures and service use, and self-reported education level at the time of survey response. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights as described in Section B. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

Table 5.6. Control variables used in regressions

Variable description	Source
Practice-level variables at baseline (2016)	
Number of practitioners (physicians, NPs, PAs) of all specialties	SK&A, 2016
Meaningful use status (whether physicians at practice are meaningful users of EHRs and earliest year that physician at practice attested to meaningful use)	CMS, 2016
Whether the practice is multispecialty	SK&A, 2016
Whether the practice is owned by either a hospital or a health system	SK&A, 2016
Whether the practice participated in an SSP accountable care organization	MDM, 2016
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 alumni of CPC Classic or MAPCP	NCQA, 2016; TJC, 2016; AAAHC, 2016; URAC, 2016; state-specific sources, 2016; CPC+ data; CMS, 2016
Modified U.S. census region (Midwest, Northeast, South and Plains, West) ^a	SK&A, 2016
Median household income of the county	Area Resource File, 2015–2016
Whether there is a shortage of primary care health professionals in the practice's county	Area Resource File, 2015–2016
Medicare Advantage penetration rate in the practice's county	Area Resource File, 2015–2016
Whether in an urban, rural, or suburban area	Area Resource File, 2015–2016
Number of hospitals and/or hospital beds in the county	Area Resource File, 2015–2016
Percentage of county's population in poverty	Area Resource File, 2015–2016
Percentage of adults age 25 or older in the county with a degree from a four-year college	Area Resource File, 2015–2016
Beneficiary characteristics at baseline (2016)	
Age	Medicare enrollment data, 2016
Gender	Medicare enrollment data, 2016
Race	Medicare enrollment data, 2016
Reasons for Medicare eligibility	Medicare enrollment data, 2016
Dual eligibility status	Medicare enrollment data, 2016
Risk score measured using the beneficiary's HCC score and indicator for whether the HCC score is missing	Medicare claims and enrollment data, 2016
Annualized Medicare expenditures at baseline (2016)	Medicare claims, 2016
Annualized number of hospitalizations at baseline (2016)	Medicare claims data, 2016
Annualized number of ED visits at baseline (2016)	Medicare claims data, 2016
Indicator for missing baseline Medicare FFS expenditures and service use for new-to-Medicare beneficiaries	Medicare claims data
Annualized number of primary care visits at baseline (2016)	Medicare claims data, 2016
Presence of selected chronic conditions	Medicare claims data, 2016
<ul style="list-style-type: none"> • HCC 8 – Metastatic Cancer and Acute Leukemia • HCC 18 – Diabetes with Chronic Complications • HCC 21 – Protein-Calorie Malnutrition • HCC 22 – Morbid Obesity • HCC 23 – Other Significant Endocrine and Metabolic Disorders • HCC 85 – Congestive Heart Failure • HCC 96 – Specified Heart Arrhythmias • HCC 106 – Atherosclerosis of the Extremities with Ulceration or Gangrene • HCC 111 – Chronic Obstructive Pulmonary Disease • HCC 173 – Traumatic Amputations and Complications • HCC 186 – Major Organ Transplant or Replacement Status • HCC 40 or 47 – Rheumatoid Arthritis and Inflammatory Connective Tissue Disease or Disorders of Immunity • HCC 46 or 48 – Severe Hematological Disorders, or Coagulation Defects and Other Specified Hematological Disorders • HCC 54 or 55 – Drug/Alcohol Psychosis or Dependence 	

Table 5.6. (continued)

Variable description	Source
<ul style="list-style-type: none"> • HCC 57 or 58 – Schizophrenia or Major Depressive, Bipolar, and Paranoid Disorders • HCC 70 or 71 – Quadriplegia or Paraplegia • HCC 80 or 82 – Coma, Brain Compression/Anoxic Damage or Respirator Dependence/Tracheostomy Status • HCC 86, 87, or 88 – Acute Myocardial Infarction, Unstable Angina and Other Acute Ischemic Heart Disease, or Angina Pectoris • HCC 99 or 100 – Cerebral Hemorrhage, or Ischemic or Unspecified Stroke • HCC 107 or 108 – Vascular Disease, with Complications • HCC 157 or 158 – Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone; or of Skin with Full Thickness Skin Loss • Chronic Conditions Warehouse indicator • Alzheimer's disease or dementia 	
Self-reported education level	CPC+ Beneficiary Survey, 2018

^a For the 2017 Starters, we grouped CPC+ regions into four market areas using the four U.S. census regions as our starting point. We moved two CPC+ 2017 regions from their given census region to a neighboring census region. The Northern Kentucky–Ohio region spans two census regions; therefore, we moved CPC+ practices in Northern Kentucky to the Midwest region. Because of its geographic proximity to CPC+ regions in the South (Arkansas, Oklahoma, and Tennessee), we moved the Kansas City region from the Midwest region to the South. For face validity, we excluded several states from the external market areas from which we could draw comparison practices. We also assigned three external states to a geographic region different from their census region, to more closely mirror the CPC+ regions' market characteristics. See Appendix 6.C for more information on how we defined modified U.S. census regions.

AAHC = Accreditation Association for Ambulatory Health Care; CMS = Centers for Medicare & Medicaid Services; ED = emergency department; FFS = fee-for-service; 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; PA = physician assistant; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Missing data due to nonresponse or skips. We calculated predicted probabilities for each of the 39 questions among beneficiaries who responded to that question. Ten of these questions were preceded by questions that asked respondents whether the next question applied to them. Fewer beneficiaries responded to these questions, because of skip patterns in the survey. In those cases, we report responses among those who should have answered the question. For example, all beneficiaries were asked whether they contacted the doctor's office with a health question during regular office hours. If respondents selected yes, the survey then asked a follow-up question about how often they received an answer to their medical question the same day. Fifty-six percent of respondents in both groups of practices answered that they did not phone their provider's office with a medical question during regular office hours. Therefore, these beneficiaries were not asked the follow-up question and were not included in the analysis for that question. Most questions that were not preceded by a screener question were answered by 96 percent or more of the survey respondents.

Creating and assessing composite measures. In addition to individual questions, we created 10 composite measures using 37 of the 39 questions about patient experience (described above). We calculated composite measures by averaging non-missing binary indicators for whether the beneficiary'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.) We then assessed differences in composite measures between beneficiaries in the CPC+ and comparison groups using ordinary least squares regressions that controlled for the same characteristics as the regressions for individual questions (described above).

Subgroups. For the composite measures, we also estimated the effects of CPC+ on key subgroups of beneficiaries based on baseline (pre-2017) patient and practice characteristics:

- Practice characteristics
 - Whether the beneficiary’s practice participated in prior primary care practice transformation activities, defined as whether the practice was recognized as a medical home or participated in the Multi-Payer Advanced Primary Care Practice demonstration or CPC Classic²¹
 - Whether the beneficiary’s practice was owned by a hospital or a health system, or independently owned²²
 - The size of the beneficiary’s practice site (measured by number of primary care practitioners: large [6+ practitioners], medium [3–5 practitioners], or small [1–2 practitioners])²³
 - Whether the beneficiary’s practice was in a rural, suburban, or urban area²⁴
- Patient characteristics
 - The beneficiary’s relative health status, measured in three different ways, by whether the beneficiary at baseline had:
 - A top quartile HCC risk score (Pope et al. 2004);
 - A top 10 percent HCC score or dementia;

²¹ We considered a practice to be a Multi-Payer Advanced Primary Care Practice participant if it participated in any year, 2011-2014 for 2017 Starters, as determined by a file from CMS. A practice was considered to have medical home recognition if it at least one of its primary care providers was listed as having recognition at some point 2014-2017 from a state, the Accreditation Association for Ambulatory Health Care (AAAHC), The Joint Commission (TJC), National Community for Quality Assurance (NCQA), or Utilization Review Accreditation Commission (URAC), as determined by the June 2016 (for 2017 Starters) NCQA PCMH file and data extracted from the websites of TJC, AAAHC, URAC and state-specific sources between October 2016 and February 2017.

²² Practice ownership comes from the SK&A database, managed by IQVIA, a marketing organization that collects information directly from all health care practices in the United States. IQVIA updates this information on an ongoing basis; we pulled practice ownership information November 2016.

²³ Practice size is determined from the number of primary care practitioners (PCPs) at the practice site listed in a November 2016 pull of SK&A data and the National Plan & Provider Enumeration System (NPPES). We defined small practices to have one to two PCPs, medium practices to have three to five PCPs, and large practices to have six or more PCPs. For a provider to count as a PCP, they had to meet criteria based on SK&A or NPPES. Using the SK&A data, we defined PCPs as a physician (MD or DO), nurse practitioner (NP), or physician’s assistant (PA) who bill under their own National Provider Identifier (NPI) and have a specialty of general practitioner, family practitioner, internist, internal medicine/pediatrics, or geriatrician. In NPPES, we defined PCPs as physicians, NPs, PAs, or clinical nurse specialists with 1 of 56 primary care taxonomy codes.

²⁴ Geographic location is derived from the 2015-2016 Department of Health and Human Services’s Area Health Resource File (AHRF). The variable used reflects 2013 data. The AHRF provides a 9-point rural-urban continuum code (RUCC) from the USDA Economic Research Service. From these codes, we defined urban as a county in a metro area of more than 250,000 people (RUCC=1 or 2), suburban as a county in a metro area of less than 250,000 people or that has an urban population of 20,000 or more and is adjacent to a metro area (RUCC=3 or 4), or rural if it does not meet the urban or suburban classifications (RUCC=5-9).

- A serious mental illness (defined as having one of the following behavioral health conditions: schizophrenia or major depressive, bipolar, and paranoid disorders, or drug/alcohol psychosis or drug/alcohol dependence).

For these subgroup analyses, we included in the regressions interactions of variables denoting subgroup membership with the indicator for CPC+ versus comparison status. Because there is likely to be significant correlation among practice or beneficiary characteristics, for example, between practice size and ownership, testing for differential effects for each characteristic separately may not unmask the real drivers of significant differences. Therefore, we included interactions with subgroup indicators for *all* practice (or beneficiary) characteristics in a single regression to disentangle characteristics that actually influence program impacts.

Power. Using two-tailed tests at the 10 percent significance level, the analysis had 80 percent power to detect differences between CPC+ and comparison patients of one to four percentage points for the composite measures and most individual questions. Exceptions were for questions that applied to a small proportion of respondents, such as beneficiaries who had contacted the doctor's office outside of regular office hours, or via a patient portal or text messaging, as well as beneficiaries who in the last six months had gone to the ED for care or stayed overnight in the hospital, where we could detect differences of 6 to 10 percentage points. Among subgroups, minimum detectable effects are larger due to smaller sample sizes.

Multiple comparisons and substantial importance. 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. Nevertheless, we must interpret results with caution due to the number of tests performed. We tested for 98 primary impacts (39 survey questions and 10 composite measures across the two tracks), not including the subgroup analyses and the sensitivity analysis on average response. The analyses for the eight subgroups in each track only examined the 10 composite measures, resulting in an additional 160 tests. The analysis of average responses added an additional 98 tests (39 survey questions and 10 composites across two tracks). This means that, by chance alone, we would expect to find statistically significant differences in 36 tests using the 0.10 significance level. To reduce the risk of incorrectly concluding there were effects of CPC+, we considered responses between beneficiaries in CPC+ and comparison practices to be statistically different and *substantially* important if the difference met two criteria: (1) the *p*-value was less than or equal to 0.10 and (2) the difference between the two groups was five percentage points or larger. Additionally, we determined statistical significance for subgroup effects for which there were more than one category (i.e., practice size; and whether the practice is located in an rural, suburban, or urban area) by testing the joint interaction of the subgroup identifiers and the indicator for whether the patient is in the CPC+ or comparison group using F-tests. This is in contrast to pairwise t-tests that test for effects of CPC+ within each category of the subgroups, and that would further increase the number of hypothesis tests.

Sensitivity tests using average response. To test the sensitivity of our findings, we examined CPC+-comparison differences in regression-adjusted average responses. Because the number of response options varies among questions, we first standardized responses to a 0 to 1 scale, where 0 is the worst response and 1 is the best response. To calculate average responses for the composite measures, we created beneficiary-level composite measures by averaging the non-

missing standardized responses across the questions in the composite measure. We then used ordinary least squares regressions and controlled for the same practice and beneficiary characteristics used for the analysis of best responses.

Software. All analyses were conducted using SAS version 9.4 and Stata version 15.

5.E. Data tables

This section presents five sets of tables showing weighted and regression-adjusted data. Each table shows data for respondents in CPC+ and comparison practices separately, as follows:

- Table 5.7 presents the predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices who gave the best response to individual survey questions and the 10 composite measures, by track.
- Table 5.8 presents the predicted standardized average responses for composite measures and the individual survey questions for Medicare FFS beneficiaries attributed to CPC+ and comparison practices, by track.
- Table 5.9 presents the predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices who gave the best response to the 10 composite measures, by SSP status, by track.
- Tables 5.10a-5.10d present the predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices who gave the best responses to the 10 composite measures, by various practice characteristics, by track.
 - Table 5.10a: by practice ownership
 - Table 5.10b: by practice size
 - Table 5.10c: by practice's geographic location
 - Table 5.10d: by practice's prior primary care transformation experience
- Tables 5.11a-5.11c present the predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices who gave the best responses to the 10 composite measures, by various beneficiary characteristics, by track.
 - Table 5.11a: by beneficiary's high-risk status defined by whether the beneficiary's HCC score is in the top quartile of the sample
 - Table 5.11b: by beneficiary's high-risk status defined by whether the beneficiary's HCC score is in the top 10 percent or has Dementia
 - Table 5.11c: by beneficiary's high-risk status defined by whether the beneficiary has a serious mental illness

For tables 5.7 through 5.9, green shading with **bolded text** indicates a favorable finding that is both statistically significant ($p < 0.10$) and substantially significant (a difference of five percentage points or more); red shading with **bold, italicized text** indicates an unfavorable finding that is both statistically and substantially significant. For tables 5.10a through 5.11c, the shading indicates where there are differential effects of CPC+ between the subgroups defined by

different practice or patient characteristics. For example, the effect of CPC+ on small practices is statistically ($p < 0.10$) and substantially (a difference of five percentage points or more) different from the effect on medium and/or large practices. Because we measure the differential effects between subgroups, the effect of CPC+ in any specific subgroup might not be statistically and substantially significant (e.g., using the example above, the difference between CPC+ and comparison practice respondents in large practices might be less than 5 percentage points and not statistically significant).

Table 5.7. Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions and composites, by track (PY 2)

	Track 1					Track 2				
	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)
Composite measures										
Access (11 questions)	38.0	39.0	-1.0	0.023	3,924; 7,320	39.2	38.7	0.4	0.321	3,989; 7,056
Continuity in the doctor's office (1 question)	83.7	84.3	-0.6	0.413	3,821; 7,120	83.4	83.9	-0.5	0.586	3,900; 6,873
Continuity outside of the doctor's office (2 question)	3.7	3.3	0.4	0.185	3,832; 7,188	4.0	3.3	0.7	0.034	3,901; 6,936
Care management (4 questions)	71.6	71.3	0.3	0.663	3,904; 7,284	72.1	71.8	0.3	0.662	3,976; 7,016
Comprehensiveness (6 questions)	51.0	51.5	-0.5	0.411	3,908; 7,298	50.8	52.1	-1.3	0.035	3,978; 7,030
Coordination (1 question)	66.2	67.1	-0.9	0.461	2,752; 5,265	66.2	67.4	-1.2	0.300	2,878; 5,089
Patient and family caregiver engagement (8 questions)	73.5	74.6	-1.1	0.026	3,916; 7,305	74.6	75.2	-0.5	0.339	3,983; 7,040
Helpful, courteous, and respectful office staff (2 questions)	83.6	84.9	-1.3	0.053	3,880; 7,241	84.8	84.7	0.1	0.909	3,946; 6,976
Teamwork (1 question)	78.2	78.7	-0.5	0.583	3,804; 7,155	80.0	78.7	1.3	0.125	3,888; 6,884
Patients' rating of the primary care doctors and their staff (1 question)	84.1	83.8	0.3	0.666	3,860; 7,194	85.3	84.1	1.1	0.134	3,929; 6,940
Individual questions in the composite measures										
Access (11 questions)										
Q3: Type of care received by patient from primary care doctors and their staff										
Q3_3: Discussed his/her health with doctor or someone from the doctor's office via phone, email, text messaging, or a patient portal	33.2	37.0	-3.7	0.001	3,832; 7,188	35.9	35.9	0.0	0.989	3,901; 6,936
Q3_4: Had a same-day appointment or walk-in visit	20.0	18.9	1.1	0.249	3,832; 7,188	19.1	18.1	1.0	0.316	3,901; 6,936
Q3_7: Had a video appointment with doctor or someone from doctor's office	1.1	0.9	0.1	0.520	3,794; 7,126	1.3	0.8	0.5	0.060	3,752; 6,695

Table 5.7. (continued)

	Track 1					Track 2				
	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)
Q3_8: Attended a group medical appointment arranged by the doctor's office with patients with similar medical issues	1.2	1.3	-0.2	0.549	3,794; 7,126	1.7	1.1	0.6	0.035	3,802; 6,762
Q6: Patient always got care as soon as needed when s/he contacted doctor's office for care needed right away	72.8	71.9	1.0	0.588	1,732; 3,091	74.5	72.2	2.2	0.175	1,742; 2,929
Q8: Patient always got care as soon as needed when s/he made appointments for check-up or routine care	78.1	79.6	-1.5	0.170	3,256; 6,032	80.0	78.9	1.1	0.295	3,270; 5,826
Q10: Patient always received an answer to his/her health question that same day when contacting doctor's office during regular office hours	61.1	60.2	0.9	0.633	1,688; 3,218	59.7	60.3	-0.6	0.752	1,690; 3,078
Q11: Patient received information from doctor's office about what to do if she/he needed care during evenings, weekends, or holidays	72.2	71.7	0.5	0.645	3,796; 6,990	73.4	71.8	1.7	0.139	3,853; 6,738
Q13: Patient always received an answer to his/her health question as soon as needed when contacting doctor's office outside of regular office hours	60.1	61.7	-1.6	0.694	303; 601	67.4	60.5	7.0	0.079	302; 573
Q15: Patient always received an answer to his/her health question as soon as needed when contacting the doctor's office using email, a patient portal, or text messaging	75.2	76.4	-1.3	0.686	371; 946	77.0	73.7	3.3	0.236	525; 925
Q16: Among individuals with scheduled appointments, appointments always started within 15 minutes of scheduled appointment time	42.0	46.2	-4.2	0.001	3,804; 7,065	44.6	46.4	-1.8	0.171	3,861; 6,809

Table 5.7. (continued)

	Track 1					Track 2				
	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)
Continuity in the doctor's office (1 question)										
Q42: Patient always received care from the primary care doctor she/he thought of as her/his regular doctor	83.1	84.6	-1.5	0.105	3,821; 7,120	83.1	84.6	-1.5	0.096	3,900; 6,873
Continuity outside of the doctor's office (2 question)										
Q3_5: Patient's doctor or someone from the doctor's office came to see patient in the hospital	4.0	3.8	0.1	0.759	3,832; 7,188	4.2	3.2	0.9	0.037	3,895; 6,926
Q3_6: Patient's doctor or someone from the doctor's office came to see patient at another location (excluding the doctor's office and hospital) to provide health care	2.1	2.0	0.1	0.861	3,832; 7,188	2.5	1.8	0.7	0.048	3,880; 6,904
Care management (4 questions)										
Q18: If patient took prescription medicine, someone from the doctor's office talked with patient about all the prescription medicines patient was taking	93.8	93.3	0.5	0.386	3,752; 6,881	93.6	93.4	0.2	0.728	3,799; 6,622
Q27: Patient's doctor or someone from the doctor's office asked patient if there are things that make it hard for him/her to take care of his/her health	53.4	54.6	-1.2	0.341	3,793; 7,088	53.5	55.3	-1.8	0.145	3,856; 6,824
Q38: If patient visited the emergency room or emergency department for care, patient was contacted by doctor's office within one week	64.7	58.7	6.0	0.021	873; 1,595	65.0	61.6	3.4	0.148	915; 1,513
Q40: If patient stayed in a hospital overnight or longer, patient was contacted by doctor's office within 3 days	53.5	55.0	-1.6	0.603	612; 1,131	59.9	53.8	6.2	0.036	649; 1,127
Comprehensiveness (6 questions)										
Q23: People from the doctor's office, including the doctor, always seemed to know the important information about patient's medical history	75.4	75.9	-0.5	0.651	3,875; 7,224	75.9	76.1	-0.1	0.894	3,935; 6,958

Table 5.7. (continued)

	Track 1					Track 2				
	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)
Q28: Patient's doctor or someone from the doctor's office asked patient if she/he had any problems with physical pain or discomfort	85.4	86.3	-0.9	0.287	3,850; 7,194	84.7	86.2	-1.5	0.097	3,904; 6,919
Q29: Patient's doctor or someone from the doctor's office asked patient if there was a period of time when she/he felt sad, empty, or depressed	60.6	59.4	1.2	0.357	3,829; 7,144	61.4	62.5	-1.1	0.363	3,891; 6,899
Q30: Patient's doctor or someone from the doctor's office talked to patient about things in his/her life that cause worry or stress	52.6	53.5	-0.9	0.494	3,812; 7,127	52.7	54.6	-1.9	0.116	3,870; 6,875
Q31: Patient's doctor or someone from the doctor's office asked her/him about non-medical problems she/he might need help with	10.7	10.3	0.4	0.578	3,796; 7,042	10.5	10.3	0.3	0.717	3,865; 6,779
Q32: Patient's doctor or someone from the doctor's office asked her/him if she/he had any problems with abuse or violence at home or in her/his neighborhood	18.1	18.5	-0.4	0.704	3,803; 7,026	17.8	20.6	-2.7	0.012	3,866; 6,770
Coordination (1 question)										
Q36: If patient received care from a specialist, primary care doctors and their staff always seemed to work well together to care for patient	66.1	67.5	-1.4	0.307	2,752; 5,265	65.9	67.7	-1.8	0.196	2,878; 5,089
Patient and family caregiver engagement (8 questions)										
Q20: Patient always received test results that were ordered by the doctor or someone at the doctor's office	83.2	85.4	-2.3	0.020	3,236; 6,081	85.1	85.7	-0.6	0.517	3,272; 5,938
Q21: People from the doctor's office, including the doctor, always explained medical things to patient in a way that was easy to understand	79.0	80.5	-1.6	0.114	3,885; 7,245	79.3	81.4	-2.1	0.032	3,947; 6,975
Q22: People from the doctor's office, including the doctor, always listened carefully to patient	82.7	82.6	0.1	0.953	3,879; 7,260	84.0	84.1	-0.1	0.902	3,948; 6,994

Table 5.7. (continued)

	Track 1					Track 2				
	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)
Q24: People from the doctor's office, including the doctor, always showed respect for what patient had to say	87.5	87.7	-0.2	0.823	3,895; 7,256	88.2	88.5	-0.3	0.723	3,944; 6,986
Q25: People from the doctor's office, including the doctor, always spent enough time with patient	78.3	78.4	-0.1	0.916	3,889; 7,260	79.7	78.2	1.5	0.142	3,952; 6,984
Q26: Patient's doctor or someone from the doctor's office talked with patient about how to be healthy enough to do the things he/she likes to do	78.0	80.3	-2.3	0.021	3,825; 7,114	77.9	79.8	-1.9	0.056	3,866; 6,851
Q33: Patient has an advanced care plan	61.7	64.8	-3.2	0.007	3,845; 7,106	64.2	64.9	-0.7	0.559	3,908; 6,846
Q34: Patient's doctor or someone from the doctor's office asked patient about his/her end-of-life care wishes or creating an advance care plan	37.2	40.1	-2.9	0.023	3,794; 7,056	40.8	42.7	-1.9	0.157	3,874; 6,789
Helpful, courteous, and respectful office staff (2 questions)										
Q43: Clerks and receptionists at the doctor's office were always as helpful as patient thought they should be	78.9	80.9	-2.0	0.047	3,868; 7,207	80.0	80.9	-0.9	0.386	3,937; 6,941
Q44: Clerks and receptionists at the doctor's office always treated patient with courtesy and respect	88.2	89.1	-1.0	0.226	3,972; 7,226	89.3	89.5	-0.2	0.795	3,941; 6,966
Teamwork (1 question)										
Q41: Primary care doctors and their staff always worked well together to care for patient	78.4	78.7	-0.3	0.787	3,804; 7,155	80.6	79.5	1.1	0.264	3,888; 6,884
Patients' rating of the primary care doctors and their staff (1 question)										
Q45: Patient's rating of care received from the primary care doctors and their staff as best level of care possible (9-10, out of a maximum of 10)	84.2	83.8	0.4	0.661	3,860; 7,194	85.5	84.1	1.4	0.114	3,939; 6,940

Table 5.7. (continued)

	Track 1					Track 2				
	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)	CPC+ practices (%)	Comparison practices (%)	Diff. (% pt)	p-value	N (CPC+; Comparison)
Questions not included in composite measures										
Q3_1: Had a scheduled appointment with the primary care doctors and their staff	94.5	95.2	-0.7	0.216	3,827; 7,178	94.1	95.4	-1.2	0.030	3,880; 6,904
Q3_2: Received help to fill prescriptions, set up medical tests, or schedule appointments from the primary care doctors and their staff	61.6	63.9	-2.3	0.052	3,832; 7,188	61.7	61.7	0.0	0.997	3,901; 6,936

Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate predicted probabilities for the composite measures, we first created beneficiary-level composite measures by averaging nonmissing binary indicators for whether the beneficiary's response was the best option across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

For each outcome, we estimated six separate regressions. We estimated outcomes separately for Track 1 and Track 2, and within each track, separately by SSP participation status at the start of CPC+ (January 1, 2017). All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

Green shading with **bolded text** indicates a favorable finding that is both statistically and substantially significant; there were no unfavorable findings that were both statistically and substantially significant.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.8. Predicted standardized average responses (0 to 1) for composite measures and individual questions for Medicare FFS beneficiaries attributed to CPC+ and comparison practices, by track (PY 2)

	Track 1				Track 2			
	CPC+ practices	Comparison practices	Difference	p-value	CPC+ practices	Comparison practices	Difference	p-value
Composite measures								
Access (11 questions)	0.46	0.46	0.00	0.285	0.47	0.46	0.01	0.071
Continuity in the doctor's office (1 question)	0.93	0.93	0.00	0.438	0.93	0.93	0.00	0.584
Continuity outside of the doctor's office (2 questions)	0.04	0.03	0.00	0.185	0.04	0.03	0.01	0.034
Care management (4 questions)	0.72	0.71	0.00	0.663	0.72	0.72	0.00	0.662
Comprehensiveness (6 questions)	0.53	0.54	-0.01	0.394	0.53	0.55	-0.01	0.036
Coordination (1 question)	0.84	0.84	0.00	0.580	0.84	0.84	0.00	0.529
Patient and family caregiver engagement (8 questions)	0.80	0.81	-0.01	0.016	0.81	0.82	0.00	0.201
Helpful, courteous, and respectful office staff (2 questions)	0.93	0.94	0.00	0.156	0.94	0.94	0.00	0.781
Teamwork (1 question)	0.91	0.91	0.00	0.538	0.92	0.91	0.01	0.151
Patients' rating of the primary care doctors and their staff (1 question)	0.93	0.93	0.00	0.796	0.94	0.93	0.00	0.251
Individual questions in the composite measures								
Access (11 questions)								
Q3: Type of care received by patient from primary care doctors and their staff								
Q3_3: Discussed his/her health with doctor or someone from the doctor's office via phone, email, text messaging, or a patient portal	0.33	0.37	-0.04	0.001	0.36	0.36	0.00	0.989
Q3_4: Had a same-day appointment or walk-in visit	0.20	0.19	0.01	0.249	0.19	0.18	0.01	0.316
Q3_7: Had a video appointment with doctor or someone from doctor's office	0.01	0.01	0.00	0.520	0.01	0.01	0.00	0.060
Q3_8: Attended a group medical appointment arranged by the doctor's office with patients with similar medical issues	0.01	0.01	0.00	0.549	0.02	0.01	0.01	0.035

Table 5.8. (continued)

	Track 1				Track 2			
	CPC+ practices	Comparison practices	Difference	p-value	CPC+ practices	Comparison practices	Difference	p-value
Q6: Patient always got care as soon as needed when s/he contacted doctor's office for care needed right away	0.88	0.88	0.01	0.367	0.89	0.88	0.01	0.313
Q8: Patient always got care as soon as needed when s/he made appointments for check-up or routine care	0.91	0.92	-0.01	0.154	0.92	0.92	0.00	0.335
Q10: Patient always received an answer to his/her health question that same day when contacting doctor's office during regular office hours	0.82	0.82	0.00	0.893	0.83	0.82	0.00	0.661
Q11: Patient received information from doctor's office about what to do if she/he needed care during evenings, weekends, or holidays	0.72	0.72	0.01	0.645	0.73	0.72	0.02	0.139
Q13: Patient always received an answer to his/her health question as soon as needed when contacting doctor's office outside of regular office hours	0.81	0.82	-0.01	0.466	0.83	0.83	0.01	0.782
Q15: Patient always received an answer to his/her health question as soon as needed when contacting the doctor's office using email, a patient portal, or text messaging	0.88	0.87	0.01	0.372	0.89	0.87	0.02	0.161
Q16: Among individuals with scheduled appointments, appointments always started within 15 minutes of scheduled appointment time	0.74	0.75	-0.01	0.040	0.75	0.75	0.00	0.812
Continuity in the doctor's office (1 question)								
Q42: Patient always received care from the primary care doctor she/he thought of as her/his regular doctor	0.93	0.93	0.00	0.438	0.93	0.93	0.00	0.584
Continuity outside of the doctor's office (2 question)								
Q3_5: Patient's doctor or someone from the doctor's office came to see patient in the hospital	0.04	0.04	0.00	0.759	0.04	0.03	0.01	0.037
Q3_6: Patient's doctor or someone from the doctor's office came to see patient at another location (excluding the doctor's office and hospital) to provide health care	0.02	0.02	0.00	0.861	0.02	0.02	0.01	0.048

Table 5.8. (continued)

	Track 1				Track 2			
	CPC+ practices	Comparison practices	Difference	p-value	CPC+ practices	Comparison practices	Difference	p-value
Care management (4 questions)								
Q18: If patient took prescription medicine, someone from the doctor's office talked with patient about all the prescription medicines patient was taking	0.94	0.93	0.01	0.386	0.94	0.93	0.00	0.728
Q27: Patient's doctor or someone from the doctor's office asked patient if there are things that make it hard for him/her to take care of his/her health	0.53	0.55	-0.01	0.341	0.53	0.55	-0.02	0.145
Q38: If patient visited the emergency room or emergency department for care, patient was contacted by doctor's office within one week	0.65	0.59	0.06	0.021	0.65	0.62	0.03	0.148
Q40: If patient stayed in a hospital overnight or longer, patient was contacted by doctor's office within 3 days	0.53	0.55	-0.02	0.603	0.60	0.54	0.06	0.036
Comprehensiveness (6 questions)								
Q23: People from the doctor's office, including the doctor, always seemed to know the important information about patient's medical history	0.90	0.90	0.00	0.928	0.90	0.90	0.00	0.960
Q28: Patient's doctor or someone from the doctor's office asked patient if she/he had any problems with physical pain or discomfort	0.85	0.86	-0.01	0.287	0.85	0.86	-0.02	0.097
Q29: Patient's doctor or someone from the doctor's office asked patient if there was a period of time when she/he felt sad, empty, or depressed	0.61	0.59	0.01	0.357	0.61	0.62	-0.01	0.363
Q30: Patient's doctor or someone from the doctor's office talked to patient about things in his/her life that cause worry or stress	0.53	0.54	-0.01	0.494	0.53	0.55	-0.02	0.116
Q31: Patient's doctor or someone from the doctor's office asked her/him about non-medical problems she/he might need help with	0.11	0.10	0.00	0.578	0.11	0.10	0.00	0.717
Q32: Patient's doctor or someone from the doctor's office asked her/him if she/he had any problems with abuse or violence at home or in her/his neighborhood	0.18	0.18	0.00	0.704	0.18	0.21	-0.03	0.012

Table 5.8. (continued)

	Track 1				Track 2			
	CPC+ practices	Comparison practices	Difference	p-value	CPC+ practices	Comparison practices	Difference	p-value
Coordination (1 question)								
Q36: If patient received care from a specialist, primary care doctors and their staff always seemed to work well together to care for patient	0.84	0.84	0.00	0.580	0.84	0.84	0.00	0.529
Patient and family caregiver engagement (8 questions)								
Q20: Patient always received test results that were ordered by the doctor or someone at the doctor's office	0.92	0.93	-0.01	0.022	0.93	0.93	0.00	0.478
Q21: People from the doctor's office, including the doctor, always explained medical things to patient in a way that was easy to understand	0.91	0.92	0.00	0.519	0.91	0.92	-0.01	0.085
Q22: People from the doctor's office, including the doctor, always listened carefully to patient	0.93	0.93	0.00	0.978	0.93	0.93	0.00	0.888
Q24: People from the doctor's office, including the doctor, always showed respect for what patient had to say	0.95	0.95	0.00	0.982	0.95	0.95	0.00	0.970
Q25: People from the doctor's office, including the doctor, always spent enough time with patient	0.91	0.91	0.00	0.918	0.92	0.91	0.00	0.359
Q26: Patient's doctor or someone from the doctor's office talked with patient about how to be healthy enough to do the things he/she likes to do	0.78	0.80	-0.02	0.021	0.78	0.80	-0.02	0.056
Q33: Patient has an advanced care plan	0.62	0.65	-0.03	0.007	0.64	0.65	-0.01	0.559
Q34: Patient's doctor or someone from the doctor's office asked patient about his/her end-of-life care wishes or creating an advance care plan	0.37	0.40	-0.03	0.023	0.41	0.43	-0.02	0.157
Helpful, courteous, and respectful office staff (2 questions)								
Q43: Clerks and receptionists at the doctor's office were always as helpful as patient thought they should be	0.91	0.92	0.00	0.214	0.92	0.92	0.00	0.694
Q44: Clerks and receptionists at the doctor's office always treated patient with courtesy and respect	0.95	0.96	0.00	0.235	0.96	0.96	0.00	0.791
Teamwork (1 question)								
Q41: Primary care doctors and their staff always worked well together to care for patient	0.91	0.91	0.00	0.538	0.92	0.91	0.01	0.151

Table 5.8. (continued)

	Track 1				Track 2			
	CPC+ practices	Comparison practices	Difference	p-value	CPC+ practices	Comparison practices	Difference	p-value
Patients' rating of the primary care doctors and their staff (1 question)								
Q45: Patient's rating of care received from the primary care doctors and their staff as best level of care possible (9-10, out of a maximum of 10)	0.93	0.93	0.00	0.796	0.94	0.93	0.00	0.251
Questions not included in composite measures								
Q3_1: Had a scheduled appointment with the primary care doctors and their staff	0.94	0.95	-0.01	0.216	0.94	0.95	-0.01	0.030
Q3_2: Received help to fill prescriptions, set up medical tests, or schedule appointments from the primary care doctors and their staff	0.62	0.64	-0.02	0.052	0.62	0.62	0.00	0.997

Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

For each outcome, we estimated six separate regressions. We estimated outcomes separately for Track 1 and Track 2, and within each track, separately by SSP participation status at the start of CPC+ (January 1, 2017). All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

Sample sizes for each questions are shown in Table 5.7.

Green shading with **bolded text** indicates a favorable finding that is both statistically and substantially significant; there were no unfavorable findings that were both statistically and substantially significant.

Table 5.9. Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by SSP status (PY 2)

	Track 1 SSP ^a				Track 1 Not-SSP ^b				Track 2 SSP ^c				Track 2 Not-SSP ^d			
	CPC+ practices (%)	Comparison practices (%)	Difference (% pt)	p-value	CPC+ practices (%)	Comparison practices (%)	Difference (% pt)	p-value	CPC+ practices (%)	Comparison practices (%)	Difference (% pt)	p-value	CPC+ practices (%)	Comparison practices (%)	Difference (% pt)	p-value
Composite measures																
Access (11 questions)	37.2	38.7	-1.5	0.018	38.9	39.3	-0.4	0.539	38.8	38.6	0.3	0.667	39.4	38.9	-0.4	0.539
Continuity in the doctor's office (1 question)	82.1	84.1	-2.0	0.067	85.3	84.6	0.7	0.488	82.6	83.2	-0.6	0.647	84.0	84.5	0.7	0.488
Continuity outside of the doctor's office (2 question)	4.0	3.6	0.3	0.461	3.4	2.9	0.5	0.246	4.2	3.5	0.7	0.184	3.8	3.0	0.5	0.246
Care management (4 questions)	71.0	72.1	-1.2	0.206	72.2	70.5	1.7	0.088	72.4	72.4	0.1	0.955	71.7	71.4	1.7	0.088
Comprehensiveness (6 questions)	50.9	52.5	-1.7	0.047	50.8	50.4	0.4	0.670	51.6	53.3	-1.7	0.076	50.2	51.1	0.4	0.670
Coordination (1 question)	64.6	67.0	-2.5	0.124	67.9	67.2	0.7	0.682	64.6	67.7	-3.1	0.079	67.5	67.1	0.7	0.682
Patient and family caregiver engagement (8 questions)	72.8	74.9	-2.1	0.003	74.0	74.4	-0.4	0.596	74.7	75.1	-0.4	0.654	74.6	75.2	-0.4	0.596
Helpful, courteous, and respectful office staff (2 questions)	82.4	85.3	-2.8	0.003	84.7	84.6	0.1	0.888	85.1	84.5	0.7	0.517	84.8	84.9	0.1	0.888
Teamwork (1 question)	76.9	78.6	-1.7	0.169	79.8	78.8	1.0	0.416	78.8	77.5	1.4	0.328	81.1	79.7	1.0	0.416
Patients' rating of the primary care doctors and their staff (1 question)	83.1	85.0	-1.9	0.078	84.9	82.5	2.4	0.027	85.7	84.7	1.0	0.376	84.8	83.7	2.4	0.027

Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate predicted probabilities for the composite measures, we first created beneficiary-level composite measures by averaging nonmissing binary indicators for whether the beneficiary's response was the best option across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

For each outcome, we estimated six separate regressions. We estimated outcomes separately for Track 1 and Track 2, and within each track, separately by SSP participation status at the start of CPC+ (January 1, 2017). All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

^a Sample sizes were between 1,403 beneficiaries and 2,034 beneficiaries in CPC+ practices and 2,828 beneficiaries and 3,936 beneficiaries in the comparison practices.

^b Sample sizes were between 1,349 beneficiaries and 1,890 beneficiaries in CPC+ practices and 2,437 beneficiaries and 3,384 beneficiaries in the comparison practices.

^c Sample sizes were between 1,312 beneficiaries and 1,788 beneficiaries in CPC+ practices and 2,398 beneficiaries and 3,299 beneficiaries in the comparison practices.

^d Sample sizes were between 1,566 beneficiaries and 1,2201 beneficiaries in CPC+ practices and 2,691 beneficiaries and 3,757 beneficiaries in the comparison practices.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.10a. Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by practice characteristics (PY 2): practice ownership²⁵

	Track 1: Health system or hospital owned ^a			Track 1: Independent ^b			Track 1 p-value ^e	Track 2: Health system or hospital owned ^c			Track 2: Independent ^d			Track 2 p-value ^e
	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)		CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	
Composite measures														
Access (11 questions)	37.1	38.6	-1.6	39.4	39.5	-0.1	0.065	38.6	38.1	0.5	39.8	39.5	0.2	0.764
Continuity in the doctor's office (1 question)	82.6	83.8	-1.2	85.3	84.9	0.4	0.282	83.4	84.0	-0.6	83.5	83.8	-0.3	0.899
Continuity outside of the doctor's office (2 question)	3.1	2.9	0.3	4.4	3.8	0.6	0.829	3.6	3.1	0.4	4.6	3.4	1.2	0.337
Care management (4 questions)	72.0	72.1	-0.2	71.2	70.3	0.9	0.553	71.5	72.1	-0.6	73.0	71.4	1.6	0.132
Comprehensiveness (6 questions)	52.4	52.6	-0.2	49.1	50.1	-1.0	0.405	51.0	53.0	-1.9	50.7	51.0	-0.3	0.187
Coordination (1 question)	66.2	68.6	-2.4	66.5	65.3	1.2	0.149	67.1	69.0	-1.9	64.8	65.1	-0.4	0.492
Patient and family caregiver engagement (8 questions)	72.5	75.2	-2.7	74.7	73.8	0.9	0.001	74.2	75.3	-1.1	75.3	75.0	0.3	0.246
Helpful, courteous, and respectful office staff (2 questions)	82.9	84.9	-2.0	84.6	84.9	-0.3	0.303	84.8	84.7	0.1	84.8	84.9	-1.7	0.888
Teamwork (1 question)	76.6	78.9	-2.3	80.4	78.4	2.0	0.014	80.8	78.7	2.1	78.9	78.6	0.3	0.355
Patients' rating of the primary care doctors and their staff (1 question)	83.2	84.4	-1.2	85.5	83.0	2.5	0.041	84.9	84.4	0.4	85.7	83.6	2.0	0.282

Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

We estimated outcomes separately for Track 1 and Track 2, and within each track. All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

²⁵ Practice ownership comes from the SK&A database, managed by IQVIA, a marketing organization that collects information directly from all health care practices in the United States. IQVIA updates this information on an ongoing basis; we pulled practice ownership information November 2016.

Table 5.10a. (continued)

^a Sample sizes were between 1,471 beneficiaries and 2,135 beneficiaries in CPC+ practices and 2,969 beneficiaries and 4,121 beneficiaries in the comparison practices.

^b Sample sizes were between 1,281 beneficiaries and 1,789 beneficiaries in CPC+ practices and 2,296 beneficiaries and 3,199 beneficiaries in the comparison practices.

^c Sample sizes were between 1,599 beneficiaries and 2,233 beneficiaries in CPC+ practices and 2,978 beneficiaries and 4,118 beneficiaries in the comparison practices.

^d Sample sizes were between 1,279 beneficiaries and 1,756 beneficiaries in CPC+ practices and 2,111 beneficiaries and 2,938 beneficiaries in the comparison practices.

^e The estimates in the difference column show subgroup-specific differences between CPC+ and comparison respondents separately for each practice characteristic listed in the table. The *p*-values represent results from testing for statistically significant differences in impact estimates between the subgroups, based on the same baseline practice characteristic. The *p*-values are from a *t*-test for subgroups with two categories and from an *F*-test for subgroups with more than two categories.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.10b. Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by practice characteristics (PY 2): practice size²⁶

	Track 1: Small (1-2 PCPs) ^a			Track 1: Medium (3-5 PCPs) ^b			Track 1: Large (6+ PCPs) ^c			Track 1 p-value ^g	Track 2: Small (1-2 PCPs) ^d			Track 2: Medium (3-5 PCPs) ^e			Track 2: Large (6+ PCPs) ^f			Track 2 p-value ^g
	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)		CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	
Composite measures																				
Access (11 questions)	40.5	40.4	0.1	38.2	39.3	-1.1	37.0	38.2	-1.2	0.282	40.7	39.0	1.7	39.2	39.5	-0.4	38.7	38.1	0.6	0.228
Continuity in the doctor's office (1 question)	87.8	87.5	0.3	84.4	84.2	0.1	81.5	82.8	-1.3	0.617	86.5	86.7	-0.2	84.1	84.4	-0.2	82.3	83.0	-0.7	0.960
Continuity outside of the doctor's office (2 question)	5.0	3.5	1.5	2.9	2.8	0.0	3.7	3.5	0.2	0.252	4.3	2.8	1.5	3.8	2.6	1.2	4.0	3.7	0.3	0.345
Care management (4 questions)	72.0	71.0	1.0	72.4	71.8	0.6	70.9	71.1	-0.2	0.875	74.2	71.7	2.5	71.3	71.8	-0.5	72.2	71.8	0.4	0.499
Comprehensiveness (6 questions)	50.8	50.8	0.0	51.3	51.7	-0.4	50.7	51.6	-0.9	0.881	50.5	52.1	-1.6	50.6	52.3	-1.7	51.1	52.0	-0.9	0.693
Coordination (1 question)	67.8	65.0	2.8	66.5	67.7	-1.2	65.5	67.7	-2.2	0.273	68.7	66.8	1.9	66.5	66.9	-0.4	65.3	67.8	-2.5	0.357
Patient and family caregiver engagement (8 questions)	74.0	73.5	0.6	73.8	75.3	-1.5	73.0	74.6	-1.6	0.331	75.2	74.3	1.0	74.5	75.7	-1.2	74.6	75.0	-0.4	0.508
Helpful, courteous, and respectful office staff (2 questions)	85.9	84.8	1.1	83.3	85.2	-2.0	82.9	84.8	-1.9	0.302	86.5	84.9	1.6	84.6	84.4	0.2	84.6	84.9	-0.4	0.682
Teamwork (1 question)	79.8	78.8	1.0	79.5	79.1	0.4	76.7	78.4	-1.7	0.495	78.9	79.6	-0.7	81.0	79.7	1.3	79.6	77.8	1.8	0.801
Patients' rating of the primary care doctors and their staff (1 question)	87.8	82.4	5.4	85.0	85.3	-0.3	81.9	83.2	-1.4	0.006	85.5	83.2	2.3	85.9	85.2	0.7	84.7	83.7	1.1	0.791

²⁶ Practice size is determined from the number of primary care practitioners (PCPs) listed in a November 2016 pull of SK&A data and the National Plan & Provider Enumeration System (NPPES). We defined small practices to have one to two PCPs, medium practices to have three to five PCPs, and large practices to have six or more PCPs. For a provider to count as a PCP, they had to meet criteria based on SK&A or NPPES. Using the SK&A data, we defined PCPs as a physician (MD or DO), nurse practitioner (NP), or physician's assistant (PA) who bill under their own National Provider Identifier (NPI) and have a specialty of general practitioner, family practitioner, internist, internal medicine/pediatrics, or geriatrician. In NPPES, we defined PCPs as physicians, NPs, PAs, or clinical nurse specialists with 1 of 56 primary care taxonomy codes.

Table 5.10b. (continued)

Source: Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

We estimated outcomes separately for Track 1 and Track 2, and within each track. All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

Blue shading with **bolded text** indicates that the effect of CPC+ on patients is different between each of the subgroups. We assessed an effect to be different if the difference in the effect between the groups is both statistically significant and 5 percentage points or larger.

^a Sample sizes were between 577 beneficiaries and 818 beneficiaries in CPC+ practices and 1,095 beneficiaries and 1,504 beneficiaries in the comparison practices.

^b Sample sizes were between 881 beneficiaries and 1,255 beneficiaries in CPC+ practices and 1,907 beneficiaries and 2,657 beneficiaries in the comparison practices.

^c Sample sizes were between 1,294 beneficiaries and 1,851 beneficiaries in CPC+ practices and 2,263 beneficiaries and 3,159 beneficiaries in the comparison practices.

^d Sample sizes were between 332 beneficiaries and 485 beneficiaries in CPC+ practices and 657 beneficiaries and 897 beneficiaries in the comparison practices.

^e Sample sizes were between 937 beneficiaries and 1,307 beneficiaries in CPC+ practices and 1,682 beneficiaries and 2,333 beneficiaries in the comparison practices.

^f Sample sizes were between 1,609 beneficiaries and 2,197 beneficiaries in CPC+ practices and 2,750 beneficiaries and 3,826 beneficiaries in the comparison practices.

^g The estimates in the difference column show subgroup-specific differences between CPC+ and comparison respondents separately for each practice characteristic listed in the table.

The *p*-values represent results from testing for statistically significant differences in impact estimates between the subgroups, based on the same baseline practice characteristic. The *p*-values are from a *t*-test for subgroups with two categories and from an *F*-test for subgroups with more than two categories.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.10c. Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by practice characteristics (PY 2): geographic location²⁷

	Track 1: Rural ^a			Track 1: Suburban ^b			Track 1: Urban ^c			Track 1 p-values ^g	Track 2: Rural ^d			Track 2: Suburban ^e			Track 2: Urban ^f			Track 2 p-values ^g
	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)		CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	
Composite measures																				
Access (11 questions)	38.3	39.0	-0.7	37.3	38.3	-0.9	38.3	39.2	-0.9	0.993	38.3	39.0	-0.7	39.3	36.9	2.3	39.2	39.0	0.1	0.140
Continuity in the doctor's office (1 question)	85.0	84.9	0.1	81.5	83.8	-2.3	84.2	84.3	-0.2	0.573	82.7	85.5	-2.8	85.5	83.1	2.5	83.1	83.9	-0.8	0.299
Continuity outside of the doctor's office (2 question)	3.0	3.4	-0.5	3.9	2.6	1.3	3.7	3.4	0.3	0.306	4.9	2.8	2.1	4.4	2.9	1.5	3.9	3.4	0.5	0.364
Care management (4 questions)	71.0	69.2	1.9	72.6	72.0	0.6	71.5	71.4	0.0	0.735	73.6	69.4	4.3	72.7	72.6	0.1	71.9	71.9	0.0	0.226
Comprehensiveness (6 questions)	49.6	49.8	-0.2	51.2	51.5	-0.3	51.0	51.7	-0.6	0.967	48.7	50.8	-2.1	50.4	52.6	-2.2	51.2	52.2	-0.9	0.655
Coordination (1 question)	72.9	71.5	1.4	66.1	69.9	-3.7	65.6	66.0	-0.4	0.498	66.5	71.8	-5.3	68.2	67.3	0.9	65.7	67.0	-1.3	0.435
Patient and family caregiver engagement (8 questions)	71.8	73.4	-1.6	72.5	74.4	-1.9	73.9	74.8	-0.9	0.658	74.8	74.6	0.1	73.8	75.0	-1.2	74.8	75.2	-0.4	0.809
Helpful, courteous, and respectful office staff (2 questions)	85.2	83.4	1.8	84.0	86.9	-2.9	83.4	84.7	-1.3	0.251	86.9	85.8	1.1	84.2	84.7	-0.5	84.7	84.7	0.1	0.878
Teamwork (1 question)	79.2	79.0	0.2	77.5	79.3	-1.8	78.4	78.5	-0.2	0.718	78.7	80.5	-1.8	80.8	80.1	0.7	79.9	78.2	1.8	0.569
Patients' rating of the primary care doctors and their staff (1 question)	82.8	81.1	1.7	83.4	84.3	-0.9	84.5	84.0	0.5	0.687	83.5	82.6	0.8	86.0	84.3	1.7	85.2	84.2	1.0	0.901

Source: Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

²⁷ Geographic location is derived from the 2015-2016 Department of Health and Human Services' Area Health Resource File (AHRF). The variable used reflects 2013 data. The AHRF provides a 9-point rural-urban continuum code (RUCC) from the USDA Economic Research Service. From these codes, we defined urban as a county in a metro area of more than 250,000 people (RUCC=1 or 2), suburban as a county in a metro area of less than 250,000 people or that has an urban population of 20,000 or more and is adjacent to a metro area (RUCC=3 or 4), or rural if it does not meet the urban or suburban classifications (RUCC=5-9).

Table 5.10c. (continued)

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

We estimated outcomes separately for Track 1 and Track 2, and within each track. All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

^a Sample sizes were between 234 beneficiaries and 369 beneficiaries in CPC+ practices and 455 beneficiaries and 695 beneficiaries in the comparison practices.

^b Sample sizes were between 480 beneficiaries and 686 beneficiaries in CPC+ practices and 775 beneficiaries and 1,147 beneficiaries in the comparison practices.

^c Sample sizes were between 2,038 beneficiaries and 2,869 beneficiaries in CPC+ practices and 4,035 beneficiaries and 5,478 beneficiaries in the comparison practices.

^d Sample sizes were between 178 beneficiaries and 293 beneficiaries in CPC+ practices and 396 beneficiaries and 597 beneficiaries in the comparison practices.

^e Sample sizes were between 430 beneficiaries and 631 beneficiaries in CPC+ practices and 805 beneficiaries and 1,144 beneficiaries in the comparison practices.

^f Sample sizes were between 2,770 beneficiaries and 3,065 beneficiaries in CPC+ practices and 3,888 beneficiaries and 5,315 beneficiaries in the comparison practices.

^g The estimates in the difference column show subgroup-specific differences between CPC+ and comparison respondents separately for each practice characteristic listed in the table. The p -values represent results from testing for statistically significant differences in impact estimates between the subgroups, based on the same baseline practice characteristic. The p -values are from a t -test for subgroups with two categories and from an F -test for subgroups with more than two categories.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.10d. Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by practice characteristics (PY 2): prior primary care transformation²⁸

	Track 1: Participant in CPC Classic, MAPCP, or has medical home recognition ^a			Track 1: Not a participant in CPC Classic, MAPCP, and does not have medical home recognition ^b			Track 1 p-value ^e	Track 2: Participant in CPC Classic, MAPCP, or has medical home recognition ^c			Track 2: Not a participant in CPC Classic, MAPCP, and does not have medical home recognition ^d			Track 2 p-value ^e
	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)		CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	
Composite measures														
Access (11 questions)	38.4	38.6	-0.2	37.8	39.7	-1.9	0.008	39.3	38.7	0.7	38.3	38.9	-0.6	0.129
Continuity in the doctor's office (1 question)	83.2	83.4	-0.2	84.7	85.6	-0.8	0.503	83.1	83.8	-0.8	84.6	84.1	0.5	0.643
Continuity outside of the doctor's office (2 question)	3.4	3.0	0.3	4.1	3.6	0.5	0.735	3.9	3.2	0.7	4.5	3.3	1.1	0.739
Care management (4 questions)	71.9	72.0	-0.1	71.3	70.3	0.9	0.589	72.4	72.2	0.2	71.4	70.5	0.8	0.762
Comprehensiveness (6 questions)	51.5	52.4	-1.0	50.1	50.1	0.1	0.432	51.0	52.6	-1.6	50.6	50.6	0.0	0.239
Coordination (1 question)	66.2	66.7	-0.5	66.4	67.6	-1.2	0.397	65.9	66.9	-1.0	66.9	68.9	-2.0	0.479
Patient and family caregiver engagement (8 questions)	73.7	74.7	-1.1	73.2	74.4	-1.2	0.280	74.6	75.2	-0.7	74.9	74.8	0.1	0.646
Helpful, courteous, and respectful office staff (2 questions)	83.3	84.7	-1.4	84.2	85.3	-1.1	0.832	84.8	84.9	-0.1	84.8	84.4	0.5	0.818
Teamwork (1 question)	77.4	77.9	-0.6	79.7	79.8	-0.2	0.694	80.2	78.4	1.8	79.3	79.5	-0.2	0.459
Patients' rating of the primary care doctors and their staff (1 question)	83.5	83.3	0.2	85.1	84.4	0.7	0.399	85.6	84.0	1.5	83.9	84.3	-0.3	0.266

²⁸ We determined a practice to have prior transformation experience if the practice participated in CPC Classic, CMMI's Multi-payer Advanced Primary Care Practice (MAPCP) initiative, or has medical home recognition. We considered a practice to be a MAPCP participant if it participated in any year, 2011-2014 for 2017 Starters, as determined by a file from CMS. A practice was considered to have medical home recognition if at least one of its primary care providers was listed as having recognition at some point 2014-2017 from a state, the Accreditation Association for Ambulatory Health Care (AAAHC), The Joint Commission (TJC), National Community for Quality Assurance (NCQA), or Utilization Review Accreditation Commission (URAC), as determined by the June 2016 (for 2017 Starters) NCQA PCMH file and data extracted from the websites of TJC, AAAHC, URAC and state-specific sources between October 2016 and February 2017.

Table 5.10d. (continued)

Source: Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

We estimated outcomes separately for Track 1 and Track 2, and within each track. All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

^a Sample sizes were between 1,423 beneficiaries and 2,064 beneficiaries in CPC+ practices and 3,291 beneficiaries and 4,575 beneficiaries in the comparison practices.

^b Sample sizes were between 1,329 beneficiaries and 1,860 beneficiaries in CPC+ practices and 1,974 beneficiaries and 2,745 beneficiaries in the comparison practices.

^c Sample sizes were between 2,349 beneficiaries and 3,255 beneficiaries in CPC+ practices and 3,844 beneficiaries and 5,314 beneficiaries in the comparison practices.

^d Sample sizes were between 529 beneficiaries and 734 beneficiaries in CPC+ practices and 1,245 beneficiaries and 1,742 beneficiaries in the comparison practices.

^e The estimates in the difference column show subgroup-specific differences between CPC+ and comparison respondents separately for each practice characteristic listed in the table. The p -values represent results from testing for statistically significant differences in impact estimates between the subgroups, based on the same baseline practice characteristic. The p -values are from a t -test for subgroups with two categories and from an F -test for subgroups with more than two categories.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.11a Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by patient characteristics (PY 2): high risk beneficiaries (HCC score in top quartile)

	Track 1: High-Risk ^a			Track 1: Not High-Risk ^b			Track 1 p-value ^e	Track 2: High-Risk ^c			Track 2: Not High-Risk ^d			Track 2 p-value ^e
	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)		CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	
Composite measures														
Access (11 questions)	39.1	40.7	-1.6	37.7	38.4	-0.8	0.369	40.9	40.4	0.5	38.6	38.2	0.4	0.952
Continuity in the doctor's office (1 question)	83.6	83.4	0.2	83.7	84.6	-0.9	0.495	81.3	81.9	-0.6	84.1	84.5	-0.4	0.896
Continuity outside of the doctor's office (2 question)	6.1	5.5	0.6	2.9	2.5	0.4	0.755	7.5	6.0	1.6	2.8	2.3	0.5	0.234
Care management (4 questions)	73.4	72.9	0.5	71.0	70.8	0.2	0.839	75.5	73.9	1.6	71.0	71.1	-0.2	0.208
Comprehensiveness (6 questions)	52.7	53.0	-0.3	50.4	51.0	-0.6	0.797	52.1	53.6	-1.5	50.4	51.7	-1.2	0.859
Coordination (1 question)	66.7	68.8	-2.1	66.0	66.4	-0.4	0.466	65.0	66.4	-1.4	66.6	67.8	-1.1	0.913
Patient and family caregiver engagement (8 questions)	73.2	74.4	-1.2	73.5	74.6	-1.1	0.951	74.0	74.8	-0.8	74.9	75.3	-0.4	0.743
Helpful, courteous, and respectful office staff (2 questions)	82.1	84.3	-2.2	84.1	85.1	-1.0	0.433	84.7	83.4	1.3	84.9	85.2	-0.3	0.268
Teamwork (1 question)	77.0	76.9	0.1	78.6	79.3	-0.6	0.708	77.6	75.5	2.1	80.8	79.7	1.1	0.581
Patients' rating of the primary care doctors and their staff (1 question)	82.6	83.2	-0.6	84.6	84.0	0.6	0.483	83.4	83.3	0.1	85.9	84.4	1.5	0.403

Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

We estimated outcomes separately for Track 1 and Track 2, and within each track. All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

^a Sample sizes were between 825 beneficiaries and 1,035 beneficiaries in CPC+ practices and 1,448 beneficiaries and 1,793 beneficiaries in the comparison practices.

^b Sample sizes were between 1,927 beneficiaries and 2,889 beneficiaries in CPC+ practices and 3,817 beneficiaries and 5,527 beneficiaries in the comparison practices.

^c Sample sizes were between 794 beneficiaries and 983 beneficiaries in CPC+ practices and 1,447 beneficiaries and 1,779 beneficiaries in the comparison practices.

^d Sample sizes were between 2,084 beneficiaries and 3,006 beneficiaries in CPC+ practices and 3,642 beneficiaries and 5,227 beneficiaries in the comparison practices.

Table 5.11a. (continued)

^e The estimates in the difference column show subgroup-specific differences between CPC+ and comparison respondents separately for each patient characteristic listed in the table. The p -values represent results from testing for statistically significant differences in impact estimates between the subgroups, based on the same baseline patient characteristic. The p -values are from a t -test for subgroups with two categories and from an F -test for subgroups with more than two categories.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.11b Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by patient characteristics (PY 2): high risk beneficiaries (HCC score in top 10 percent or has Dementia)

	Track 1: High-Risk ^a			Track 1: Not High-Risk ^b			Track 1 p-value ^e	Track 2: High-Risk ^c			Track 2: Not High-Risk ^d			Track 2 p-value ^e
	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)		CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	
Composite measures														
Access (11 questions)	39.7	40.5	-0.8	37.7	38.8	-1.0	0.852	39.9	40.2	-0.3	39.0	38.5	0.6	0.460
Continuity in the doctor's office (1 question)	84.0	82.8	1.2	83.6	84.5	-0.9	0.305	80.9	81.8	-0.9	83.8	84.2	-0.4	0.822
Continuity outside of the doctor's office (2 question)	6.7	6.1	0.5	3.2	2.8	0.4	0.910	9.7	6.9	2.8	3.1	2.7	0.4	0.064
Care management (4 questions)	74.4	72.6	1.8	71.2	71.1	0.0	0.323	75.0	73.6	1.4	71.6	71.5	0.1	0.473
Comprehensiveness (6 questions)	54.0	53.7	0.3	50.5	51.1	-0.7	0.524	51.2	55.1	-3.9	50.8	51.7	-0.9	0.041
Coordination (1 question)	64.6	68.2	-3.6	66.5	66.9	-0.3	0.283	63.3	65.1	-1.8	66.7	67.8	-1.1	0.806
Patient and family caregiver engagement (8 questions)	74.1	75.1	-0.9	73.3	74.5	-1.2	0.855	73.1	75.2	-2.1	74.9	75.1	-0.3	0.203
Helpful, courteous, and respectful office staff (2 questions)	82.9	84.0	-1.1	83.7	85.1	-1.3	0.915	84.1	82.5	1.6	84.9	85.1	-0.2	0.369
Teamwork (1 question)	77.3	76.2	1.1	78.4	79.1	-0.7	0.442	73.7	73.7	0.0	81.1	79.5	1.6	0.536
Patients' rating of the primary care doctors and their staff (1 question)	82.2	82.6	-0.4	84.4	84.0	0.4	0.703	81.9	82.5	-0.6	85.8	84.4	1.4	0.364

Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

We estimated outcomes separately for Track 1 and Track 2, and within each track. All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

^a Sample sizes were between 454 beneficiaries and 582 beneficiaries in CPC+ practices and 758 beneficiaries and 975 beneficiaries in the comparison practices.

^b Sample sizes were between 2,298 beneficiaries and 3,342 beneficiaries in CPC+ practices and 4,507 beneficiaries and 6,345 beneficiaries in the comparison practices.

^c Sample sizes were between 460 beneficiaries and 585 beneficiaries in CPC+ practices and 763 beneficiaries and 963 beneficiaries in the comparison practices.

Table 5.11b. (continued)

^d Sample sizes were between 2,418 beneficiaries and 3,404 beneficiaries in CPC+ practices and 4,326 beneficiaries and 6,093 beneficiaries in the comparison practices.

^e The estimates in the difference column show subgroup-specific differences between CPC+ and comparison respondents separately for each patient characteristic listed in the table. The p -values represent results from testing for statistically significant differences in impact estimates between the subgroups, based on the same baseline patient characteristic. The p -values are from a t -test for subgroups with two categories and from an F -test for subgroups with more than two categories.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

Table 5.11c Predicted percentage of Medicare FFS beneficiaries attributed to CPC+ and comparison practices giving the best response to questions in the composites, by track, by patient characteristics (PY 2): high risk beneficiaries based on having a severe mental illness²⁹

	Track 1: High-Risk ^a			Track 1: Not High-Risk ^b			Track 1 p-value ^e	Track 2: High-Risk ^c			Track 2: Not High-Risk ^d			Track 2 p-value ^e
	CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)		CPC+ (%)	Comparison (%)	Diff. (%pt)	CPC+ (%)	Comparison (%)	Diff. (%pt)	
Composite measures														
Access (11 questions)	37.3	40.6	-3.3	38.0	39.0	-1.0	0.701	41.6	39.9	1.7	39.1	38.7	0.4	0.789
Continuity in the doctor's office (1 question)	90.8	82.8	8.0	83.6	84.3	-0.7	0.285	77.6	77.9	-0.3	83.5	83.9	-0.4	0.987
Continuity outside of the doctor's office (2 question)	2.0	5.3	-3.3	3.7	3.3	0.5	0.299	-0.3	5.2	-5.5	4.0	3.2	0.8	0.025
Care management (4 questions)	70.8	73.5	-2.7	71.6	71.3	0.3	0.668	79.9	79.0	0.9	72.1	71.8	0.3	0.909
Comprehensiveness (6 questions)	57.7	60.4	-2.7	50.9	51.4	-0.5	0.747	56.7	66.4	-9.7	50.8	52.0	-1.2	0.134
Coordination (1 question)	68.2	67.9	0.3	66.2	67.1	-0.9	0.933	71.3	71.9	-0.6	66.2	67.4	-1.2	0.971
Patient and family caregiver engagement (8 questions)	65.3	66.2	-0.9	73.5	74.6	-1.1	0.977	75.3	70.9	4.4	74.6	75.2	-0.6	0.432
Helpful, courteous, and respectful office staff (2 questions)	74.4	82.1	-7.7	83.7	84.9	-1.3	0.477	92.8	84.2	8.6	84.8	84.7	0.0	0.149
Teamwork (1 question)	81.8	69.8	12.0	78.2	78.8	-0.5	0.252	95.6	73.5	22.0	79.9	78.7	1.2	0.005
Patients' rating of the primary care doctors and their staff (1 question)	68.8	68.5	0.3	84.2	83.9	0.3	0.996	82.0	72.1	10.0	85.3	84.2	1.1	0.333

Source: CPC+ Beneficiary Survey administered to Medicare FFS beneficiaries attributed to 2017 Starter CPC+ practices May through August 2018, and to Medicare FFS beneficiaries attributed to comparison practices June through December 2018.

Notes: Composite measures for the 10 domains of care were created from 37 survey questions. To calculate the composite measures, we first calculated beneficiary-level composite measures by averaging the nonmissing standardized responses across each question in the composite. We then ran ordinary least squares regressions on beneficiary-level composite measures to create CPC-wide composite scores.

We estimated outcomes separately for Track 1 and Track 2, and within each track. All regressions controlled for baseline (pre-CPC+) beneficiary and practice characteristics, and beneficiaries' self-reported education level at the time of the survey. Appendix Table 5.6 lists the control variables. For all regressions, we weighted

²⁹ Beneficiaries with behavioral health conditions (HCCs for schizophrenia or major depressive, bipolar, and paranoid disorders, or drug/alcohol psychosis or drug/alcohol dependence) at baseline (2016).

Table 5.11c. (continued)

estimates using beneficiary-level nonresponse and matching weights. To account for correlation in responses within practices, our regression models used cluster-robust standard errors, clustering at the practice level.

Blue shading with **bolded text** indicates that the effect of CPC+ on patients is different between each of the subgroups. We assessed an effect to be different if the difference in the effect between the groups is both statistically significant and 5 percentage points or larger.

^a Sample sizes were between 15 beneficiaries and 23 beneficiaries in CPC+ practices and 35 beneficiaries and 49 beneficiaries in the comparison practices.

^b Sample sizes were between 2,737 beneficiaries and 3,901 beneficiaries in CPC+ practices and 5,230 beneficiaries and 7,271 beneficiaries in the comparison practices.

^c Sample sizes were between 16 beneficiaries and 24 beneficiaries in CPC+ practices and 37 beneficiaries and 50 beneficiaries in the comparison practices.

^d Sample sizes were between 2,862 beneficiaries and 3,965 beneficiaries in CPC+ practices and 5,052 beneficiaries and 7,006 beneficiaries in the comparison practices.

^e The estimates in the difference column show subgroup-specific differences between CPC+ and comparison respondents separately for each patient characteristic listed in the table. The p -values represent results from testing for statistically significant differences in impact estimates between the subgroups, based on the same baseline patient characteristic. The p -values are from a t -test for subgroups with two categories and from an F -test for subgroups with more than two categories.

Diff = the difference in the percentage of CPC+ and comparison patients giving the best response.

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CHAPTER 6 APPENDIX

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6.A. Results for the first year of CPC+ for the combined 2017 and 2018 Starters

In this Appendix, we present CPC+ impact estimates for the combined sample of 2017 and 2018 Starters. We combined the 2017 and 2018 Starters because there are too few 2018 Starters ($N = 163$) to permit reliable estimates for this group alone. We show only the results from the first program year (PY 1) because we have only one year of data since CPC+ began for 2018 Starters at this time.³⁰ These results are very similar to the PY 1 estimates for the 2017 Starters only, consistent with the fact that 2018 Starters constitute only 7.65 and 2.95 percent of the combined sample of 2017 and 2018 Starters in Tracks 1 and 2, respectively.

For both Track 1 and Track 2 practices that started CPC+ in 2017 and 2018, CPC+ had a few, small effects on Medicare fee-for-service (FFS) beneficiaries' outcomes during PY 1, and the findings were generally similar for Medicare Shared Savings Plan (SSP) and non-SSP practices. Specifically, comparing the change in outcomes between CPC+ and comparison practices from baseline to the end of PY 1:

- There was no discernible difference in Medicare expenditures *without CMS' enhanced payments*.
- There was a 2 to 3 percent increase in Medicare expenditures (including all of CMS' enhanced payments and shared savings payments for Accountable Care Organizations [ACOs] of practices that participate in SSP) that was slightly higher than the average amount of care management fees (CMFs) paid to Track 1 and Track 2 practices.³¹
- Hospice expenditures increased significantly by 2 and 5 percent in Track 1 and Track 2, respectively. This is consistent with the expectation that CPC+ practices would better engage patients and caregivers in planning and making decisions on health care use, including end-of-life care.
- All other statistically significant changes were around 1 percent or smaller:
 - Home health expenditures decreased by 1 percent.
 - Total emergency department (ED) visits and outpatient ED visits decreased by 1.1 percent.
 - There was a net decrease of 1.3 to 1.7 percent in ambulatory care visits to primary care practitioners, depending on the track. Expenditures on ambulatory specialist visits decreased by 0.9 percent in Track 1 ($p = 0.02$) and increased by 0.3 percent in Track 2 ($p = 0.43$).

³⁰ For 2017 Starters, Program Year 1 was calendar year 2017; for 2018 Starters, Program Year 1 was calendar year 2018.

³¹ We calculated percentage impacts relative to what the CPC+ mean would have been in an intervention year in the absence of the intervention—that is, the unadjusted CPC+ mean minus the impact estimate for that year.

- There were small (about one percentage point or less) improvements in the planned care and population health measures for recommended services among beneficiaries with diabetes and for breast cancer screening.
- We did not find any sizeable or statistically significant differences in the number of acute hospitalizations or unplanned 30-day readmissions.

We also present aggregate impact estimates over the first year across all Medicare FFS beneficiaries assigned to practices that started in 2017 and 2018, for four outcome measures: (1) Medicare expenditures without CMS' enhanced payments, (2) number of hospitalizations, (3) number of outpatient ED visits, and (4) 30-day unplanned readmissions. The only statistically significant aggregate estimates were relative reductions of 5,955 and 8,320 outpatient ED visits for Track 1 and Track 2, respectively, during the first program year. Since ED visits account for a small proportion of Medicare expenditures—compared to, for example, acute hospitalizations—any reduction in expenditures stemming from this reduction in ED visits is unlikely to be detectable and could be offset by small increases in primary care and hospice expenditures.

In the rest of the appendix, for the combined sample of 2017 and 2018 Starters, we present:

1. Summary tables of impact estimates on key outcome measures in both tracks (Tables 6.A.1 and 6.A.2),
2. Overlap in the payment and evaluation attribution (Figure 6.A.1),
3. Balance table showing similarity of practice characteristics between CPC+ and comparison practices (Table 6.A.3),
4. Quarterly trends in Medicare expenditures without CMS' enhanced payments (Figures 6.A.2 and 6.A.3),
5. Detailed tables of impact estimates, by track (Tables 6.A.4 to 6.A.6 for Track 1; Tables 6.A.8 to 6.A.10 for Track 2), and
6. Aggregate impacts on key outcomes, by track (Table 6.A.7 for Track 1; Table 6.A.11 for Track 2).

Table 6.A.1. Summary table of impacts (in percentages) on expenditures and service use measures for Medicare FFS beneficiaries in the first program year, for combined 2017 and 2018 Starters, by track and SSP participation status

	Track 1				Track 2			
	CPC+ mean in PY 1, overall	Percentage impacts, overall	Percentage impacts, SSP	Percentage impacts, non-SSP	CPC+ mean in PY 1, overall	Percentage impacts, overall	Percentage impacts, SSP	Percentage impacts, non-SSP
Monthly Medicare Part A and B expenditures (PBPM)								
Excluding enhanced CPC+ payments ^a	\$898	0.4%	0.2%	0.6%	\$897	0.4%	0.1%	0.6%
Including CPC+ CMFs ^b	\$911	1.9%***	1.8%***	2.1%***	\$923	3.3%***	3.0%***	3.6%***
Including CPC+ CMFs and PBIPs ^b	\$912	2.0%***	NA	2.3%***	\$924	3.4%***	NA	3.8%***
Including CPC+ CMFs, PBIPs, and shared savings payments to SSP ACOs ^b	\$915	2.0%***	1.8%***	NA	\$925	3.3%***	2.6%***	NA
Monthly Medicare expenditures by service category (PBPM)								
Inpatient expenditures	\$314	0.6%	0.2%	1.0%	\$320	0.9%	0.1%	1.5%
Expenditures on acute inpatient care ^c	\$278	0.2%	-0.4%	0.9%	\$285	0.7%	-0.3%	1.6%
Outpatient expenditures	\$179	0.2%	0.4%	0.0%	\$179	0.1%	0.6%	-0.4%
Expenditures on physician and nonphysician Part B noninstitutional services in any setting	\$257	0.1%	-0.3%	0.5%	\$250	0.0%	-0.8%*	0.6%
Expenditures on ambulatory visits with primary care practitioners	\$24	-0.9%**	-0.8%	-1.0%*	\$25	0.3%	0.7%	0.1%
Expenditures on ambulatory visits with specialists	\$23	0.5%*	0.0%	1.1%***	\$22	-0.1%	-0.1%	-0.1%
Skilled nursing home expenditures	\$65	0.8%	0.8%	0.7%	\$63	-0.3%	1.4%	-1.7%
Home health expenditures	\$39	-1.3%*	-0.5%	-2.0%**	\$40	-0.9%	-0.5%	-1.3%
Hospice expenditures	\$24	4.9%***	6.6%***	3.0%	\$24	2.2%	1.9%	2.5%
Durable medical equipment expenditures	\$21	0.4%	-1.0%	1.8%	\$20	1.6%	0.3%	2.5%
Annualized service use (per 1,000 beneficiaries per year)								
Acute hospitalizations (short-stay acute care and CAHs)	287	-0.5%	-0.9%	-0.1%	292	-0.4%	-0.3%	-0.4%
Total ED visits, including observation stays	700	-1.1%***	-1.0%*	-1.1%**	701	-1.1%***	-1.0%	-1.2%**
Outpatient ED visits, including observation stays	489	-1.2%***	-1.0%*	-1.4%**	485	-1.5%***	-1.6%**	-1.4%**
Ambulatory primary care visits (including to FQHCs, RHCs, and CAHs)	4,336	-1.3%***	-1.0%**	-1.5%***	4,353	-1.7%***	-1.4%***	-2.0%***
Ambulatory specialty care visits	4,134	0.3%	0.0%	0.6%*	4,092	0.0%	-0.1%	0.1%

Source: Mathematica's analysis of Medicare claims data from January 2013 through December 2018.

Notes: We base impact estimates on a difference-in-differences analysis; they reflect the difference in the regression-adjusted average outcome for attributed Medicare FFS beneficiaries in CPC+ practices in the first year of CPC+ compared with the average outcome in the baseline year, relative to the same difference over time for attributed

Table 6.A.1. (continued)

Medicare FFS beneficiaries in comparison practices. **Yellow shading with bold, italicized text** signifies that the underlying impact estimate (in dollars PBPM for expenditures and in per 1,000 beneficiaries per year for service use) was statistically significant at the 10 percent level using a two-sided test. Expenditures on Part B noninstitutional services include (1) ambulatory primary care visits, (2) ambulatory specialist visits, and (3) non-ambulatory physician visits as well as services provided by other noninstitutional providers (the third category is not shown separately). For Medicare service use, measures of outpatient ED visits and total ED visits include observation stays. Ambulatory visits with primary care practitioners and specialists include office-based visits and visits at home, as well as visits in other settings, such as FQHCs, RHCs, and CAHs.

This analysis includes (first number for Track 1 and second for Track 2) – (1) 1,490 and 1,561 CPC+ practices (2) 5,516 and 4,041 comparison practices, (3) approximately 1.2 million and 1.3 million CPC+ beneficiaries, (4) approximately 3.7 and 3.1 million comparison beneficiaries, (5) approximately 2.0 million and 2.3 million CPC+ beneficiary-year observations and (6) approximately 6.2 and 5.3 million comparison beneficiary-year observations. After accounting for weights that adjust for matching and time observed in Medicare FFS, the effective sample sizes fall but are still substantial. For the comparison group, the effective sample size is 38 to 51 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size because it is affected only by time observed (and not by the matching weights).

Although this table indicates which estimates are statistically significant, when we interpret evidence, we combine evidence from the magnitude of the effect, the *p*-values, findings on related outcomes, subgroups, sensitivity tests, and other data sources about model implementation.

^a For Track 2 practices, Medicare Part A and B expenditures *without* enhanced CPC+ payments include the base CPCPs, but not the 10 percent comprehensiveness supplement. We include CPCPs in Part B spending because Track 2 practices agreed to lower Part B payment for evaluation and management services in exchange for CPCPs.

^b For Track 2 practices, Medicare Part A and B expenditures *with* enhanced CPC+ payments include the base CPCPs, as well as the 10 percent comprehensiveness supplement.

^c Acute inpatient care includes short-stay acute hospital admissions and admissions to critical access hospitals. Expenditures on non-acute hospital admissions, such as inpatient rehabilitation and psychiatric hospital admissions, are included in inpatient expenditures but not shown separately.

//*** Underlying impact estimate in dollars PBPM for expenditures and in per 1,000 beneficiaries per year for service use was significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

NA = not applicable, because only CPC+ practices that participate in SSP are eligible to receive shared savings payments, and only non-SSP practices are eligible to receive Performance-based Incentive Payments.

ACO = accountable care organization; CAH = critical access hospital; CMF = care management fee; CPCP = Comprehensive Primary Care Payment; ED = emergency department; FFS = fee-for-service; FQHC = federally qualified health center; PBIP = Performance-based Incentive Payment; PBPM = per beneficiary per month; PY = Program Year; RHC = rural health center; SSP = Medicare Shared Savings Program.

Table 6.A.2. Summary table of impacts (in percentage points) on claims-based quality-of-care measures for Medicare FFS beneficiaries in the first program year, for combined 2017 and 2018 Starters, by track and SSP participation status

	Track 1				Track 2			
	CPC+ mean in PY 1, overall	Impact estimates (percentage points), overall	Impact estimates (percentage points), SSP	Impact estimates (percentage points), non-SSP	CPC+ mean in PY 1, overall	Impact estimates (percentage points), overall	Impact estimates (percentage points), SSP	Impact estimates (percentage points), non-SSP
Planned care and population health measures for beneficiaries ages 18–75 with diabetes (annualized)								
Received HbA1c test	91.4%	0.2	0.3	0.2	92.9%	0.3	0.2	0.3
Received eye exam	65.1%	0.8***	0.1	1.6***	66.2%	0.0	-0.5	0.4
Received attention for nephropathy	82.1%	0.6***	0.5*	0.8**	83.5%	0.3	0.1	0.5
Diabetes composite measure 1 (received all three tests above: HbA1c test, eye exam, attention for nephropathy)	52.8%	0.8***	0.1	1.4***	55.3%	0.2	-0.3	0.5
Diabetes composite measure 2 (received none of the three tests above)	2.2%	-0.2***	-0.2**	-0.2	1.9%	-0.1	0.0	-0.2*
Planned care and population health measures for female beneficiaries ages 52–74 (annualized)								
Received breast cancer screening	69.9%	0.5***	0.1	0.8***	71.7%	0.5***	0.3	0.7***
Care coordination measures								
Percentage of discharges that had a 30-day all-cause unplanned readmission	15.6%	0.1	0.1	0.1	15.6%	-0.1	-0.1	-0.2
Patient and caregiver engagement measures (annualized)								
Received hospice services	2.7%	0.0	0.1**	0.0	2.8%	0.0	0.0	0.1

Source: Mathematica’s analysis of Medicare claims data from January 2013 through December 2018.

Notes: We base impact estimates on a difference-in-differences analysis; they reflect the difference in the regression-adjusted average outcome for attributed Medicare FFS beneficiaries in CPC+ practices in the first year of CPC+ compared with the average outcome in the baseline year, relative to the same difference over time for attributed Medicare FFS beneficiaries in comparison practices. **Yellow shading with bold, italicized text** signifies that an estimate was statistically significant at the 10 percent level using a two-sided test. For the readmissions outcome, which is estimated at the discharge level, we also controlled for discharge-level risk factors. For the binary quality-of-care outcomes, we present the absolute impact estimate on the relevant measures only in percentage points. We do so because percentage impacts for some of the measures are likely to be misleadingly large, given the low means for the measures. We grouped the claims-based quality-of-care measures into four domains according to the Comprehensive Primary Care Functions under which they appear in the 2018 Implementation Guide (CMMI 2018).

For the planned care and population health measures for beneficiaries ages 18-75 with diabetes, the analysis includes (first number for Track 1 and second for Track 2), approximately (1) 173,000 and 196,000 CPC+ beneficiaries, (2) 548,000 and 456,000 comparison beneficiaries, (3) 275,000 and 311,000 CPC+ beneficiary-year observations, and (4) 866,000 and 722,000 comparison beneficiary-year observations. For the breast cancer screening measure for female beneficiaries ages 52-74, the analysis includes (first number for Track 1 and second for Track 2), approximately (1) 275,000 and 310,000 CPC+ beneficiaries, (2) 863,000 and 729,000 comparison beneficiaries, (3) 441,000 and 498,000 CPC+ beneficiary-year observations and (4) 1.4 million and 1.2 million comparison beneficiary-year observations. For the 30-day readmissions measure, the analysis includes (first number for Track 1 and second for Track 2), approximately (1) 484,000 and 559,000 index discharges for CPC+ practices and (2) 1.5 million and 1.3 million index discharges for comparison practices. The sample sizes for the use of hospice services measure as well as the number of CPC+ and comparison practices in each track for all measures, are the same as in Table 6.A.1. After accounting for weights that adjust for matching and time observed in

Table 6.A.2. (continued)

Medicare FFS, the effective sample sizes fall but are substantial. For the comparison group, the effective sample size is 38 to 51 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size because it is affected only by time observed (and not by the matching weights). For the analysis of unplanned 30-day readmissions, we only use matching weights—therefore, the effective sample size for the number of index discharges shown in the table is smaller by 40 to 53 percent for the comparison group only.

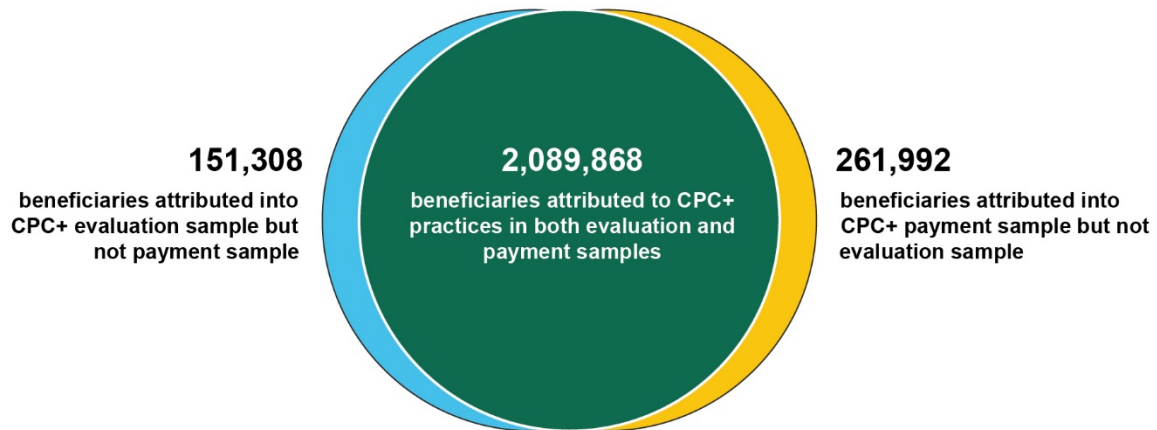
Although this table indicates which estimates are statistically significant, when we interpret evidence, we combine evidence from the magnitude of the effect, the p -values, findings on related outcomes, subgroups, sensitivity tests, and other data sources about model implementation.

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service; PY = Program Year; SSP = Medicare Shared Savings Program.

Figure 6.A.1. Attribution of Medicare FFS beneficiaries for the combined 2017 and 2018 Starters during PY 1

Overlap of Payment and Evaluation Attribution



Source: Comparison of attributed Medicare FFS beneficiaries in Mathematica's evaluation sample and those in CMS' payment sample.

Notes: Comparison of attributed Medicare FFS beneficiaries in Mathematica's evaluation sample for the first program year (January 2017 through December 2017 for the 2017 starters and January 2018 through December 2018 for the 2018 starters) and those in CMS' payment sample for the second through the fifth program quarter (April 2017 through March 2018 for the 2017 starters and April 2018 through March 2019 for the 2018 starters), which used the same set of two-year lookback periods. We used Medicare FFS beneficiary attribution lists provided by CMS to define the payment sample.

FFS = fee-for-service.

Table 6.A.3. Similarity of the CPC+ and comparison groups: practice values weighted by number of Medicare FFS beneficiaries for combined 2017 and 2018 Starters, by track

Practice characteristic	Data source for characteristic	Track 1		Track 2	
		Mean among CPC+ practices (N = 1,490)	Weighted mean among comparison practices (N = 5,516)	Mean among CPC+ practices (N = 1,561)	Weighted mean among comparison practices (N = 4,041)
Participant in SSP ACO as of January 1 of the first intervention year (%)	MDM 2017	50.6	51.4	43.5	43.4
Hospital ownership or health system management or ownership (%)	SK&A 2017	53.0	54.2	57.9	59.9
Experience in selected practice transformation activities ^a (%)	Data from CMS and from organizations that offer medical home recognition	52.4	50.2	79.3	73.2
Urbanicity of practice's county					
Rural (%)	Area Resource File	10.4	10.4	7.7	8.3
Suburban (%)	Area Resource File	20.9	22.1	16.3	18.0
Urban (%)	Area Resource File	68.8	67.5	76.0	73.8
Mean PBPM Medicare expenditures in the baseline year	EDB and claims data	878	882	877	878
Acute care hospitalizations (short-stay acute care and CAHs) in the baseline year per 1,000 beneficiaries, annualized	EDB and claims data	285.2	284.6	287.3	284.2
Outpatient ED visits, including observation stays, in the baseline year per 1,000 beneficiaries, annualized	EDB and claims data	495.2	500.7	491.8	493.4
Mean HCC score among beneficiaries assigned in the baseline year	EDB and claims data	1.101	1.101	1.103	1.104
Number of primary care practitioners:					
1–2 primary care practitioners (%)	SK&A baseline year	20.2	20.9	12.6	13.4
3–4 primary care practitioners (%)	SK&A baseline year	22.5	23.5	22.1	21.9
5–7 primary care practitioners (%)	SK&A baseline year	26.0	25.4	25.7	26.2
8+ primary care practitioners (%)	SK&A baseline year	31.3	30.2	39.6	38.4
Practice is multispecialty ^b (%)	SK&A baseline year	20.1	21.5	27.3	26.6
Hospital Referral Region price index	CMS' Medicare Geographic Variation data, 2015	1.046	1.053	1.046	1.052

Table 6.A.3. (continued)

Practice characteristic	Data source for characteristic	Track 1		Track 2	
		Mean among CPC+ practices (N = 1,490)	Weighted mean among comparison practices (N = 5,516)	Mean among CPC+ practices (N = 1,561)	Weighted mean among comparison practices (N = 4,041)
Meaningful EHR use ^c (%)					
Never attested (%)	CMS' Medicare EHR Incentive Program data	7.6	8.2	3.5	3.9
Attested since 2011 or 2012 (%)	CMS' Medicare EHR Incentive Program data	78.8	79.1	88.4	87.6
Attested since 2013 or later (%)	CMS' Medicare EHR Incentive Program data	13.6	12.6	8.2	8.4
Number of Medicare FFS beneficiaries per PCP	Mathematica attribution based on SK&A roster	231	223	197	201

Source: Mathematica's analysis of baseline practice characteristic data of CPC+ and matched comparison practices for the combined 2017 and 2018 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, we analyzed Medicare claims-based outcomes using beneficiary-level data rather than practice-level data, so we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance in the analytic sample that we used in regression analyses. Specifically, the means in this table represent practice-level means, weighted by the number of Medicare FFS beneficiaries assigned to each practice in the baseline year.

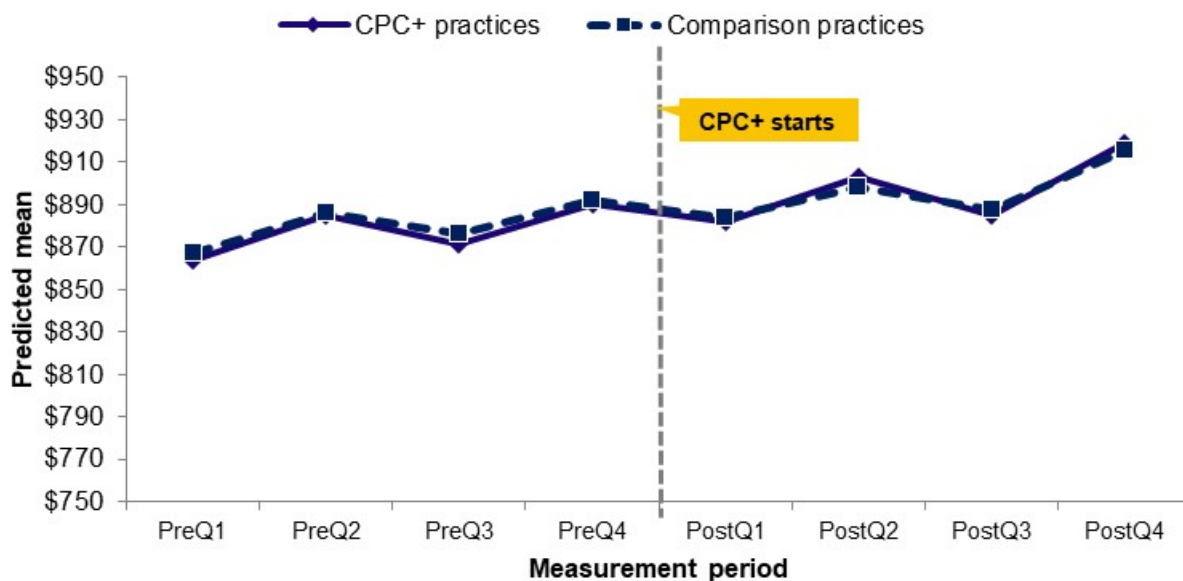
^a We define prior transformation experience as CPC Classic or MAPCP participation, or whether the practice is recognized as a medical home by NCQA, TJC, AAAHC, URAC, or a state medical-home recognition program.

^b We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

^c We define meaningful EHR use as having at least one practitioner within the practice who attested to meaningful use under the CMS Medicare EHR Incentive Program.

AAAHC = Accreditation Association for Ambulatory Health Care; ACO = accountable care organization; CAH = critical access hospital; CMS = Centers for Medicare & Medicaid Services; ED = emergency department; EDB = Medicare enrollment database; EHR = electronic health record; FFS = fee-for-service; HCC = hierarchical condition category; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; MDM = CMS master data management system; NCQA = National Committee for Quality Assurance; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Figure 6.A.2. Quarterly trends in mean Medicare Part A and Part B expenditures PBPM, excluding CMS' enhanced payments, for Track 1 combined 2017 and 2018 Starters

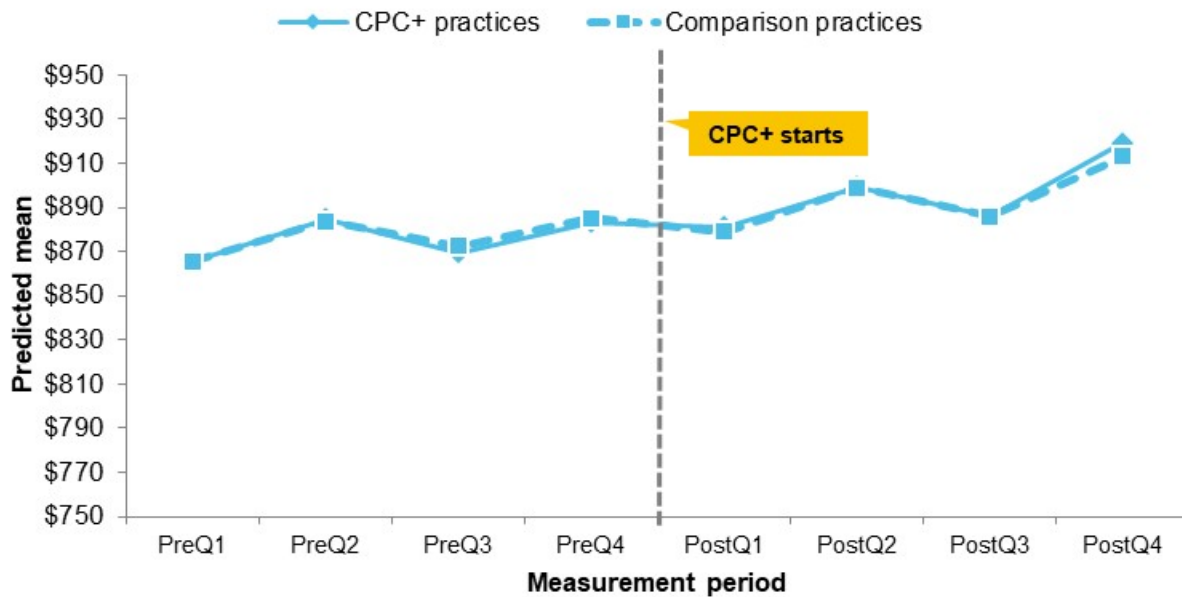


Source: Analyses of Medicare claims data from January 2013 through December 2018.

Notes: For beneficiaries attributed to CPC+ practices, the figure shows actual, unadjusted average expenditures. For beneficiaries attributed to comparison practices, the figure shows actual, unadjusted average expenditures in the baseline quarters and adjusted estimates of average expenditures in the intervention quarters. We obtain this adjusted mean by subtracting the regression-adjusted difference between the CPC+ and comparison means in each quarter (taken from the quarterly difference-in-differences model) from the CPC+ mean in that same quarter. The measurement period reflects the baseline and program quarters instead of calendar year quarters. "PreQ1" to "PreQ4" represent the four baseline quarters, which are 2016 calendar quarters for the 2017 Starters and 2017 calendar quarters for the 2018 Starters. "PostQ1" to "PostQ4" represent the four Program Year 1 quarters, which are 2017 calendar quarters for the 2017 Starters and 2018 calendar quarters for the 2018 Starters.

PBPM = per beneficiary per month.

Figure 6.A.3. Quarterly trends in mean Medicare Part A and Part B expenditures PBPM, excluding CMS' enhanced payments, for Track 2 combined 2017 and 2018 Starters



Source: Analyses of Medicare claims data from January 2013 through December 2018.

Notes: For beneficiaries attributed to CPC+ practices, the figure shows actual, unadjusted average expenditures. For beneficiaries attributed to comparison practices, the figure shows actual, unadjusted average expenditures in the baseline quarters and adjusted estimates of average expenditures in the intervention quarters. We obtain this adjusted mean by subtracting the regression-adjusted difference between the CPC+ and comparison means in each quarter (taken from the quarterly difference-in-differences model) from the CPC+ mean in that same quarter. Medicare expenditures without CMS' enhanced payments include Comprehensive Primary Care Payments for Track 2 practices. The measurement period reflects the baseline and program quarters instead of calendar year quarters. "PreQ1" to "PreQ4" represent the four baseline quarters, which are 2016 calendar quarters for the 2017 Starters and 2017 calendar quarters for the 2018 Starters. "PostQ1" to "PostQ4" represent the four Program Year 1 quarters, which are 2017 calendar quarters for the 2017 Starters and 2018 calendar quarters for the 2018 Starters.

PBPM = per beneficiary per month.

Table 6.A.4. Regression-adjusted means and estimated impact of CPC+ on selected Medicare expenditure outcomes for attributed Medicare FFS beneficiaries in the first program year: Track 1 combined 2017 and 2018 Starters

	Track 1—Overall						Track 1—SSP						Track 1—Non-SSP					
	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value
Medicare expenditures (per beneficiary per month)																		
Medicare Part A and B expenditures without enhanced CPC+ payments																		
Baseline	\$878	\$881	NA	NA	NA	NA	\$899	\$899	NA	NA	NA	NA	\$856	\$862	NA	NA	NA	NA
PY 1	\$898	\$897	\$3.6 (\$3.2)	0.4%	(-\$1.8, \$8.9)	0.272	\$919	\$916	\$2.3 (\$4.5)	0.2%	(-\$5.1, \$9.7)	0.612	\$876	\$876	\$4.9 (\$4.7)	0.6%	(-\$2.9, \$12.7)	0.299
Medicare Part A and B expenditures including care management fees																		
Baseline	\$878	\$881	NA	NA	NA	NA	\$899	\$899	NA	NA	NA	NA	\$856	\$862	NA	NA	NA	NA
PY 1	\$911	\$897	\$17.4*** (\$3.2)	1.9%***	(-\$12.1, \$22.7)	0.000	\$933	\$916	\$16.2*** (\$4.5)	1.8%***	(-\$8.8, \$23.6)	0.000	\$889	\$876	\$18.7*** (\$4.7)	2.1%***	(-\$10.9, \$26.4)	0.000
Medicare Part A and B expenditures including care management fees and Performance-based Incentive Payments																		
Baseline	\$878	\$881	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$856	\$862	NA	NA	NA	NA
PY 1	\$912	\$897	\$18.1*** (\$3.2)	2.0%***	(-\$12.7, \$23.4)	0.000	NA	NA	NA	NA	NA	NA	\$891	\$876	\$20.1*** (\$4.7)	2.3%***	(-\$12.3, \$27.8)	0.000
Medicare Part A and B expenditures including care management fees, Performance-based Incentive Payments, and shared savings payments to SSP ACOs																		
Baseline	\$880	\$883	NA	NA	NA	NA	\$903	\$902	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PY 1	\$915	\$899	\$18.1*** (\$3.2)	2.0%***	(-\$12.8, \$23.4)	0.000	\$938	\$921	\$16.2*** (\$4.5)	1.8%***	(-\$8.8, \$23.6)	0.000	NA	NA	NA	NA	NA	NA
Medicare expenditures by service category (per beneficiary per month)																		
Inpatient expenditures																		
Baseline	\$310	\$316	NA	NA	NA	NA	\$315	\$319	NA	NA	NA	NA	\$304	\$313	NA	NA	NA	NA
PY 1	\$314	\$318	\$1.8 (\$2.2)	0.6%	(-\$1.8, \$5.3)	0.414	\$319	\$322	\$0.7 (\$2.9)	0.2%	(-\$4.0, \$5.5)	0.798	\$308	\$314	\$2.9 (\$3.3)	1.0%	(-\$2.5, \$8.3)	0.373
Expenditures on acute inpatient care^b																		
Baseline	\$274	\$280	NA	NA	NA	NA	\$280	\$283	NA	NA	NA	NA	\$269	\$278	NA	NA	NA	NA
PY 1	\$278	\$283	\$0.6 (\$1.9)	0.2%	(-\$2.6, \$3.7)	0.769	\$282	\$286	-\$1.1 (\$2.5)	-0.4%	(-\$5.2, \$3.0)	0.661	\$273	\$279	\$2.3 (\$2.9)	0.9%	(-\$2.4, \$7.1)	0.418
Outpatient expenditures																		
Baseline	\$167	\$170	NA	NA	NA	NA	\$165	\$167	NA	NA	NA	NA	\$169	\$173	NA	NA	NA	NA
PY 1	\$179	\$182	\$0.3 (\$0.8)	0.2%	(-\$1.0, \$1.7)	0.671	\$177	\$179	\$0.7 (\$1.1)	0.4%	(-\$1.1, \$2.5)	0.543	\$180	\$185	\$0.0 (\$1.2)	0.0%	(-\$2.0, \$2.0)	0.976

Table 6.A.4. (continued)

	Track 1—Overall						Track 1—SSP						Track 1—Non-SSP					
	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value
Expenditures on physician and nonphysician Part B noninstitutional services in any setting																		
Baseline	\$251	\$241	NA	NA	NA	NA	\$265	\$254	NA	NA	NA	NA	\$237	\$227	NA	NA	NA	NA
PY 1	\$257	\$246	\$0.3 (\$0.8)	0.1%	(-\$1.0, \$1.6)	0.742	\$270	\$259	-\$0.7 (\$1.1)	-0.3%	(-\$2.5, \$1.0)	0.490	\$244	\$232	\$1.3 (\$1.2)	0.5%	(-\$0.6, \$3.2)	0.269
Expenditures on ambulatory visits with primary care practitioners																		
Baseline	\$24	\$24	NA	NA	NA	NA	\$24	\$25	NA	NA	NA	NA	\$23	\$23	NA	NA	NA	NA
PY 1	\$24	\$25	-\$0.2** (\$0.1)	-0.9%**	(-\$0.4, \$0.1)	0.019	\$24	\$25	-\$0.2 (\$0.1)	-0.8%	(-\$0.4, \$0.0)	0.143	\$24	\$24	-\$0.3* (\$0.1)	-1.0%*	(-\$0.5, \$0.0)	0.069
Expenditures on ambulatory visits with specialists																		
Baseline	\$23	\$22	NA	NA	NA	NA	\$25	\$24	NA	NA	NA	NA	\$21	\$21	NA	NA	NA	NA
PY 1	\$23	\$22	\$0.1* (\$0.1)	0.5%*	(\$0.0, \$0.2)	0.056	\$25	\$24	\$0.0 (\$0.1)	0.0%	(-\$0.1, \$0.1)	0.915	\$21	\$20	\$0.2*** (\$0.1)	1.1%***	(\$0.1, \$0.4)	0.004
Skilled nursing home expenditures																		
Baseline	\$67	\$68	NA	NA	NA	NA	\$71	\$72	NA	NA	NA	NA	\$63	\$65	NA	NA	NA	NA
PY 1	\$65	\$66	\$0.5 (\$0.7)	0.8%	(-\$0.6, \$1.6)	0.462	\$70	\$70	\$0.5 (\$1.0)	0.8%	(-\$1.1, \$2.1)	0.586	\$61	\$62	\$0.4 (\$1.0)	0.7%	(-\$1.1, \$2.0)	0.649
Home health expenditures																		
Baseline	\$39	\$41	NA	NA	NA	NA	\$39	\$43	NA	NA	NA	NA	\$39	\$39	NA	NA	NA	NA
PY 1	\$39	\$41	-\$0.5* (\$0.3)	-1.3%*	(-\$0.9, \$0.0)	0.067	\$39	\$43	-\$0.2 (\$0.4)	-0.5%	(-\$0.8, \$0.4)	0.576	\$38	\$39	-\$0.8** (\$0.4)	-2.0%**	(-\$1.5, \$0.1)	0.045
Hospice expenditures																		
Baseline	\$22	\$24	NA	NA	NA	NA	\$22	\$24	NA	NA	NA	NA	\$22	\$24	NA	NA	NA	NA
PY 1	\$24	\$24	\$1.1*** (\$0.4)	4.9%***	(\$0.5, \$1.7)	0.004	\$24	\$25	\$1.5*** (\$0.5)	6.6%***	(\$0.6, \$2.4)	0.004	\$23	\$24	\$0.7 (\$0.5)	3.0%	(-\$0.2, \$1.6)	0.223
Durable medical equipment expenditures																		
Baseline	\$22	\$21	NA	NA	NA	NA	\$21	\$20	NA	NA	NA	NA	\$22	\$21	NA	NA	NA	NA
PY 1	\$21	\$20	\$0.1 (\$0.2)	0.4%	(-\$0.3, \$0.5)	0.759	\$21	\$19	-\$0.2 (\$0.3)	-1.0%	(-\$0.7, \$0.3)	0.494	\$21	\$20	\$0.4 (\$0.4)	1.8%	(-\$0.2, \$1.0)	0.307
Unweighted sample sizes^c																		
Number of practices	1,490	5,516					768	3,046					722	2,470				
Number of beneficiaries	1,154,444	3,651,829					585,279	2,089,617					571,130	1,573,107				
Number of beneficiary-years	1,965,693	6,186,861					994,305	3,536,863					971,388	2,649,998				

Table 6.A.4. (continued)

Source: Mathematica's analysis of Medicare claims data from January 2013 through December 2018.

Notes: Impact estimates are regression-adjusted for pre-CPC+ beneficiary characteristics and practice fixed effects. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for Medicare FFS beneficiaries attributed to CPC+ practices in the first year of CPC+ compared with baseline relative to the same difference over time for Medicare FFS beneficiaries attributed to comparison practices. Expenditures on Part B noninstitutional services include expenditures on (1) billable ambulatory primary care visits, (2) ambulatory specialist visits, and (3) non-ambulatory physician visits as well as services provided by other noninstitutional providers (we only show the first two categories separately in the table).

We report the actual, unadjusted CPC+ mean for each time period shown in the table. For comparison group practices, we report the actual, unadjusted mean during the baseline period but the adjusted mean during each intervention period. We obtain the adjusted mean by subtracting the regression adjusted difference between the CPC+ and comparison means in each time period from the CPC+ mean in that same time period.

Although this table indicates which estimates are statistically significant, when we interpret evidence, we combine evidence from the magnitude of the effect, the p -values, findings on related outcomes, subgroups, sensitivity tests, and other data sources about model implementation.

^a We calculated percentage impacts relative to what the CPC+ mean would have been in Program Year 1 in the absence of the intervention—that is, the unadjusted CPC+ mean minus the impact estimate.

^b Acute inpatient care includes short-stay acute hospital admissions and admissions to critical access hospitals. Expenditures on non-acute hospital admissions, such as inpatient rehabilitation and psychiatric hospital admissions, are included in inpatient expenditures but not shown separately.

^c After accounting for weights that adjust for matching and time observed in Medicare FFS, the effective sample sizes fall but are still substantial. For the comparison group, the effective sample size is 46 to 51 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size because it is affected only by time observed (and not by the matching weights).

^{*/**/**} Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

NA = not applicable, either because the difference-in-differences impact estimate cannot be calculated at baseline, or because only CPC+ practices that participate in SSP are eligible to receive shared savings payments, and only non-SSP practices are eligible to receive Performance-based Incentive Payments. However, for the impact analysis, we determine SSP ACO participation status based on participation at the beginning of PY 1 (January 1, 2017 for 2017 Starters). Over time, CPC+ practices may join or leave SSP, resulting in a small subset of SSP practices receiving the Performance-based Incentive Payments and a small subset of non-SSP practices receiving the shared savings payments. Therefore, the impact estimates for the SSP practices may change slightly after including the Performance-based Incentive Payments and similarly, the impact estimates for non-SSP practices may change slightly after including the shared savings payments.

ACO = accountable care organization; C = comparison; FFS = fee-for-service; PY = Program Year; SE = standard error; SSP = Medicare Shared Savings Program.

Table 6.A.5. Regression-adjusted means and estimated impact of CPC+ on selected Medicare service use outcomes for attributed Medicare FFS beneficiaries in the first program year: Track 1 combined 2017 and 2018 Starters

	Track 1—Overall						Track 1—SSP						Track 1—Non-SSP					
	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value
Service use (per 1,000 beneficiaries per year)																		
Acute hospitalizations (short-stay acute care and critical access hospitals)																		
Baseline	290	289	NA	NA	NA	NA	290	289	NA	NA	NA	NA	289	289	NA	NA	NA	NA
PY 1	287	288	-1.4 (1.5)	-0.5%	(-3.8, 1.0)	0.333	287	289	-2.6 (2.0)	-0.9%	(-5.8, 0.7)	0.195	287	287	-0.2 (2.2)	-0.1%	(-3.8, 3.4)	0.932
Total ED visits, including observation stays																		
Baseline	706	708	NA	NA	NA	NA	689	690	NA	NA	NA	NA	724	727	NA	NA	NA	NA
PY 1	700	709	-7.4*** (2.7)	-1.1%***	(-11.9, -3.0)	0.006	684	692	-7.0* (3.7)	-1.0%*	(-13.1, -0.9)	0.059	717	728	-7.8** (4.0)	-1.1%**	(-14.3, -1.3)	0.049
Outpatient ED visits, including observation stays																		
Baseline	495	501	NA	NA	NA	NA	475	479	NA	NA	NA	NA	514	524	NA	NA	NA	NA
PY 1	489	502	-6.0*** (2.2)	-1.2%***	(-9.5, -2.4)	0.006	472	481	-4.9* (2.9)	-1.0%*	(-9.7, -0.1)	0.092	507	523	-7.0** (3.2)	-1.4%**	(-12.3, -1.7)	0.030
Ambulatory primary care visits (including to FQHCs, RHCs, and CAHs)																		
Baseline	4,302	4,403	NA	NA	NA	NA	4,258	4,375	NA	NA	NA	NA	4,347	4,433	NA	NA	NA	NA
PY 1	4,336	4,493	-55.1*** (14.4)	-1.3%***	(-78.7, -31.5)	0.000	4,304	4,465	-43.8** (17.7)	-1.0%**	(-72.9, -14.6)	0.014	4,369	4,522	-66.2*** (22.7)	-1.5%***	(-103.6, -28.8)	0.004
Ambulatory specialty care visits (including to FQHCs, RHCs, and CAHs)																		
Baseline	4,185	4,113	NA	NA	NA	NA	4,466	4,315	NA	NA	NA	NA	3,899	3,901	NA	NA	NA	NA
PY 1	4,134	4,050	12.2 (8.7)	0.3%	(-2.2, 26.6)	0.164	4,400	4,247	1.7 (11.9)	0.0%	(-17.9, 21.3)	0.887	3,862	3,840	23.4* (12.7)	0.6%*	(2.4, 44.3)	0.066
Unweighted sample sizes^b																		
Number of practices	1,490	5,516					768	3,046					722	2,470				
Number of beneficiaries	1,154,444	3,651,829					585,279	2,089,617					571,130	1,573,107				
Number of beneficiary-years	1,965,693	6,186,861					994,305	3,536,863					971,388	2,649,998				

Source: Mathematica’s analysis of Medicare claims data from January 2013 through December 2018.

Notes: Impact estimates are regression-adjusted for pre-CPC+ beneficiary characteristics and practice fixed effects. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for Medicare FFS beneficiaries attributed to CPC+ practices in the first year of CPC+, compared with baseline relative to the same difference over time for Medicare FFS beneficiaries attributed to comparison practices. For Medicare service use measures, measures of outpatient ED visits and total ED visits include

Table 6.A.5. (continued)

observation stays. Billable ambulatory visits with primary care practitioners and specialists include office-based visits, visits at home, and visits in other settings, such as FQHCs, RHCs, and CAHs.

We report the actual, unadjusted CPC+ mean for each time period shown in the table. For comparison group practices, we report the actual, unadjusted mean during the baseline period but the adjusted mean during each intervention period. We obtain the adjusted mean by subtracting the regression adjusted difference between the CPC+ and comparison means in each time period from the CPC+ mean in that same time period.

This table indicates which estimates are statistically significant; when we interpret evidence, we combine evidence from the magnitude of the effect, the p -values, findings on related outcomes, subgroups, sensitivity tests, and other data sources about model implementation.

^a We calculated percentage impacts relative to what the CPC+ mean would have been in Program Year 1 in the absence of the intervention—that is, the unadjusted CPC+ mean minus the impact estimate.

^b After accounting for weights that adjust for matching and time observed in Medicare FFS, the effective sample sizes fall but are still substantial. For the comparison group, the effective sample size is 46 to 51 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size because it is affected only by time observed (and not by the matching weights).

*/**/** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

C = comparison; CAH = critical access hospital; ED = emergency department; FFS = fee-for-service; FQHC = federally qualified health center; NA = not applicable; PY = Program Year; RHC = rural health center; SE = standard error; SSP = Medicare Shared Savings Program.

Table 6.A.6. Regression-adjusted means and estimated impact of CPC+ on selected claims-based quality-of-care measures for attributed Medicare FFS beneficiaries in the first program year: Track 1 combined 2017 and 2018 Starters

	Track 1—Overall					Track 1—SSP					Track 1—Non-SSP				
	PC+ mean	mean	Impact estimate (SE)	% confidence interval	p-value	PC+ mean	mean	Impact estimate (SE)	% confidence interval	p-value	PC+ mean	mean	Impact estimate (SE)	% confidence interval	p-value
Planned care and population health measures for beneficiaries ages 18–75 with diabetes (percentage)															
Received HbA1c test															
Baseline	91.0%	91.7%	NA	NA	NA	92.0%	92.2%	NA	NA	NA	90.0%	91.2%	NA	NA	NA
PY 1	91.4%	91.9%	0.2 (0.1)	(0.0, 0.4)	0.148	92.3%	92.2%	0.3 (0.2)	(0.0, 0.6)	0.163	90.5%	91.5%	0.2 (0.2)	(-0.2, 0.5)	0.485
Received eye exam															
Baseline	63.7%	64.8%	NA	NA	NA	64.5%	66.4%	NA	NA	NA	63.0%	63.1%	NA	NA	NA
PY 1	65.1%	65.3%	0.8*** (0.2)	(0.5, 1.2)	0.000	65.1%	67.0%	0.1 (0.3)	(-0.4, 0.6)	0.777	65.0%	63.5%	1.6*** (0.3)	(1.1, 2.1)	0.000
Received attention for nephropathy															
Baseline	81.1%	80.9%	NA	NA	NA	82.3%	81.8%	NA	NA	NA	79.8%	79.9%	NA	NA	NA
PY 1	82.1%	81.3%	0.6*** (0.2)	(0.3, 1.0)	0.005	83.1%	82.1%	0.5* (0.3)	(0.0, 1.0)	0.097	81.0%	80.3%	0.8** (0.3)	(0.2, 1.3)	0.022
Diabetes composite measure 1 (received all three tests above: HbA1c test, eye exam, attention for nephropathy)															
Baseline	51.3%	52.2%	NA	NA	NA	53.0%	54.2%	NA	NA	NA	49.6%	50.2%	NA	NA	NA
PY 1	52.8%	53.0%	0.8*** (0.3)	(0.4, 1.2)	0.002	53.9%	55.0%	0.1 (0.4)	(-0.5, 0.7)	0.746	51.8%	51.0%	1.4*** (0.4)	(0.9, 2.0)	0.000
Diabetes composite measure 2 (received none of the three tests above)															
Baseline	2.5%	2.3%	NA	NA	NA	2.2%	2.1%	NA	NA	NA	2.7%	2.5%	NA	NA	NA
PY 1	2.2%	2.2%	-0.2*** (0.1)	(-0.3, -0.1)	0.005	2.0%	2.1%	-0.2** (0.1)	(-0.4, -0.1)	0.015	2.4%	2.3%	-0.2 (0.1)	(-0.4, 0.0)	0.100
Unweighted sample sizes for the diabetes measures^a															
Number of beneficiaries	173,163	548,338				86,673	308,214				86,733	241,443			
Number of beneficiary-years	274,503	865,944				137,251	486,934				137,252	379,010			
Planned care and population health measures for female beneficiaries ages 52–74 (percentage)															
Received breast cancer screening															
Baseline	68.6%	68.6%	NA	NA	NA	69.7%	70.0%	NA	NA	NA	67.6%	67.2%	NA	NA	NA
PY 1	69.9%	69.4%	0.5*** (0.1)	(0.2, 0.7)	0.001	70.9%	71.1%	0.1 (0.2)	(-0.2, 0.4)	0.469	68.9%	67.7%	0.8*** (0.2)	(0.5, 1.2)	0.000
Unweighted sample sizes for the breast cancer screening measure^a															
Number of beneficiaries	274,759	863,471				138,966	493,086				136,252	372,880			
Number of beneficiary-years	440,760	1,378,619				222,375	786,148				218,385	592,471			

Table 6.A.6. (continued)

	Track 1—Overall					Track 1—SSP					Track 1—Non-SSP				
	PC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value	PC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value	PC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value
Measures for coordination of care (percentage)															
Percentage of discharges that had a 30-day all-cause unplanned readmission															
Baseline	15.5%	15.8%	NA	NA	NA	15.4%	15.9%	NA	NA	NA	15.7%	15.7%	NA	NA	NA
PY 1	15.6%	15.8%	0.1 (0.1)	(-0.2, 0.3)	0.577	15.2%	15.7%	0.1 (0.2)	(-0.2, 0.4)	0.643	16.0%	16.0%	0.1 (0.2)	(-0.3, 0.4)	0.783
Measures for patient and caregiver engagement (percentage)															
Received hospice services															
Baseline	2.7%	2.7%	NA	NA	NA	2.7%	2.7%	NA	NA	NA	2.7%	2.7%	NA	NA	NA
PY 1	2.7%	2.7%	0.0 (0.0)	(0.0, 0.1)	0.176	2.8%	2.7%	0.1** (0.0)	(0.0, 0.1)	0.039	2.7%	2.7%	0.0 (0.0)	(-0.1, 0.1)	0.944
Unweighted sample sizes for unplanned readmission and receiving hospice services^a															
Number of index discharges for readmissions	484,063	1,497,642				244,889	854,322				239,174	643,320			
Number of beneficiaries	1,154,444	3,651,829				585,279	2,089,617				571,130	1,573,107			
Number of beneficiary-years	1,965,693	6,186,861				994,305	3,536,863				971,388	2,649,998			

Source: Mathematica’s analysis of Medicare claims data from January 2013 through December 2018.

Notes: Impact estimates are regression-adjusted for baseline beneficiary characteristics and practice fixed effects. All outcomes are reported as beneficiary-level percentages, except for the 30-day unplanned readmission measure, which is at the discharge level. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for Medicare FFS beneficiaries attributed to CPC+ practices in the first year of CPC+ compared with the average outcome in the baseline year, relative to the same difference over time for Medicare FFS beneficiaries attributed to comparison practices. For the readmissions outcome, which is estimated at the discharge level, we also controlled for discharge-level risk factors. For the binary quality-of-care outcomes, we present the absolute impact estimate only in percentage points. This is because percentage impacts for some of the outcomes are likely to be misleadingly large, given the low means for the outcome measures.

We report the actual, unadjusted CPC+ mean for each time period shown in the table. For comparison group practices, we report the actual, unadjusted mean during the baseline period but the adjusted mean during each intervention period. We obtain the adjusted mean by subtracting the regression adjusted difference between the CPC+ and comparison means in each time period from the CPC+ mean in that same time period.

This table indicates which estimates are statistically significant; when we interpret evidence, we combine evidence from the magnitude of the effect, the p-values, findings on related outcomes, subgroups, sensitivity tests, and other data sources on model implementation.

We grouped the claims-based quality-of-care measures into four domains according to the Comprehensive Primary Care Functions under which they appear in the 2018 Implementation Guide (CMMI 2018).

^a The numbers of Track 1 CPC+ and comparison practices are the same as in Tables 6.A.4 and 6.A.5, and hence, are not reported separately in this table. After accounting for weights that adjust for matching and time observed in Medicare FFS, the effective sample sizes fall. For the comparison group, the effective sample size is 46 to 51 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size, because it is only affected by time observed (and not by the matching weights). For the analysis of unplanned 30-day readmissions, we only use matching weights—therefore, the effective sample size for the number of index discharges shown in the table is smaller by 47 to 53 percent for the comparison group only.

*/**/** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

C = comparison; FFS = fee-for-service; NA = not applicable; PY = Program Year; SE = standard error; SSP = Medicare Shared Savings Program.

Table 6.A.7. Aggregate impacts on key outcomes in the first program year: Track 1 combined 2017 and 2018 Starters

Outcome	Estimate	90 percent CI lower bound	90 percent CI upper bound
Medicare expenditures without CMS' enhanced payments	\$39,409,938	-\$19,621,364	\$98,441,245
Medicare expenditures including CMS' enhanced payments	\$200,248,237	\$141,222,953	\$259,273,410
Hospitalizations	-1,309	-3,530	913
Outpatient ED visits	<i>-5,510</i>	-8,796	-2,224
30-day readmissions ^a	194	-377	764

Source: Mathematica's analysis of Medicare claims data from January 2013 through December 2018.

Notes: This table calculates the estimated effects over all attributed Medicare FFS beneficiaries who were in the intent-to-treat analysis sample in the first year of CPC+ for combined 2017 and 2018 Starters in Track 1. The total number of beneficiaries attributed to Track 1 practices in the annual analysis sample was 1,154,444. These beneficiaries had 11,064,924 eligible beneficiary months, and 246,847 eligible index discharges (for readmissions) over the course of the first year of CPC+. Impact estimates are from difference-in-differences regressions using practice fixed effects and patient-level control variables from the pre-CPC+ period shown in Tables 6.A.4, 6.A.5, and 6.A.6. See Appendix 6.D for a full list of measures and definitions, and Appendix 6.E for a discussion of methods. **Yellow shading with bold, italicized text** signifies that estimate was statistically significant at the $p < 0.10$ level.

^a In the impact analysis, this outcome represents the percentage of discharges that had an unplanned readmission within 30 days of the discharge. For this table, we translate the impact estimate to the total number of discharges for which readmissions were affected by the initiative.

CI = confidence interval; ED = emergency department; FFS = fee-for-service.

Table 6.A.8. Regression-adjusted means and estimated impacts of CPC+ on selected Medicare expenditures outcomes for attributed Medicare FFS beneficiaries in the first program year: Track 2 combined 2017 and 2018 Starters

	Track 2—Overall						Track 2—SSP						Track 2—Non-SSP					
	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value
Medicare expenditures (per beneficiary per month)																		
Medicare Part A and B expenditures without enhanced CPC+ payments^b																		
Baseline	\$876	\$877	NA	NA	NA	NA	\$895	\$892	NA	NA	NA	NA	\$862	\$865	NA	NA	NA	NA
PY 1	\$897	\$894	\$3.2 (\$3.4)	0.4%	(-\$2.4, \$8.9)	0.341	\$917	\$913	\$0.9 (\$5.1)	0.1%	(-\$7.5, \$9.2)	0.864	\$881	\$880	\$5.0 (\$4.6)	0.6%	(-\$2.5, \$12.6)	0.275
Medicare Part A and B expenditures including care management fees^c																		
Baseline	\$876	\$877	NA	NA	NA	NA	\$895	\$892	NA	NA	NA	NA	\$862	\$865	NA	NA	NA	NA
PY 1	\$923	\$894	\$29.4*** (\$3.4)	3.3%***	(\$23.8, \$35.1)	0.000	\$943	\$913	\$27.0*** (\$5.1)	3.0%***	(\$18.7, \$35.4)	0.000	\$907	\$880	\$31.2*** (\$4.6)	3.6%***	(\$23.6, \$38.8)	0.000
Medicare Part A and B expenditures including care management fees and Performance-based Incentive Payments^c																		
Baseline	\$876	\$877	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$862	\$865	NA	NA	NA	NA
PY 1	\$924	\$894	\$30.8*** (\$3.4)	3.4%***	(\$25.1, \$36.4)	0.000	NA	NA	NA	NA	NA	NA	\$910	\$880	\$33.5*** (\$4.6)	3.8%***	(\$26.0, \$41.1)	0.000
Medicare Part A and B expenditures including care management fees, Performance-based Incentive Payments, and shared savings payments to SSP ACOs^c																		
Baseline	\$878	\$879	NA	NA	NA	NA	\$900	\$897	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PY 1	\$925	\$897	\$29.4*** (\$3.4)	3.3%***	(\$23.7, \$35.0)	0.000	\$945	\$918	\$24.1*** (\$5.1)	2.6%***	(\$15.8, \$32.4)	0.000	NA	NA	NA	NA	NA	NA
Medicare expenditures by service category (per beneficiary per month)																		
Inpatient expenditures																		
Baseline	\$314	\$316	NA	NA	NA	NA	\$321	\$321	NA	NA	NA	NA	\$308	\$313	NA	NA	NA	NA
PY 1	\$320	\$320	\$2.8 (\$2.2)	0.9%	(-\$0.9, \$6.5)	0.212	\$329	\$328	\$0.4 (\$3.3)	0.1%	(-\$5.1, \$5.9)	0.905	\$314	\$314	\$4.6 (\$3.0)	1.5%	(-\$0.3, \$9.6)	0.122
Expenditures on acute inpatient care^d																		
Baseline	\$278	\$281	NA	NA	NA	NA	\$285	\$284	NA	NA	NA	NA	\$273	\$278	NA	NA	NA	NA
PY 1	\$285	\$285	\$2.0 (\$2.0)	0.7%	(-\$1.3, \$5.3)	0.309	\$292	\$292	-\$0.9 (\$3.0)	-0.3%	(-\$5.9, \$4.1)	0.773	\$279	\$280	\$4.3 (\$2.7)	1.6%	(-\$0.1, \$8.7)	0.107
Outpatient expenditures																		
Baseline	\$167	\$172	NA	NA	NA	NA	\$174	\$167	NA	NA	NA	NA	\$162	\$175	NA	NA	NA	NA
PY 1	\$179	\$183	\$0.2 (\$0.8)	0.1%	(-\$1.2, \$1.6)	0.843	\$186	\$178	\$1.2 (\$1.3)	0.6%	(-\$1.0, \$3.3)	0.378	\$173	\$187	-\$0.6 (\$1.1)	-0.4%	(-\$2.4, \$1.2)	0.575

Table 6.A.8. (continued)

	Track 2—Overall						Track 2—SSP						Track 2—Non-SSP					
	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value
Expenditures on physician and nonphysician Part B noninstitutional services in any setting																		
Baseline	\$244	\$238	NA	NA	NA	NA	\$248	\$249	NA	NA	NA	NA	\$242	\$229	NA	NA	NA	NA
PY 1	\$250	\$243	\$0.0 (\$0.8)	0.0%	(-\$1.2, \$1.2)	0.999	\$252	\$255	-\$2.0* (\$1.1)	-0.8%*	(-\$3.7, - \$0.2)	0.074	\$249	\$235	\$1.5 (\$1.0)	0.6%	(-\$0.2, \$3.2)	0.152
Expenditures on ambulatory visits with primary care practitioners																		
Baseline	\$24	\$24	NA	NA	NA	NA	\$24	\$25	NA	NA	NA	NA	\$24	\$24	NA	NA	NA	NA
PY 1	\$25	\$25	\$0.1 (\$0.1)	0.3%	(-\$0.1, \$0.2)	0.427	\$25	\$25	\$0.2 (\$0.1)	0.7%	(-\$0.1, \$0.4)	0.240	\$25	\$25	\$0.0 (\$0.1)	0.1%	(-\$0.2, \$0.2)	0.914
Expenditures on ambulatory visits with specialists																		
Baseline	\$23	\$22	NA	NA	NA	NA	\$24	\$24	NA	NA	NA	NA	\$22	\$21	NA	NA	NA	NA
PY 1	\$22	\$22	\$0.0 (\$0.1)	-0.1%	(-\$0.1, \$0.1)	0.694	\$24	\$23	\$0.0 (\$0.1)	-0.1%	(-\$0.2, \$0.1)	0.786	\$21	\$21	\$0.0 (\$0.1)	-0.1%	(-\$0.1, \$0.1)	0.783
Skilled nursing home expenditures																		
Baseline	\$65	\$64	NA	NA	NA	NA	\$69	\$69	NA	NA	NA	NA	\$62	\$61	NA	NA	NA	NA
PY 1	\$63	\$63	-\$0.2 (\$0.7)	-0.3%	(-\$1.3, \$1.0)	0.823	\$68	\$66	\$1.0 (\$1.0)	1.4%	(-\$0.8, \$2.7)	0.362	\$60	\$60	-\$1.1 (\$1.0)	-1.7%	(-\$2.7, \$0.6)	0.284
Home health expenditures																		
Baseline	\$41	\$41	NA	NA	NA	NA	\$41	\$43	NA	NA	NA	NA	\$41	\$39	NA	NA	NA	NA
PY 1	\$40	\$41	-\$0.4 (\$0.3)	-0.9%	(-\$0.9, \$0.1)	0.227	\$40	\$43	-\$0.2 (\$0.4)	-0.5%	(-\$0.9, \$0.6)	0.686	\$41	\$39	-\$0.5 (\$0.4)	-1.3%	(-\$1.2, \$0.2)	0.214
Hospice expenditures																		
Baseline	\$24	\$25	NA	NA	NA	NA	\$22	\$23	NA	NA	NA	NA	\$25	\$26	NA	NA	NA	NA
PY 1	\$24	\$25	\$0.5 (\$0.4)	2.2%	(-\$0.2, \$1.2)	0.210	\$23	\$24	\$0.4 (\$0.6)	1.9%	(-\$0.6, \$1.4)	0.490	\$25	\$26	\$0.6 (\$0.5)	2.5%	(-\$0.3, \$1.5)	0.279
Durable medical equipment expenditures																		
Baseline	\$21	\$21	NA	NA	NA	NA	\$20	\$20	NA	NA	NA	NA	\$21	\$22	NA	NA	NA	NA
PY 1	\$20	\$20	\$0.3 (\$0.2)	1.6%	(-\$0.1, \$0.7)	0.192	\$19	\$19	\$0.1 (\$0.3)	0.3%	(-\$0.5, \$0.6)	0.843	\$20	\$20	\$0.5 (\$0.3)	2.5%	(\$0.0, \$1.0)	0.128
Unweighted sample sizes^a																		
Number of practices	1,561	4,041					643	1,865					918	2,176				
Number of beneficiaries	1,319,999	3,105,369					578,744	1,519,158					744,347	1,594,799				
Number of beneficiary-years	2,250,965	5,268,363					981,277	2,575,706					1,269,688	2,692,657				

Table 6.A.8. (continued)

Source: Mathematica's analysis of Medicare claims data from January 2013 through December 2018.

Notes: Impact estimates are regression-adjusted for pre-CPC+ beneficiary characteristics and practice fixed effects. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for Medicare FFS beneficiaries attributed to CPC+ practices in the first year of CPC+, compared with baseline relative to the same difference over time for Medicare FFS beneficiaries attributed to comparison practices. Expenditures on Part B noninstitutional services include expenditures on (1) billable primary care ambulatory visits, (2) ambulatory specialist visits, and (3) non-ambulatory physician visits as well as services provided by other noninstitutional providers (we only show the first two categories separately in the table).

We report the actual, unadjusted CPC+ mean for each time period shown in the table. For comparison group practices, we report the actual, unadjusted mean during the baseline period but the adjusted mean during each intervention period. We obtain the adjusted mean by subtracting the regression adjusted difference between the CPC+ and comparison means in each time period from the CPC+ mean in that same time period.

This table indicates which estimates are statistically significant; when we interpret evidence, we combine evidence from the magnitude of the effect, the p -values, findings on related outcomes, subgroups, sensitivity tests, and other data sources about model implementation.

^a We calculated percentage impacts relative to what the CPC+ mean would have been in Program Year 1 in the absence of the intervention—that is, the unadjusted CPC+ mean minus the impact estimate.

^b Medicare Part A and B expenditures *without* enhanced CPC+ payments include the base CPCPs, but not the 10 percent comprehensiveness supplement. We include CPCPs in Part B spending because Track 2 practices agreed to lower Part B payment for evaluation and management services in exchange for CPCPs.

^c Medicare Part A and B expenditures *with* enhanced CPC+ payments include the base CPCPs, as well as the 10 percent comprehensiveness supplement.

^d Acute inpatient care includes short-stay acute hospital admissions and admissions to critical access hospitals. Expenditures on non-acute hospital admissions, such as inpatient rehabilitation and psychiatric hospital admissions, are included in inpatient expenditures but not shown separately.

^e After accounting for weights that adjust for matching and time observed in Medicare FFS, the effective sample sizes fall but are still substantial. For the comparison group, the effective sample size is 38 to 43 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size because it is affected only by time observed (and not by the matching weights).

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

NA = not applicable, either because the difference-in-differences impact estimate cannot be calculated at baseline, or because only CPC+ practices that participate in SSP are eligible to receive shared savings payments, and only non-SSP practices are eligible to receive Performance-based Incentive Payments. However, for the impact analysis, we determine SSP ACO participation status based on participation at the beginning of PY 1 (January 1, 2017 for 2017 Starters). Over time, CPC+ practices may join or leave SSP, resulting in a small subset of SSP practices receiving the Performance-based Incentive Payments and a small subset of non-SSP practices receiving the shared savings payments. Therefore, the impact estimates for the SSP practices may change slightly after including the Performance-based Incentive Payments and similarly, the impact estimates for non-SSP practices may change slightly after including the shared savings payments.

ACO = Accountable Care Organization; C = comparison; CPCP = Comprehensive Primary Care Payment; FFS = fee-for-service; PY = Program Year; SE = standard error; SSP = Medicare Shared Savings Program.

Table 6.A.9. Regression-adjusted means and estimated impact of CPC+ on selected Medicare service use outcomes for attributed Medicare FFS beneficiaries in the first year of CPC+: Track 2 combined 2017 and 2018 Starters

	Track 2—Overall						Track 2—SSP						Track 2—Non-SSP					
	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value	CPC+ mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-value
Service use (per 1,000 beneficiaries per year)																		
Acute hospitalizations (short-stay acute care and critical access hospitals)																		
Baseline	292	289	NA	NA	NA	NA	300	292	NA	NA	NA	NA	287	286	NA	NA	NA	NA
PY 1	292	289	-1.1 (1.6)	-0.4%	(-3.6, 1.5)	0.495	301	294	-0.9 (2.3)	-0.3%	(-4.8, 2.9)	0.686	285	286	-1.1 (2.1)	-0.4%	(-4.6, 2.3)	0.584
Total ED visits, including observation stays																		
Baseline	706	702	NA	NA	NA	NA	700	689	NA	NA	NA	NA	710	713	NA	NA	NA	NA
PY 1	701	705	-7.8*** (2.9)	-1.1%***	(-12.5, -3.1)	0.006	695	691	-6.7 (4.2)	-1.0%	(-13.6, 0.2)	0.111	705	716	-8.7** (3.9)	-1.2%**	(-15.1, -2.3)	0.025
Outpatient ED visits, including observation stays																		
Baseline	491	493	NA	NA	NA	NA	478	475	NA	NA	NA	NA	502	508	NA	NA	NA	NA
PY 1	485	494	-7.3*** (2.3)	-1.5%***	(-11.1, -3.6)	0.001	470	475	-7.8** (3.4)	-1.6%**	(-13.4, -2.3)	0.020	497	510	-6.9** (3.1)	-1.4%**	(-12.0, -1.9)	0.023
Ambulatory primary care visits (including FOHCs, RHCs, and CAHs)																		
Baseline	4,358	4,436	NA	NA	NA	NA	4,225	4,352	NA	NA	NA	NA	4,459	4,501	NA	NA	NA	NA
PY 1	4,353	4,508	-76.9*** (16.7)	-1.7%***	(-104.3, -49.4)	0.000	4,231	4,419	-60.9*** (22.7)	-1.4%***	(-98.2, -23.6)	0.007	4,447	4,578	-89.5*** (23.1)	-2.0%***	(-127.5, -51.5)	0.000
Ambulatory specialty care visits (including FOHCs, RHCs, and CAHs)																		
Baseline	4,137	4,076	NA	NA	NA	NA	4,357	4,261	NA	NA	NA	NA	3,968	3,933	NA	NA	NA	NA
PY 1	4,092	4,030	1.7 (9.7)	0.0%	(-14.3, 17.6)	0.865	4,292	4,199	-3.5 (16.8)	-0.1%	(-31.2, 24.3)	0.838	3,937	3,897	5.7 (11.2)	0.1%	(-12.7, 24.1)	0.611
Unweighted sample sizes^b																		
Number of practices	1,561	4,041					643	1,865					918	2,176				
Number of beneficiaries	1,319,999	3,105,369					578,744	1,519,158					744,347	1,594,799				
Number of beneficiary-years	2,250,965	5,268,363					981,277	2,575,706					1,269,688	2,692,657				

Source: Mathematica’s analysis of Medicare claims data from January 2013 through December 2018.

Notes: Impact estimates are regression-adjusted for pre-CPC+ beneficiary characteristics and practice fixed effects. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for Medicare FFS beneficiaries attributed to CPC+ practices in the first year of CPC+, compared with baseline relative to the same difference over time for Medicare FFS beneficiaries attributed to comparison practices. For Medicare service use measures, measures of outpatient ED visits and total ED visits include

Table 6.A.9. (continued)

observation stays. Billable ambulatory visits with primary care practitioners and specialists include office-based visits, visits at home, and visits in other settings, such as FQHCs, RHCs, and CAHs.

We report the actual, unadjusted CPC+ mean for each time period shown in the table. For comparison group practices, we report the actual, unadjusted mean during the baseline period but the adjusted mean during each intervention period. We obtain the adjusted mean by subtracting the regression adjusted difference between the CPC+ and comparison means in each time period from the CPC+ mean in that same time period.

This table indicates which estimates are statistically significant; when we interpret evidence, we combine evidence from the magnitude of the effect, the p -values, findings on related outcomes, subgroups, sensitivity tests, and other data sources about model implementation.

^a We calculated percentage impacts relative to what the CPC+ mean would have been in Program Year 1 in the absence of the intervention—that is, the unadjusted CPC+ mean minus the impact estimate.

^b After accounting for weights that adjust for matching and time observed in Medicare FFS, the effective sample sizes fall but are still substantial. For the comparison group, the effective sample size is 38 to 43 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size because it is affected only by time observed (and not by the matching weights).

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test. C = comparison; CAH = critical access hospital; ED = emergency department; FFS = fee-for-service; FQHC = federally qualified health center; NA = not applicable; PY = Program Year; RHC = rural health center; SE = standard error; SSP = Medicare Shared Savings Program.

Table 6.A.10. Regression-adjusted means and estimated impact of CPC+ on selected claims-based quality-of-care measures for attributed Medicare FFS beneficiaries in the first program year: Track 2 combined 2017 and 2018 Starters

	Track 2—Overall					Track 2—SSP					Track 2—Non-SSP				
	PC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value	PC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value	PC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value
Planned care and population health measures for beneficiaries ages 18–75 with diabetes (percentage)															
Received HbA1c test															
Baseline	92.5%	92.2%	NA	NA	NA	92.9%	92.1%	NA	NA	NA	92.3%	92.3%	NA	NA	NA
PY 1	92.9%	92.3%	0.3 (0.2)	(0.0, 0.5)	0.116	93.4%	92.4%	0.2 (0.2)	(-0.1, 0.6)	0.296	92.6%	92.3%	0.3 (0.2)	(-0.1, 0.7)	0.234
Received eye exam															
Baseline	65.5%	65.6%	NA	NA	NA	67.0%	67.0%	NA	NA	NA	64.5%	64.6%	NA	NA	NA
PY 1	66.2%	66.4%	0.0 (0.2)	(-0.4, 0.4)	0.917	67.0%	67.6%	-0.5 (0.4)	(-1.2, 0.1)	0.176	65.6%	65.4%	0.4 (0.3)	(-0.1, 0.8)	0.185
Received attention for nephropathy															
Baseline	82.8%	82.2%	NA	NA	NA	84.6%	83.0%	NA	NA	NA	81.5%	81.6%	NA	NA	NA
PY 1	83.5%	82.6%	0.3 (0.2)	(-0.1, 0.7)	0.186	85.2%	83.5%	0.1 (0.3)	(-0.4, 0.6)	0.766	82.2%	81.9%	0.5 (0.3)	(-0.1, 1.0)	0.148
Diabetes composite measure 1 (received all three tests above: HbA1c test, eye exam, attention for nephropathy)															
Baseline	54.3%	53.8%	NA	NA	NA	56.4%	55.4%	NA	NA	NA	52.6%	52.6%	NA	NA	NA
PY 1	55.3%	54.7%	0.2 (0.3)	(-0.3, 0.6)	0.520	57.1%	56.3%	-0.3 (0.4)	(-1.0, 0.5)	0.535	54.0%	53.4%	0.5 (0.3)	(0.0, 1.1)	0.131
Diabetes composite measure 2 (received none of the three tests above)															
Baseline	2.1%	2.1%	NA	NA	NA	2.0%	2.1%	NA	NA	NA	2.2%	2.1%	NA	NA	NA
PY 1	1.9%	2.0%	-0.1 (0.1)	(-0.2, 0.0)	0.236	1.9%	2.0%	0.0 (0.1)	(-0.2, 0.2)	0.860	2.0%	2.1%	-0.2* (0.1)	(-0.4, 0.0)	0.099
Unweighted sample sizes for the diabetes measures^a															
Number of beneficiaries	195,865	456,280				84,761	220,382				111,475	236,862			
Number of beneficiary-years	311,201	721,702				134,025	348,256				177,176	373,446			
Planned care and population health measures for female beneficiaries ages 52–74 (percentage)															
Received breast cancer screening															
Baseline	70.2%	70.1%	NA	NA	NA	71.9%	71.3%	NA	NA	NA	69.0%	69.1%	NA	NA	NA
PY 1	71.7%	71.1%	0.5*** (0.1)	(0.3, 0.7)	0.001	73.3%	72.5%	0.3 (0.2)	(-0.1, 0.6)	0.184	70.5%	70.1%	0.7*** (0.2)	(0.3, 1.0)	0.001

Table 6.A.10. (continued)

	Track 2—Overall					Track 2—SSP					Track 2—Non-SSP				
	CPC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value	CPC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value	CPC+ mean	mean	Impact estimate (SE)	95% confidence interval	p-value
Unweighted sample sizes for the breast cancer screening measure^a															
Number of beneficiaries	310,003	728,956				135,367	355,475				175,295	375,403			
Number of beneficiary-years	498,193	1,165,286				216,083	567,536				282,110	597,750			
Measures for coordination of care (percentage)															
Percentage of discharges that had a 30-day all-cause unplanned readmission															
Baseline	15.7%	15.9%	NA	NA	NA	15.9%	16.0%	NA	NA	NA	15.5%	15.8%	NA	NA	NA
PY 1	15.6%	15.9%	-0.1 (0.2)	(-0.4, 0.1)	0.479	16.0%	16.2%	-0.1 (0.2)	(-0.4, 0.3)	0.788	15.3%	15.7%	-0.2 (0.2)	(-0.5, 0.2)	0.470
Measures for patient and caregiver engagement (percentage)															
Received hospice services															
Baseline	2.7%	2.7%	NA	NA	NA	2.7%	2.6%	NA	NA	NA	2.8%	2.8%	NA	NA	NA
PY 1	2.8%	2.7%	0.0 (0.0)	(0.0, 0.1)	0.242	2.7%	2.6%	0.0 (0.0)	(-0.1, 0.1)	0.695	2.8%	2.8%	0.1 (0.0)	(0.0, 0.1)	0.227
Unweighted sample sizes for unplanned readmission and receiving hospice services^a															
Number of index discharges for readmissions	558,992	1,278,486				251,089	628,841				307,903	649,645			
Number of beneficiaries	1,319,999	3,105,369				578,744	1,519,158				744,347	1,594,799			
Number of beneficiary-years	2,250,965	5,268,363				981,277	2,575,706				1,269,688	2,692,657			

Source: Mathematica’s analysis of Medicare claims data from January 2013 through December 2018.

Notes: Impact estimates are regression-adjusted for baseline beneficiary characteristics and practice fixed effects. All outcomes are reported as beneficiary-level percentages, except for the 30-day unplanned readmission measure, which is at the discharge level. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for Medicare FFS beneficiaries attributed to CPC+ practices in the first year of CPC+ compared with the average outcome in the baseline year, relative to the same difference over time for Medicare FFS beneficiaries attributed to comparison practices. For the readmissions outcome, which is estimated at the discharge level, we also controlled for discharge-level risk factors. For the binary quality-of-care outcomes, we present the absolute impact estimate only in percentage points. This is because percentage impacts for some of the outcomes are likely to be misleadingly large, given the low means for the outcome measures.

We report the actual, unadjusted CPC+ mean for each time period shown in the table. For comparison group practices, we report the actual, unadjusted mean during the baseline period but the adjusted mean during each intervention period. We obtain the adjusted mean by subtracting the regression adjusted difference between the CPC+ and comparison means in each time period from the CPC+ mean in that same time period.

This table indicates which estimates are statistically significant; when we interpret evidence, we combine evidence from the magnitude of the effect, the p-values, findings on related outcomes, subgroups, sensitivity tests, and other data sources about model implementation.

Table 6.A.10. (continued)

We grouped the claims-based quality-of-care measures into four domains according to the Comprehensive Primary Care Functions under which they appear in the 2018 Implementation Guide (CMMI 2018).

^a The numbers of Track 2 CPC+ and comparison practices are the same as in Tables 6.A.8 and 6.A.9, and hence, are not reported separately in this table. After accounting for weights that adjust for matching and time observed in Medicare FFS, the effective sample sizes fall but are still substantial. For the comparison group, the effective sample size is 38 to 43 percent of the size of the actual comparison group. The effective sample size for the CPC+ group is about 95 percent of the actual sample size because it is affected only by time observed (and not by the matching weights). For the analysis of unplanned 30-day readmissions, we only use matching weights—therefore, the effective sample size for the number of index discharges shown in the table is smaller by 40 to 44 percent for the comparison group only.

*/**/** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

C = comparison; FFS = fee-for-service; NA = not applicable; PY = Program Year; SE = standard error; SSP = Medicare Shared Savings Program.

Table 6.A.11. Aggregate impacts on key outcomes in the first program year: Track 2 combined 2017 and 2018 Starters

Outcome	Estimate	90 percent CI lower bound	90 percent CI upper bound
Medicare expenditures including Comprehensive Primary Care Payments but excluding CMS' enhanced payments ^a	\$40,909,380	-\$29,753,103	\$111,571,866
Medicare expenditures including Comprehensive Primary Care Payments and CMS' enhanced payments ^a	\$369,627,190	\$299,082,638	\$440,171,743
Hospitalizations	-1,115	-3,804	1,575
Outpatient ED visits	-7,677	-11,600	-3,754
30-day readmissions ^b	-308	-1,023	408

Source: Mathematica's analysis of Medicare claims data from January 2013 through December 2018.

Notes: This table calculates the estimated effects over all attributed Medicare FFS beneficiaries who were in the intent-to-treat analysis sample in the first year of CPC+ for combined 2017 and 2018 Starters in Track 2. The total number of beneficiaries attributed to Track 2 practices in the annual analysis sample was 1,319,999. These beneficiaries had 12,593,441 eligible beneficiary months, and 284,926 eligible index discharges (for readmissions) during the first year of CPC+. Impact estimates are from difference-in-differences regressions using practice fixed effects and patient-level control variables from the pre-CPC+ period shown in Tables 6.A.8, 6.A.9, and 6.A.10. See Appendix 6.D for a full list of measures and definitions, and Appendix 6.E for a discussion of methods. **Yellow shading** with **bold, italicized text** signifies that estimate was statistically significant at the $p < 0.10$ level.

^a Medicare Part A and B expenditures without enhanced CPC+ payments also include the base CPCPs for Track 2 practices, but not the 10 percent comprehensiveness supplement. We include CPCPs in Part B spending because Track 2 practices agreed to lower Part B payments for evaluation and management services in exchange for CPCPs.

^b In the impact analysis, this outcome represents the percentage of discharges that had an unplanned readmission within 30-days of the discharge. For this table, we translated the impact estimate to the total number of discharges for which readmissions were affected by the initiative.

CI = confidence interval; CPCP = Comprehensive Primary Care Payment; ED = emergency department; FFS = fee-for-service.

6.B. Attribution methodology

In this Appendix, we explain beneficiary attribution and describe each step of the attribution approach we use for CPC+ and comparison practices. We then compare how our evaluation attribution process differs from CMS' payment attribution. Finally, we explore similarities between our evaluation attribution sample and CMS' payment attribution sample. We updated the reported number of attributed beneficiaries, by quarter or year, based on the latest attribution run for this report.

6.B.1. What is beneficiary attribution?

Attribution is a methodology used to identify the population of beneficiaries under the care of a particular provider, practice, or health system. CPC+ provides each participating practice site with enhanced and alternative payments for their Medicare fee-for-service (FFS) beneficiaries. A practice site is composed of a unique grouping of practitioners and billing numbers (described in more detail below). To determine the amount of payments practices receive, CMS uses attribution to measure the size and acuity of the Medicare FFS population receiving regular, continuous care from the practice. The CPC+ payment attribution process uses Medicare administrative data (claims and enrollment data) to identify the Medicare FFS beneficiaries associated with CPC+ practices.^{32,33}

As a part of the evaluation of CPC+, we use a similar claims-based attribution process to assign Medicare beneficiaries to all primary care practice sites serving Medicare beneficiaries in a given quarter. We assign eligible Medicare beneficiaries to practice sites for each quarter of the time period we are analyzing. For the second annual report, this period includes four baseline quarters in 2016 and eight intervention quarters in 2017 and 2018 for the 2017 Starters, and four baseline quarters in 2017 and four intervention quarters in 2018 for 2018 Starters.³⁴ Although we use a process similar to CMS payment attribution, there are a few key differences that we highlight in Section 6.B.4.

6.B.2. How do we do attribution?

Like the CMS payment attribution method, attribution for the CPC+ evaluation uses Medicare administrative data to assign Medicare FFS beneficiaries to CPC+ and comparison practice sites. The CPC+ evaluation attribution process consists of five steps. First, we identify a pool of primary care practices that compete for beneficiaries in the attribution process. Second, because we use Medicare claims, which report the practitioners who provided the service rather than the practice, we group practitioners into the practices identified in the first step. Third, we identify

³² See CMS' CPC+ Payment Methodologies at <https://innovation.cms.gov/Files/x/cpcplus-methodology.pdf> for details on CPC+ payment attribution. Section 6.B.4 summarizes the differences between the payment and evaluation attribution process.

³³ Starting in 2019, CMS incorporated Voluntary Alignment, a method by which beneficiaries confirm their primary care practitioner, into CPC+ attribution methodology.

³⁴ After attribution, beneficiaries are assigned to the first practice they are attributed to in that period (i.e., the baseline or the intervention period).

the set of beneficiaries who are eligible for attribution. Fourth, we identify the set of primary care services that we consider in the attribution process. Fifth, we use the information from the previous four steps to attribute eligible Medicare beneficiaries to a single practice in each quarter.

Below we describe each of these steps in detail.

Step 1: Identify a pool of primary care practices

To develop a frame of primary care practices that compete for beneficiaries in the attribution process, we start with a roster of 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, geriatrics, or internal medicine). We purchase the roster from SK&A, a commercial health care data vendor that maintains and verifies lists of practitioners who work in practices throughout the country, including practices' names and addresses along with the name, specialty, and National Provider Identifier (NPI) of each practitioner at the practice site. We augment the SK&A data with provider taxonomy and Medicare specialty codes and fill in missing NPIs by linking the provider-level SK&A data to the National Plan and Provider Enumeration System (NPPES). We then identify CPC+ practices within the roster of SK&A practices, using a combination of address, name, and provider matching. If we cannot identify a CPC+ practice in the SK&A roster, we augment the SK&A data by appending CPC+ practice and practitioner data from CMS.

Step 2: Group practitioners into practice sites

Two key inputs in attribution are a roster of practitioners working at practice sites and the information they use to bill Medicare for services provided at those practice sites. In the CMS payment attribution method for CPC+, a practice is defined by the combinations of Taxpayer Identification Number (TIN) or CMS Certification Number (CCN) for critical access hospitals and NPIs identified for each practitioner at the practice site. Participating CPC+ practices submit this information in monthly rosters. Each service in the Medicare claims data includes (1) the TIN or CCN and (2) the NPI of the practitioner who rendered the service. CMS determines whether the TIN (or CCN) and NPI combination on the claim match a TIN (or CCN) and NPI combination in a practitioner-practice site roster. If so, the visit is associated with that practice in the CPC+ payment attribution algorithm. Otherwise, CMS assigns that visit to the individual practitioner identified as the single TIN-NPI or CCN-NPI combination.

To facilitate attribution for the evaluation, we proceed with three substeps to construct a roster of practitioners working at all CPC+ and potential comparison practices and their associated TINs (or CCNs) and NPIs.

Substep 1: Create initial roster of NPIs from SK&A data

As a starting point, we use the practitioner rosters we purchased from SK&A in 2016 (used to create practices' roster of practitioners for the period 2014 through 2016), 2017 (used for practices' roster of practitioners in 2017), and 2018 (used for practices' roster of practitioners in 2018). Although we had extensive information about CPC+ practices from their applications, we opted to identify CPC+ practice and practitioner characteristics for matching using the same data

source (SK&A) as we used for the potential comparison practices, both at baseline and over time. This approach removes bias that could result from using different data sources for the two groups, such as more frequent or thorough updates to practitioner rosters in the CPC+ data than in SK&A data. We found approximately 80 percent overlap between the practitioners in CPC+ rosters and in the rosters we created from SK&A data. This finding suggests that, although SK&A data are not perfectly capturing CPC+ practitioners, our rosters include a high proportion of them. We explore this topic more extensively in Section 6.B.5.

Substep 2: Assign TINs to each practice in roster

Because the SK&A data do not include the practice or provider TINs used in the payment attribution method, we use claims data to assign TINs to each practice.³⁵ To do so, we use an algorithm that picks the TIN most frequently billed in Medicare claims data for primary care services by the NPIs of primary care practitioners that the SK&A roster indicates are located at a practice.³⁶ We start by assigning a single TIN to a practice in each year over the four-year period from 2015 through 2018. We then maintain all TINs previously associated with a practice, resulting in practices with multiple TINs at a given time. Additionally, we backdate the start date of each TIN by one calendar year to ensure we correctly associate claims billed by a practice at some point during the year prior to the practice's new TIN.³⁷

Substep 3: Unique NPI/TIN assignment

In some instances, the same NPI and TIN combination occurs at multiple practices identified in the SK&A data at the same time (approximately 13 percent of all practice-provider observations share the same NPI and TIN). In these cases, which occur when a provider works in more than one practice site within a health care system (if the practice sites share the same billing TIN), we cannot distinguish which practice provided care for a beneficiary. To reconcile duplicate NPI–TIN combinations before attribution, we assign the NPI to one practice using the following hierarchy of rules: (1) if the duplicate occurs between a CPC+ practice and a comparison practice, we assign the duplicate to the CPC+ practice; (2) ascending practice size, as measured by number of primary care practitioners (that is, we assign the NPI to the smaller practice); and

³⁵ For CPC+ applicants, we examined the overlap between the assigned TINs and reported TINs: for 95 percent of applicants, at least one assigned TIN was also on the CPC+ application. Using the assigned TINs in attributing beneficiaries to CPC+ practices (rather than using TINs on the CPC+ application) increases the risk of misattributing beneficiaries to CPC+ practices (if we assigned an incorrect or invalid TIN to that practice).

³⁶ In practices where at least one practitioner is found to practice only at that practice per SK&A, we limit practitioners used in TIN assignment to these “single-site” practitioners. For practices where there are no single-site practitioners, we use all primary care practitioners associated with the practice in TIN assignment.

³⁷ Specifically, we backdate assigned TINs in this way to avoid cases where the practice switched ownership (and so the TIN changed) midyear. Because we use a plurality approach to assigning TINs to a year, if we did not backdate TINs (for example, by forcing only one TIN to be active during a year) we would not assign the correct practice on up to 50 percent of the claims for that switching year.

(3) random assignment, if the duplicate occurs among practices in the same research group (CPC+ or potential comparison) and of the same size.³⁸

This process results in a master provider file with a unique crosswalk between NPIs-TINs and their associated SK&A practice IDs in each year. We use this crosswalk to map each Medicare service to a particular practice.

Step 3: Identify Medicare beneficiaries eligible for attribution

We start with the list of beneficiaries who had at least one primary care visit (see Step 4 for definition of primary care visits) to any NPI in our master provider file (created in Step 2). We then limit the pool of beneficiaries to those who meet the eligibility criteria. To be eligible for evaluation attribution in a given quarter, beneficiaries must meet the following criteria at the start of the quarter, as indicated by the Medicare enrollment database (EDB):^{39,40}

1. Be enrolled in both Medicare Part A and Part B,
2. Have Medicare as their primary payer,
3. Not be covered under a Medicare Advantage or other Medicare health plan,
4. Not be incarcerated,
5. Be alive.

These criteria ensure that we can reliably measure beneficiary outcomes in the Medicare FFS data unlike, for example, beneficiaries enrolled in a Medicare Advantage plan.

Step 4: Identify primary care claims used in attribution

We next narrow the universe of all billed Medicare services to the primary care services used in beneficiary attribution. There are four criteria for a billed service that determine whether we use it in attribution for a given quarter: (1) the type of claim, (2) date of the claim, (3) type of service, and (4) provider. A service must meet all four criteria to be included in the attribution process.

³⁸ Consistent with CMS' attribution approach, we prioritize the smaller practice to avoid dropping any practices altogether.

³⁹ For example, beneficiaries must meet all eligibility criteria on January 1, 2017, to be eligible for evaluation attribution in the first quarter of 2017 (January 1, 2017–March 31, 2017).

⁴⁰ The EDB provides information, by month, for beneficiaries enrolled in Medicare, including the parts of Medicare in which they were enrolled—Part A, Part B, or Part C (a health maintenance organization)—whether Medicare was their primary payer of medical bills, whether they were incarcerated, and the date they died, if applicable.

1. Type of claim

For attribution, we use national Medicare FFS Physician and Outpatient claims. Most visits are in the Physician file, except claims submitted by critical access hospitals, which are in the Outpatient file.

2. Date of the claim

We use primary care services that occurred during a 24-month “lookback” period in the attribution process. For each quarter, the lookback period is the 24-month period that ended immediately before the quarter started. For example, we use claims from January 2015 to December 2016 to attribute beneficiaries to CPC+ practices for the first quarter of 2017. Table 6.B.1 lists the lookback periods we used for each quarter in the annual report. Claims for attribution were pulled on May 3, 2018, for the first through fourth quarters of 2016, and on March 9, 2019, for the first quarter of 2017 through fourth quarter of 2018.

Table 6.B.1. Lookback periods for annual report quarterly beneficiary attribution

Attribution quarter	CPC+ period for 2017 Starters	CPC+ period for 2018 Starters	Lookback period
2016 Q1	Baseline		Jan. 2014–Dec. 2015
2016 Q2	Baseline		Apr. 2014–Mar. 2016
2016 Q3	Baseline		July 2014–June 2016
2016 Q4	Baseline		Oct. 2014–Sept. 2016
2017 Q1	Intervention	Baseline	Jan. 2015–Dec. 2016
2017 Q2	Intervention	Baseline	Apr. 2015–Mar. 2017
2017 Q3	Intervention	Baseline	July 2015–June 2017
2017 Q4	Intervention	Baseline	Oct. 2015 – Sept. 2017
2018 Q1	Intervention	Intervention	Jan. 2016–Dec. 2017
2018 Q2	Intervention	Intervention	Apr. 2016–Mar. 2018
2018 Q3	Intervention	Intervention	July 2016–June 2018
2018 Q4	Intervention	Intervention	Oct. 2016–Sept. 2018

3. Type of service

Next, we limit claims to eligible primary care services using the Current Procedural Terminology (CPT) code reported on the claim. Table 6.B.2 lists the CPT codes of services that we consider to be related to primary care, following the definition CMS uses for CPC+ payment attribution (Table 6.B.4 in Section 6.B.4 below describes the similarities and differences between the attribution approach for the evaluation and the one used by CMS for payment).⁴¹ A subset of eligible primary care services are related to chronic care management (CCM); these claims receive precedence in the attribution algorithm (described below).

Table 6.B.2. Primary care services eligible for attribution

Type of service	Service	CPT codes
All primary care	Office/outpatient visit evaluation and management (E&M)	99201–99205 99211–99215

⁴¹ See CMS’ CPC+ Payment Methodologies at: <https://innovation.cms.gov/Files/x/cpcplus-methodology.pdf>.

Table 6.B.2. (continued)

Type of service	Service	CPT codes
	Home care	99324–99328 99334–99337 99339–99345 99347–99350
	Welcome to Medicare and Annual Wellness visits	G0402, G0438, G0439
	Advance care planning	99497
	Collaborative care model	G0502–G0504 ^a 99492, 99493, 99494 ^b
	Cognition and functional assessment for patient with cognitive impairment	G0505 ^a , 99483 ^b
	Outpatient clinic visit for assessment and management (CAHs only)	G0463
	Transitional care management services	99495–99496
CCM-related service	CCM services	99490
	Complex CCM services	99487, 99488 ^c
	Assessment/care planning for patients requiring CCM services	G0506 ^a
	Care management services for behavioral health conditions	G0507 ^a
	Prolonged services without face-to-face contact	99358 ^a

^a Added effective January 1, 2017.

^b Added effective January 1, 2018.

^c Discontinued effective January 1, 2017.

CAH = critical access hospital; CCM = chronic care management.

4. Provider

Only claims that have a provider that is one of the following are included in the attribution process:

- A provider in SK&A data that is part of a practice with at least one practitioner with a primary care specialty (see Steps 1 and 2 for more details).
- A provider that is not in SK&A data but has a primary or secondary primary care specialty determined by the National Plan and Provider Enumeration System (NPPES; see Table 6.B.3 for the list of primary care specialty codes that we and CMS use).
- Any provider if the claim is for a CCM service (lower half of Table 6.B.2).

Additionally, we limit claims to services that are reported in the physician (carrier) claims or are from critical access hospitals in the outpatient claims. Like CMS' payment attribution approach, this process excludes claims from federally qualified health centers (FQHCs) and rural health clinics (RHCs).⁴²

Table 6.B.3. Primary care practitioner specialties

Family Medicine	207Q00000X
Adult Medicine	207QA0505X
Geriatric Medicine	207QG0300X

⁴² This restriction means that in both payment and evaluation attribution, even if beneficiaries have most of their visits at an FQHC or RHC, they would not be attributed to a practice that is an FQHC or RHC.

Table 6.B.3. (continued)

Hospice and Palliative Medicine	207QH0002X
General Practice	208D00000X
Internal Medicine	207R00000X
Geriatric Medicine	207RG0300X
Hospice and Palliative Medicine	207RH0002X
Clinical Nurse Specialist	364S00000X
Acute Care	364SA2100X
Adult Health	364SA2200X
Chronic Care	364SC2300X
Community Health/Public Health	364SC1501X
Family Health	364SF0001X
Gerontology	364SG0600X
Holistic	364SH1100X
Women's Health	364SW0102X
Nurse Practitioner	363L00000X
Acute Care	363LA2100X
Adult Health	363LA2200X
Community Health	363LC1500X
Family	363LF0000X
Gerontology	363LG0600X
Primary Care	363LP2300X
Women's Health	363LW0102X
Physician Assistant	363A00000X
Medical	363AM0700X

Source: CMS' CPC+ Payment Methodologies, at <https://innovation.cms.gov/Files/x/cpcplus-methodology.pdf>.

Step 5: The attribution algorithm

After we identify beneficiaries eligible for attribution and pull all eligible primary care services (as determined by type of claim, date of the claim, the type of service, and the provider), we apply the CPC+ payment attribution algorithm used by CMS. There are three parts to the attribution algorithm:

1. Attribution based on CCM-related billing

If a beneficiary's *most recent* eligible primary care visit in the 24-month lookback period was for CCM-related services, we attribute the beneficiary to the practice that provided that CCM-related service.⁴³

2. Attribution based on Annual Wellness Visits or Welcome to Medicare visits

Starting in the first quarter of 2018, if a beneficiary is not attributed on the basis of CCM-related billing, and the beneficiary had an Annual Wellness Visit or a Welcome to Medicare visit in the

⁴³ Because CPC+ care management (indicated by the care management fee) and the CCM are duplicative services, it is important to note that CPC+ practices cannot bill for CCM-related services for their CPC+ payment-attributed beneficiaries. CPC+ practices are free to bill for CCM-related services for non-payment-attributed beneficiaries, which may result in future attribution to the CPC+ practice.

24-month lookback period, we attribute the beneficiary to the practice that provided the most recent Annual Wellness Visit or a Welcome to Medicare visit.⁴⁴

3. Attribution based on plurality of eligible primary care services

If a beneficiary is not attributed on the basis of Annual Wellness Visits, Welcome to Medicare visit, or CCM-related billing (including cases in which a beneficiary had CCM billed, but the most recent visit was not for CCM-related services), we first count the number of eligible primary care visits the beneficiary received from each practice that provided such services. We then attribute the beneficiary to the practice that provided the plurality (that is, the largest share) of eligible primary care visits during the lookback period. If a beneficiary has the same number of eligible primary care visits at more than one practice, we attribute the beneficiary to the practice where the beneficiary had his or her most recent visit. If two or more of these practices share the same most recent visit date, we attribute the beneficiary to a practice that is on our SK&A practitioner roster over a primary care NPI that is not on the roster.⁴⁵ We break any further ties randomly.

6.B.3. Changes in attribution methodology across annual reports and across quarters

1. We update data and rerun attribution for the quarters of the last year used in the previous annual report (for example, we did this for the 2017 quarters in the second annual report). Other than the data changes, the attribution methodology stays the same between reports for a given quarter.

Data changes include:

- Backdating TINs from the 2018 TIN assignment to 2017. This would have impacted 2017 Quarters 2 through 4, for which we used 2017 claims in the lookback period.
- Additional runout of claims, which affected attribution for all four quarters in 2017.

These data changes mean that 2017 quarters could show slightly different attribution samples in the first and second annual reports.⁴⁶

2. We alter the attribution approach by quarter to reflect relevant changes in CMS' attribution approach, for example, adding the Annual Wellness Visit criteria starting in the first quarter of 2018.

⁴⁴ We include the Annual Wellness Visit and Welcome to Medicare visit attribution criteria to the attribution algorithm for the first quarter of 2018 onward, to align with the same change CMS made to the CPC+ payment attribution algorithm.

⁴⁵ Although, in a tie, CMS payment attribution gives preference to CPC+ practices, we did not want to favor CPC+ practices over comparison practices.

⁴⁶ The number of attributed beneficiaries in the CPC+ and comparison group changed by less than 1 percent. For example, for 2017Q2, the number of beneficiaries attributed to CPC+ practices increased slightly from 1,795,237, for the first annual report, to 1,796,085 for the second annual report.

In addition, annual updates to the Health Care Common Procedure Coding System (HCPCS) or other codes CMS uses and changes in the practice roster will affect each quarter's attribution differently, depending on the portion of that year that is in the lookback period for a quarter. For example, adding G0506 (assessment/care planning for patients requiring CCM services) as a CCM service starting on January 1, 2017, affected quarters from the second quarter of 2017 onward, since the second quarter of 2017 is the first quarter that contains 2017 in its lookback period.

6.B.4. How does attribution differ between the CPC+ evaluation and CMS payment?

Our attribution method for the evaluation identifies Medicare beneficiaries assigned to any practice each quarter using roughly the same claims-based attribution algorithm that CMS uses to attribute beneficiaries for CPC+ payments. However, our attribution approach for the evaluation differs from CMS' attribution approach in four key ways:

A. The evaluation provider rosters come from SK&A data for all practices (including CPC+ practices)

For payment attribution, CMS uses CPC+ practitioner rosters (lists of participating practitioners that practices participating in CPC+ submit to CMS) to determine the composition of CPC+ practices and their NPIs and TINs. However, analogous information about practice composition and TINs is not available for comparison practices. Therefore, to maintain consistency in identifying practice composition across CPC+ and comparison practices for the purposes of the evaluation, we use SK&A's roster to obtain information on NPIs affiliated with a practice. Also, for both CPC+ and comparison practices, we assign TINs to each practice using an algorithm that picks the TIN that was most frequently billed in Medicare claims for primary care services by the NPIs at that practice.

Because we use SK&A practitioner rosters for all practices, we group non-CPC+ practitioners into primary care practices, whereas payment attribution generally defines non-CPC+ practices as individual practitioners using single TIN-NPI or CCN-NPI combinations (because information regarding how they are grouped as actual practices is not available). The exception is that payment attribution defines practices that applied for CPC+ but were not accepted for CPC+ as practice sites using the practices' application rosters. The evaluation approach allows all non-CPC+ primary care practices in the frame, as well as any individual primary care practitioners not identified in SK&A data, to compete with CPC+ practices for beneficiaries. This process results in attributing fewer beneficiaries to CPC+ practices than the payment attribution process but likely leads to a more comparable attribution across CPC+ and non-CPC+ practices, because non-CPC+ practices compete for beneficiaries on equal footing with CPC+ practices.

B. The evaluation approach applies fewer restrictions to our definition of an attribution-eligible Medicare beneficiary

In CMS' payment attribution methodology, CMS excludes from attribution: (1) beneficiaries with end-stage renal disease (ESRD) or those enrolled in hospice when they are first attributed (although beneficiaries with ESRD or hospice enrollment can be attributed if they were attributed to a CPC+ practice in an earlier quarter), (2) beneficiaries who are in a long-term care institution, and (3) beneficiaries enrolled in any other program that includes a Medicare FFS shared savings opportunity, except SSP.⁴⁷ However, for the evaluation, we do not apply any of these three exclusions in identifying attributed beneficiaries, because CMS expects CPC+ to affect all beneficiaries attributed to the practice, not just those for whom CMS calculates

⁴⁷ In 2017 and 2018, the excluded programs included Next Generation ACO, Comprehensive ESRD Care, the Financial Alignment Demonstration, and the Independence at Home Practice Demonstration. Excluded programs may change as CMS launches new initiatives.

payments. In other words, for the evaluation, we want to assess impacts on all beneficiaries who received the plurality of their care from a CPC+ practice relative to similar beneficiaries attributed to comparison practices. Therefore, we think it is appropriate to apply only the eligibility criteria that pertain to the observability of the beneficiary's outcomes in Medicare FFS claims. To be eligible for inclusion in our analysis, attributed beneficiaries must (1) be alive, (2) be enrolled in Medicare Parts A and B, (3) have Medicare as their primary payer, (4) not be covered under a Medicare Advantage or other Medicare health plan, and (5) not be incarcerated. CMS applies the same eligibility criteria in identifying attributed beneficiaries for payments, although the timing of these checks differs, as we describe below.

C. The evaluation's two-year lookback period begins immediately prior to the start of the quarter

For payment attribution, CMS uses a two-year claims lookback period that ends three months before the start of the quarter, because CMS needs the list of attributed beneficiaries before the start of the quarter to calculate the care management fees and other CPC+ payments, such as the Comprehensive Primary Care Payment for beneficiaries attributed to each CPC+ practice. For the impact analysis, however, the three-month gap between the end of the lookback period and the beginning of the quarter is unnecessary. Our objective is to identify the appropriate sample of attributed beneficiaries in both CPC+ and comparison practices, without the need for calculating payments in real time. Therefore, the two-year claims lookback period for attribution in the impact analysis ends the day before the start of the quarter.

The difference in the claims lookback period also leads to a difference between CMS' approach and the evaluation in the timing of the above-mentioned Medicare FFS eligibility checks. Specifically, CMS checks for eligibility one month before the start of the quarter, and we apply these eligibility criteria at the beginning of the quarter. For example, beneficiaries had to meet all eligibility criteria on December 1, 2017, to be eligible for CMS' payment attribution in the first quarter of 2018 (January 1, 2018–March 30, 2018) but needed to meet the Medicare FFS eligibility criteria as of January 1, 2018, for attribution to the evaluation sample.

D. CMS adjusted its payment attribution methodology in 2018 to include an annual wellness criterion and in 2019 to include voluntary assignment

Starting with the first quarter of 2018, CMS included the Annual Wellness Visit and Welcome to Medicare visit criteria in its payment attribution process. Although we included this change in our attribution algorithm starting in the first quarter of 2018, it resulted in an additional discrepancy between the evaluation attribution for the fourth quarter of 2017 and payment attribution for the first quarter of 2018, the two quarters with identical claims lookback under each approach. Our attribution for 2017 Quarter 4 (Q4) covers the same lookback period as CMS' payment attribution for 2018 Q1. Because we do not include the Annual Wellness Visit criterion for the 2017 quarters, this could result in additional differences in attribution results between the evaluation sample for 2017 Q4 and payment sample for 2018 Q1, the two quarters with identical claims lookback periods under each attribution algorithm.

Starting with the first quarter of 2019, CMS included an additional criterion based on voluntary assignment in its attribution process, as follows:

- If the beneficiary voluntarily attests that an eligible practitioner is his or her primary care physician, attribute the beneficiary to that practitioner's practice.
- For remaining beneficiaries, if the most recent primary care service was a CCM-service, attribute beneficiaries to the practice with the most recent CCM-related billing.
- Attribute remaining beneficiaries to the practice with the most recent Annual Wellness Visits or Welcome to Medicare Visits.
- Attribute all remaining beneficiaries to practices on the basis of the plurality of eligible primary care visits.

We did not run attribution for 2019 quarters for the second annual report, but our attribution for 2018 Q4 covers the same lookback period as CMS' payment attribution for 2019 Q1. Because we do not include the voluntary assignment criterion, this could have resulted in additional differences between the evaluation and payment samples in those two quarters. However, our preliminary analysis indicates that the extent of this additional discrepancy is very small, as fewer than half of one percent of beneficiaries voluntarily attest to a practitioner. We are unable to replicate the voluntary assignment criterion for the comparison group, so we do not intend to include it in our attribution process for CPC+ or comparison practices.

The similarities and differences between CMS' approach and the evaluation's approach for beneficiary attribution are summarized in Table 6.B.4.

Table 6.B.4. Similarities and differences between beneficiary attribution for payment versus evaluation through 2018

	Payment attribution	Evaluation attribution
Similarities between payment and evaluation attribution processes		
Frequency of attribution	Quarterly	Same as payment attribution.
Observability criteria for beneficiary eligibility	<ul style="list-style-type: none"> • Be enrolled in Medicare Part A and Part B. • Not be covered under a Medicare Advantage or other Medicare health plan. • Not be incarcerated. • Be alive. 	Same as payment attribution.
Criteria used to identify eligible services for attribution	Evaluation and management HCPCS codes.	Same as payment attribution.
Attribution algorithm for 2017 quarters	If the most recent primary care service was a CCM service, attribute beneficiaries to the practice with most recent CCM-related billing. Attribute all remaining beneficiaries to practices on the basis of the plurality of eligible primary care visits.	Same as payment attribution.
Attribution algorithm for 2018 quarters	If the most recent primary care service was a CCM service, attribute beneficiaries to the practice with most recent CCM-related billing. If the most recent visit was not a CCM service, and beneficiary had an Annual Wellness Visit or a Welcome to Medicare visit, attribute beneficiary to practice that had most recent Annual Wellness Visit or Welcome to Medicare visit. Attribute all remaining beneficiaries to practices on the basis of the plurality of eligible primary care visits.	Same as payment attribution.
Differences between payment and evaluation attribution processes		
Time period for conducting attribution	Intervention quarters.	Baseline and intervention quarters.
Source for roster of practices and their practitioners	CPC+ practitioner rosters.	SK&A.
Source for TINs	CPC+ practitioner rosters.	TIN assignment process based on claims.
Practices/practitioners with whom CPC+ practices compete for beneficiaries	Practices rejected from CPC+ and single primary care NPIs not on CPC+ rosters.	All primary care practices from SK&A roster and single primary care NPIs not on SK&A roster.
Additional criteria for beneficiary eligibility	<p><u>Cannot</u> have end-stage renal disease and cannot be enrolled in hospice when they are first attributed.</p> <p><u>Cannot</u> be in a long-term care institution.</p> <p><u>Cannot</u> be enrolled in program that includes a Medicare FFS shared savings opportunity, except SSP.</p>	<p><u>Can</u> have end-stage renal disease or be enrolled in hospice.</p> <p><u>Can</u> be in a long-term care institution.</p> <p><u>Can</u> be enrolled in program that includes a Medicare FFS shared savings opportunity.</p>

	Payment attribution	Evaluation attribution
Time frame for evaluating eligibility criteria	Three months before the start of the quarter for 2017Q1–2017Q2. Otherwise, one month before start of quarter.	Day of the start of quarter.
Lookback period for claims used in quarter's attribution process	Two-year period that ends <u>three months</u> before the start of the quarter.	Two-year period that ends <u>immediately</u> before the start of the quarter.
Tie-breaking for practices with the most visits that have the same number of visits and same date of most recent visit	Preference given to CPC+ practices over all other practices and NPIs.	No preference given to CPC+ practices relative to comparison practices (all practices on SK&A roster are given preference over all other single primary care NPIs not on SK&A roster).

CCM = Chronic Care Management; FFS = fee-for-service; HCPCS = Health Care Common Procedure Coding System; NPI = National Provider Identifier; SSP = Medicare Shared Savings Program; TIN = Tax Identification Number.

6.B.5. How similar are the evaluation attribution samples to CMS' payment attribution samples?

Given the differences in attribution methodology between CPC+ payment and the CPC+ evaluation, the evaluation is unlikely to attribute 100 percent of the same beneficiaries to CPC+ practices as CMS does for payment attribution. The biggest concern is the difference between using the practitioner rosters and using SK&A data and TIN assignment—because including different sets of practitioners within practices could lead to large differences in the beneficiaries attributed to the practices.

If there are large differences between the payment attribution sample and the evaluation sample, that could mean that the beneficiaries in our evaluation sample are not actually under the care of CPC+ practices—and thus they are not expected to be impacted by CPC+. ⁴⁸ This would lead to attenuation in the impact estimates.

Therefore, it is important to track how well the Medicare beneficiary sample used in the evaluation and the Medicare beneficiary sample used by CMS for payments to CPC+ practices align.

To do this, we implement the following analyses:

First, we calculate the overlap of practitioners assigned to CPC+ practices based on the practitioner roster submitted to CMS and those on the practitioner rosters we develop using data purchased each year from SK&A to support patient attribution for the evaluation. When we construct our master practice-provider file, we use the practice location and practice address to identify practices participating in CPC+ in the data received from SK&A. However, even though the two data sources might indicate the same practice by practice name and location, there might be important differences in the practitioner rosters that would affect beneficiary attribution. To

⁴⁸ It is also possible that the CPC+ payment sample might include beneficiaries for whom the practices are not truly responsible; however, once beneficiaries become attributed to a CPC+ practice, that practice has an incentive to make sure they receive high quality care.

check, we merge CPC+ program data with SK&A data by practitioner NPI and report (1) the percentage of practitioners in CPC+ rosters who were found in the SK&A rosters of these practices and (2) the percentage of practitioners in SK&A rosters for these practices who were found in the CPC+ rosters. We limit CPC+ rosters to practitioners marked as actively participating in CPC+ to remove practitioners who may have moved to another location. For 2017 Starters, we compare CPC+ practitioner rosters to SK&A practitioner rosters at three time points: one month before CPC+ began (December 2016), month 12 of CPC+ (December 2017) and month 24 of CPC+ (December 2018). We repeat the analysis for the combined 2017 and 2018 Starter group; we compare CPC+ rosters to SK&A practitioner rosters one month before CPC+ began (December 2016 for 2017 Starters, and December 2017 for 2018 Starters) and in month 12 of CPC+ (December 2017 for 2017 Starters, and December 2018 for 2018 Starters).

Among 2017 Starters, we found 74.3 to 81.0 percent of active practitioners in the CPC+ rosters appeared in the SK&A rosters (Table 6.B.5, top panel). Overlap was greatest among practitioners identified on the roster as physicians, with overlap rates among non-physician practitioners considerably lower than that of physicians (data not shown). For example, at baseline 84.7 percent of active physicians in the CPC+ roster appeared in the SK&A roster, compared to 69.1 and 66.5 percent of physician assistants and clinical nurses or nurse practitioners, respectively.

The percentage of SK&A practitioners found as active practitioners in 2017 Starter CPC+ rosters was similar at baseline (82.5 percent) and also at the end of Year 1 (78.4 percent) to the rates of CPC+ to SK&A overlap. However, these rates declined faster during Year 2 of the intervention period than did the rates of CPC+ to SK&A overlap: 70.3 percent of SK&A practitioners were found as actively participating in CPC+ in the CPC+ rosters, compared to 74.3 percent in the corresponding CPC+ to SK&A overlap check, at the end of Year 2. This is partly due to practices withdrawing or being terminated from CPC+. Those practices and their practitioners are removed (marked inactive) from the CPC+ roster, but remain part of the intervention sample given the evaluation's intent-to-treat approach.

Rates for the combined 2017 and 2018 Starter group (Table 6.B.5, bottom panel) were very similar to those of 2017 Starters (because 2018 Starters make up only 5 percent of the total number of practices, this result is expected). Rates were slightly lower due to 2018 Starters having slightly less practitioner overlap than 2017 Starters.

Table 6.B.5. CMS and SK&A practitioner roster comparison

Compared rosters	Before CPC+ began (Baseline)	One year after CPC+ began (Year 1)	Two years after CPC+ began (Year 2)
2017 Starter CPC+ practices			
Number of practices	2,888	2,888	2,888
Unique practitioners			
Number of practitioners in CPC+ roster	12,950	13,342	13,182
Number of practitioners in SK&A roster	12,712	13,299	13,820
Percentage of practitioners in the CPC+ roster also in the SK&A roster	81.0	78.1	74.3

Compared rosters	Before CPC+ began (Baseline)	One year after CPC+ began (Year 1)	Two years after CPC+ began (Year 2)
Percentage of practitioners in the SK&A roster also in the CPC+ roster	82.5	78.4	70.3
2017 and 2018 Starter CPC+ practices			
Number of practices	3,051	3,051	N/A
Unique practitioners			
Number of practitioners in CPC+ roster	14,078	14,387	N/A
Number of practitioners in SK&A roster	13,759	14,347	N/A
Percentage of practitioners in the CPC+ roster also in the SK&A roster	80.6	77.7	N/A
Percentage of practitioners in the SK&A roster also in the CPC+ roster	82.4	78.0	N/A

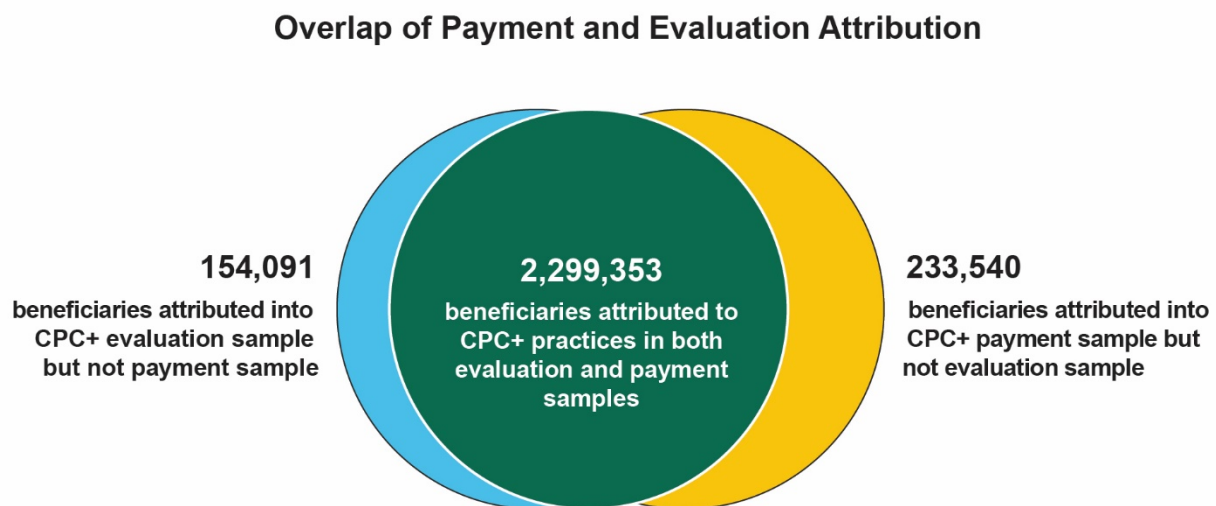
Note: All duplicate NPIs were removed from both rosters. The baseline comparison is based on December 2016 data for the 2017 Starters and December 2017 data for the 2018 Starters; the Year 1 comparison uses December 2017 data for the 2017 Starters and December 2018 for the 2018 Starters; the Year 2 comparison uses December 2018 data for the 2017 Starters. Year 2 data are not available yet for 2018 Starters.

Second, we calculate the overlap in beneficiaries attributed to CPC+ practices in the payment and evaluation samples. Due to the differences in the lookback period for a specific calendar quarter (see difference 3 above), we compare the evaluation sample from 2017 Q1 (January–March 2017) to the payment sample from 2017 Q2 (April–June 2017). This ensures we are comparing attribution from quarters that use the same lookback period. In addition to all the intervention quarters, CMS only ran payment attribution for baseline quarters 2016 Q1 and Q4, so we are unable to compare our attribution for 2016 Q2 and Q3 to the equivalent payment attribution sample.

We found substantial overlap between the sample of beneficiaries ever attributed to CPC+ practices by CMS and by the evaluation over the first two years of the intervention. As we show in Figure 6.B.1, 2,299,353 Medicare beneficiaries were ever attributed to CPC+ practices in both the evaluation sample and the sample CMS used for payment; 233,540 beneficiaries were ever attributed to the CPC+ payment sample but never to the evaluation sample; and 154,091 were ever attributed to the CPC+ evaluation sample but never the payment sample. More specifically, Table 6.B.6 shows that more than 90 percent of the beneficiaries attributed to 2017 Starter CPC+ practices in our evaluation sample for the first eight CPC+ quarters were also attributed to the payment attribution sample in the equivalent quarter. Also, 86 to 90 percent of beneficiaries attributed to the payment attribution sample by CMS each quarter were also attributed to CPC+ practices for the evaluation in the equivalent quarter. Table 6.B.7 shows the sample overlap between the evaluation and payment attribution for the 2017 and 2018 Starter practices for the last baseline quarter before the intervention and the first four quarters of the intervention. There is slightly lower overlap than for just the 2017 Starters, which is consistent with the practitioner overlap being lower for the combined 2017 and 2018 Starters.

Third, using CMS' payment eligibility criteria, we calculate the number of beneficiaries we attribute to CPC+ practices who would have been eligible for payment attribution. This involves additionally limiting the sample to beneficiaries who are not receiving hospice, do not have ESRD, are not institutionalized, and are not enrolled in any other program that includes a Medicare FFS shared savings opportunity, except SSP. Table 6.B.6, row 4, reports the number of beneficiaries in the evaluation sample for each quarter, and row 5 reports the number of beneficiaries in the evaluation sample under CMS' payment eligibility rules. This difference is approximately 40,000 or 2.5 percent of the evaluation sample.

Figure 6.B.1. Attribution of Medicare FFS beneficiaries for the 2017 Starters during PY 1 and PY 2



Source : Comparison of attributed Medicare FFS beneficiaries in Mathematica's evaluation sample for the first two program years (January 2017 through December 2018) and those in CMS' payment sample for the second through the ninth program quarter (April 2017– March 2019), which used the same set of two-year lookback periods. We used Medicare FFS beneficiary lists provided by CMS to define the payment sample.

Table 6.B.6. Beneficiaries attributed to 2017 Starter CPC+ practices, by quarter

	Mathematica attribution quarter											
	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4
Comparison to payment quarter	2016 Q2	n.a.	n.a.	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1 ^a	2018 Q2	2018 Q3	2018 Q4	2019 Q1 ^b
Beneficiaries in both payment and evaluation samples	1,489,022	n.a.	n.a.	1,638,668	1,607,570	1,647,808	1,677,206	1,669,061	1,693,212	1,708,344	1,718,080	1,713,817
Beneficiaries in payment sample	1,655,920	n.a.	n.a.	1,820,621	1,795,086	1,847,515	1,894,700	1,937,859	1,907,212	1,930,223	1,950,103	1,957,975
Beneficiaries in evaluation sample	1,651,432	1,720,593	1,773,509	1,810,383	1,768,167	1,796,085	1,817,008	1,834,483	1,827,525	1,845,009	1,856,604	1,862,889
Beneficiaries in evaluation sample under payment eligibility rules	1,609,642	1,680,865	1,734,138	1,770,994	1,724,220	1,755,978	1,777,834	1,795,648	1,785,183	1,806,639 ^c	1,821,047 ^c	1,829,923 ^c
Percentage of beneficiaries in payment sample who are in evaluation sample	90%	n.a.	n.a.	90%	90%	89%	89%	86%	89%	89%	88%	88%
Percentage of beneficiaries in evaluation sample who are in payment sample	90%	n.a.	n.a.	91%	91%	92%	92%	91%	93%	93%	93%	92%

^a In 2018, CMS changed its attribution rules to prioritize practices in which beneficiaries had their most recent Annual Wellness Visit, which results in additional differences between the evaluation attribution for 2017 Q4 and the payment attribution for 2018 Q1, the two quarters with the same claims lookback period under each attribution algorithm. Starting in 2018 Q1, we incorporated this criterion into the evaluation attribution rules as well.

^b In 2019, CMS changed its attribution rules to prioritize practices in which beneficiaries had voluntarily assigned themselves, which results in additional differences in attribution.

^c The MDS is current through 2017, so we are unable to adequately identify beneficiaries who would be ineligible for attribution due to institutionalization during the prior year for the second through the fourth quarter of 2018. Note, that on average in the previous quarters, approximately 27,000 beneficiaries (1.5 percent of attributed beneficiaries) were ineligible due to institutionalization within the year.

n.a. = not available.

Table 6.B.7. Beneficiaries attributed to 2017 and 2018 Starter CPC+ practices, by quarter

	Mathematica attribution quarter				
	BQ4	IY Q1	IY Q2	IYQ3	IYQ4
Comparison to payment quarter for 2017 starters	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1 ^a
Comparison to payment quarter for 2018 starters.	2018 Q1 ^a	2018 Q2	2018 Q3	2018 Q4	2019 Q1 ^b
Beneficiaries in both payment and evaluation samples	1,756,701	1,728,309	1,770,153	1,801,033	1,793,545
Beneficiaries in payment sample	1,960,454	1,932,606	1,987,116	2,036,280	2,080,875
Beneficiaries in evaluation sample	1,941,467	1,899,659	1,928,562	1,950,507	1,968,839
Beneficiaries in evaluation sample under payment eligibility rules	1,898,216	1,852,001	1,885,227	1,908,510	1,927,561
Percentage of beneficiaries in payment sample who are in evaluation sample	90%	89%	89%	88%	86%
Percentage of beneficiaries in evaluation sample who are in payment sample	90%	91%	92%	92%	91%

^a In 2018, CMS changed its attribution rules to prioritize practices in which beneficiaries had their most recent Annual Wellness Visit, which results in additional differences between the evaluation attribution for 2017 Q4 and the payment attribution for 2018 Q1, the two quarters with the same lookback period under each attribution algorithm. Starting in 2018 Q1, we incorporated this criterion into the evaluation attribution rules as well.

^b In 2019, CMS changed its attribution rules to prioritize practices in which beneficiaries had voluntarily assigned themselves, which results in additional differences in attribution.

n.a. = not available.

6.C. Comparison group selection

In this Appendix, we describe our approach to selecting the comparison group for the Medicare analyses.

We selected the Track 1 and Track 2 comparison groups using a four-step process, which, as noted, we conducted first for the CPC+ 2017 Starters, before repeating it one year later for the 2018 Starters. (Section 6.C.4 describes how we combined the 2017 and 2018 Starters' comparison groups.) The four steps of comparison selection were as follows:

1. **Identify external regions from which to draw potential comparison practices**—comparison regions were the same for Tracks 1 and 2, just as the CPC+ regions are the same for Tracks 1 and 2.
2. **Define a set of potential comparison practices**—that is, all practices that provide primary care in the external market regions (excluding pediatric-only practices).
3. **Use propensity score matching to narrow that pool**—selecting 7,556 initial-comparison practices for the 2017 Starters (both tracks) and 604 for the 2018 Starters that were similar to the CPC+ practices on a range of practice-, beneficiary-, and market-level characteristics available from claims and other secondary data sources. Matching characteristics for both tracks included practice characteristics, such as number of practitioners and urban/rural status, and practice-level averages of Medicare beneficiary characteristics, such as age and expenditures during a baseline year (2016 for the 2017 Starters, and 2017 for the 2018 Starters). We selected initial-comparison practices in spring 2017 for the 2017 Starters and spring 2018 for the 2018 Starters.
4. **Further restrict the initially selected comparison practices**—by removing practices that were not likely to be eligible for CPC+ (such as rural health centers) or that did not resemble CPC+ practices on updated baseline characteristics. We then reweighted the remaining practices so that the final comparison groups resemble the CPC+ practices as closely as possible on important baseline characteristics. We employed these additional steps for three reasons. First, for the 2017 Starters, we included additional information in our set of matching characteristics, incorporating changes we had made to our empirical strategy for estimating the impact of CPC+ on claims-based outcomes (described in Appendix 6.E). Second, for both the 2017 and 2018 Starters, we incorporated information that had not been available in time for the earlier propensity-score matching because of insufficient claims run-out through the end of the baseline year. By conducting the first round of propensity-score matching before we had final claims data, we were able to begin primary data collection (that is, surveys) at likely comparison practices—capturing information as close as possible to the start of CPC+—despite incomplete information to finalize comparison selection. Third, we used a novel propensity score weighting method (see Section 6.C.4) that optimizes balance on baseline characteristics subject to a constraint on the distribution of the matching weights. Because a highly variable distribution of matching weights can decrease power relative to a tighter weight distribution, this approach effectively allowed us to improve baseline equivalence between the CPC+ and final comparison groups without unduly affecting power.

Once we had completed this four-step process separately for the 2017 Starters (in July 2018) and the 2018 Starters (later that same year), we combined the comparison groups for the two practice cohorts to form the final Track 1 and Track 2 comparison groups in January of 2019.

We selected the comparison group separately for Track 1 and Track 2, because CMS views each track as a separate intervention that should be analyzed separately. CPC+ practices in the two tracks had different average care delivery approaches in place at baseline, reflecting CMS' different eligibility criteria for the two tracks, and different average baseline characteristics. Similarly, we aimed to achieve balance separately within track by Medicare Shared Savings Program (SSP) status, because we and CMS deemed practice participation in SSP to be the most important characteristic given the different incentives that SSP practices face. Therefore, within each track, we explicitly assessed balance between CPC+ and comparison practices for the subgroup defined by whether a practice was in SSP. Finally, we selected a comparison group for the practices that began CPC+ in 2017 before we had complete data to select comparison practices for the practices that began CPC+ in 2018, as this approach enabled us to report early impact estimates for the 2017 Starters—providing CMS with rapid-cycle feedback for the initiative. The result is two comparison groups—one for Track 1 and one for Track 2—supporting analyses for 12 groups. These groups include: (1) Track 1 overall, (2) Track 2 overall, (3) Track 1-SSP, (4) Track 1-non-SSP, (5) Track 2-SSP, and (6) Track 2-non-SSP for the combined 2017 and 2018 Starters, and (7–12), the same six groups limited to the 2017 Starters only. (We did not assess impacts separately for the 2018 Starters, because there are so few of these practices.)

Next, we detail our approach to selecting the groups and present final matching results.

6.C.1. Identify external regions from which to draw potential comparison practices

To maximize face validity, we sought comparison practices that are geographically close to their matched CPC+ practices, increasing similarity in market characteristics between the two groups of practices. Unlike in CPC Classic, we did not conduct matching separately for each of the CPC+ regions, because there were too many CPC+ regions to make this approach feasible, and we do not show CPC+ region-specific impacts. Instead, we grouped CPC+ regions as follows:

- For the 2017 Starters, we grouped CPC+ regions into four market areas (Northeast, Midwest, South and Plains, and West) using the four U.S. census regions as our starting point.⁴⁹ We drew potential comparison practices from practices in the same geographic region but outside the CPC+ regions (Table 6.C.1). For example, potential comparison practices for CPC+ practices in the Midwest census region (Michigan, Ohio, and Northern Kentucky) come from Illinois, Indiana, Iowa, Minnesota, West Virginia, and Wisconsin. Also, for face validity, we excluded several states from the external market areas from which we could draw comparison practices. We used three criteria to define the exclusions: (1) states with ongoing

⁴⁹ We moved two CPC+ 2017 regions from their given census region to a neighboring census region. The Northern Kentucky–Ohio region spans two census regions; therefore, we moved CPC+ practices in Northern Kentucky to the Midwest region. Because of its geographic proximity to CPC+ regions in the South (Oklahoma, Arkansas), we moved the Kansas City region from the Midwest region to the South.

robust primary care interventions somewhat similar to CPC+ (Delaware and Maryland); (2) states or regions that had applied to start CPC+ in 2018 and that CMS thought were likely to be selected;⁵⁰ and (3) states that appeared qualitatively different from CPC+ regions in their respective geographic region (such as Alaska and Florida). We also assigned three external states to a geographic region different from their census region, to more closely mirror the CPC+ regions' market characteristics. (We moved Washington, DC, from the South to the Northeast; West Virginia from the South to the Midwest; and South Dakota from the Midwest to the West). As we selected the external market areas from which to draw comparison practices, we were guided by two considerations: (1) wanting to restrict the pool to potential comparison practices located in market areas similar to those of CPC+, and (2) wanting a large enough pool of comparison practices to ensure a sufficient sample of well-matched comparison practices.

- For the 2018 Starters, we followed the same general approach with a few slight differences. Rather than grouping CPC+ regions and comparison regions into four separate market areas based on U.S. Census regions, we identified comparison market areas for each CPC+ region based on geographic proximity, the primary care landscape, and the number of available potential comparison practices. We drew potential comparison practices from states or parts of states that are geographically close to their matched CPC+ region and similar on market characteristics such as Medicare Advantage penetration rate and hospital referral region-level Medicare spending. Table 6.C.2 lists the external regions from which we drew potential comparison practices for 2018 CPC+ Starters.

For each propensity score model (described in Section 6.C.3), we exact-matched on market area to ensure we matched a CPC+ practice only to another practice within its given area. Exact matching means that we limited the comparison practices selected to match a given CPC+ practice to only those practices that have an identical value of the variable.

Table 6.C.1. CPC+ and external regions for practices starting in 2017

Modified U.S. census region	CPC+ regions (states)	External regions (states)
Northeast	New Jersey	Connecticut
	North Hudson-Capital region (NY)	Massachusetts
	Philadelphia region (PA)	New York, excluding CPC+ regions ^a
	Rhode Island	Pennsylvania, excluding CPC+ region Washington, DC
Midwest	Michigan	Illinois
	Ohio and Northern Kentucky	Indiana
		Iowa
		Minnesota
		West Virginia Wisconsin
South and Plains	Arkansas	Alabama
	Kansas City region (KS, MO)	Georgia
	Oklahoma	Mississippi
	Tennessee	Missouri, excluding CPC+ region

⁵⁰ In addition to the regions selected, this group included two counties in California (Riverside and San Bernardino) and counties in Kansas that were not already in a CPC+ 2017-Starter region.

Modified U.S. census region	CPC+ regions (states)	External regions (states)
		North Carolina
		South Carolina
		Texas
West	Colorado	Arizona
	Hawaii ^b	California, excluding Riverside and San Bernardino counties ^c
	Montana	Idaho
	Oregon	Nevada
		New Mexico
		South Dakota
		Utah
		Washington
		Wyoming

^a Excludes the CPC+ 2018 region of New York (Greater Buffalo region).

^b We selected comparison practices for CPC+ practices in Hawaii only from practices in Washington or California.

^c We excluded these two counties, because at the time of matching, they were being considered for the CPC+ 2018 region.

Table 6.C.2. CPC+ and external regions for practices starting in 2018

CPC+ regions	External regions (states)
Louisiana	Mississippi
	Texas, eastern HRR regions (Shreveport, LA; Beaumont, TX; Longview TX; and Houston, TX)
Nebraska	Iowa
	Kansas ^a
	Missouri, northwestern HRR regions (Columbia, MO; Joplin, MO; Kansas City, MO; Des Moines, IA; Iowa City, IA; Omaha, NE), excluding CPC+ regions ^b
	South Dakota
	Wyoming
	Wisconsin
New York Greater Buffalo	New York, excluding CPC+ regions ^c , excluding Bronx, New York, Kings, Queens, Nassau, Richmond, Suffolk, and Westchester counties
	Pennsylvania, excluding CPC+ regions ^d
	Vermont
North Dakota	Iowa
	Minnesota, north-western HRR regions of Grand Forks, ND, and Fargo, ND)
	South Dakota
	Wisconsin

^a Excludes the CPC+ 2017 region of Kansas (Kansas City region).

^b Excludes the CPC+ 2017 region of Missouri (Kansas City region).

^c Excludes the CPC+ 2017 region of New York (North Hudson-Capital region).

^d Excludes the CPC+ 2017 region of Pennsylvania (Philadelphia region).

HRR = hospital referral region.

6.C.2. Identify a broad pool of potential comparison practices

To develop a frame of practices to serve as comparison practices for the evaluation, we began with a roster of 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;⁵¹ we excluded pediatric-only practices as they are not a focus of CPC+). We purchased the roster from SK&A, a commercial health care data vendor that maintained and verified lists of practitioners working in practices throughout the country. (SK&A merged with vendor IQVIA in 2017.) The SK&A data included practices' names and addresses along with the name, specialty, and National Provider Identifier (NPI) of each practitioner at the practice site. Because the SK&A data did not always record NPIs and specialties, we augmented the 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. We then identified CPC+ practices within the roster of SK&A practices. Although we had extensive information about CPC+ practices from their applications, we opted to identify CPC+ practice and practitioner characteristics for matching using the same data source (SK&A) as the potential comparison practices, both at baseline and, eventually, over time. This approach removes bias that could result from using different data sources for the two groups, such as more frequent or thorough updates to practitioner rosters in the CPC+ data than in SK&A data. However, to the extent that there are discrepancies between SK&A and CPC+ data, a disadvantage to using SK&A data for CPC+ practices is the risk of incorrectly specifying CPC+ practice or patient characteristics. (See Appendix 6.B, specifically, Table 6.B.5 and Figure 6.B.1, for details on the overlap between the list of practitioners and beneficiaries based on SK&A versus CPC+ data.)

6.C.3. Narrow the pool of potential comparison practices using propensity score matching on administrative data

The first phase of our matching approach used propensity score matching to select initial-comparison groups, by track and SSP status. We used practice-, market-, and patient-level characteristics from administrative and other secondary data sources in this phase of comparison group matching.

We identified our initial comparison group in four sub-steps:

A. Assemble secondary data on matching variables for CPC+ and potential comparison practices

We developed variables for all CPC+ and potential comparison practices to use when matching to ensure comparability of CPC+ and comparison practices at baseline, defined before the start of the intervention (January 1, 2017, for the 2017 Starters and January 1, 2018, for the 2018 Starters). These matching 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

⁵¹ For 2018 Starters, we expanded the “internist” definition to include “internist/pediatrics,” because we found that a few CPC+ primary care practitioners fell into this category in the SK&A data.

practice had attested to meaningful use of an electronic health record (EHR); and participation in SSP.

- **Characteristics of patients** in each practice, comprising demographic characteristics and health care use and risk characteristics of all Medicare fee-for-service (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; dual eligibility for Medicare and Medicaid; hierarchical condition category (HCC) scores (a measure of risk for subsequent expenditures); chronic conditions; original reason for Medicare entitlement; number of emergency department (ED) visits and hospitalizations during the baseline period (two years for the 2017 Starters and one year for the 2018 Starters); Medicare spending during the same period; the number of primary care visits during the same period; and other measures of health care service use and continuity of care.
- **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.

Table 6.C.3 shows the data sources and variables constructed to support matching for 2017 and 2018 Starters. We describe the construction of beneficiary-level characteristics in more detail following the table.

Table 6.C.3. Key variables and data sources for initial matching

Matching variable	Data source
Practice characteristics	
Number of practitioners (physicians, NPs, PAs)	SK&A
Whether practice had an NP/PA	SK&A
Percentage of doctors on SK&A practice roster who used assigned TIN	SK&A, Mathematica assignment algorithm
Number of practitioners at practice with primary care specialty	SK&A, NPPES
Whether practice is multispecialty	SK&A
Whether practice is owned by either a hospital or health system	SK&A
Whether practice participated in a SSP ACO ^a	MDM
Experience in selected practice transformation activities: NCQA, TJC, AAAHC, URAC, or state medical-home recognition status (whether practice is in a medical home) or alumni of CPC Classic or MAPCP	NCQA, TJC, AAAHC, URAC, state-specific sources; CPC+ data; CMS
Meaningful use status (whether physicians at practice are meaningful users of EHRs and earliest year that physician at practice attested to meaningful use)	CMS
Practice hours (number of weekdays practice is open after 5 p.m. and whether practice is open Saturday or Sunday) ^b	SK&A
Percentage of primary care practitioners' Medicare charges that are for primary care	Medicare claims data
Modified U.S. Census region/Matching region ^c	SK&A
Characteristics of practices' Medicare beneficiaries^d	
Number of Medicare beneficiaries; number of Medicare beneficiaries per PCP; number of Tier 4 and Tier 5 beneficiaries	Medicare enrollment and claims and enrollment data

Table 6.C.3. (continued)

Matching variable	Data source
Mean annual Medicare expenditures per beneficiary (total Part A and Part B expenditures, trend in Medicare expenditures); mean annual Medicare expenditures for Tier 4 and Tier 5 beneficiaries	Medicare claims data
Mean annual Medicare service use per beneficiary (number of E&M visits, hospitalizations, ER visits, primary care [ambulatory] visits, 14-day visit follow-up after hospitalization)	Medicare claims data
Continuity of care measure capturing how consistently beneficiaries see the same doctor at a practice (a proxy for empanelment) ^b	Medicare claims data
Percentage of months enrolled in Medicare FFS among Medicare beneficiaries in the two years prior to the baseline year ^e	Medicare enrollment data
Percentage of beneficiaries in the first quarter of the baseline year who had any hospice services, home health services, or SNF services in the baseline year ^e	Medicare enrollment data
Distribution of beneficiaries' Medicare risk scores (HCC)	2015 risk scores computed from Medicare claims and enrollment data
Demographic mix of beneficiaries (age, race, and gender categories)	Medicare enrollment data
Percentage of beneficiaries having age as original reason for Medicare entitlement	Medicare enrollment data
Percentage of beneficiaries dually eligible for Medicaid (within-state quintile)	Medicare enrollment data
Percentage of Medicare beneficiaries with selected chronic conditions (diabetes, cancer, chronic obstructive pulmonary disease, kidney disease, Alzheimer's, congestive heart failure) ^f	Medicare claims data
Percentage of beneficiaries in the first quarter of the baseline year who died in the baseline year ^e	Medicare enrollment data
Characteristics of practice's geographic location	
Median household income of county	Area Resource File
Whether in area with a shortage of (primary care) health professionals	Area Resource File
Whether in an urban, rural, or suburban area	Area Resource File
Percentage of adults 25 or older in the county with a degree from a four-year college	Area Resource File
Percentage of county's population in poverty	Area Resource File
Number of hospitals and/or hospital beds in the county	Area Resource File, 2015–2016
Rate of Medicare Advantage penetration in county	Area Resource File, 2015–2016

Note: For the 2017 Starters, we used SK&A data from 2016, NPPES data from 2016, MDM data from 2016, CMS data from 2016, practice transformation data from 2016, Medicare claims and enrollment data from 2014–2016, Medicare claims data for chronic conditions from 2013–2016, and Area Resource Files from 2015–2016. For the 2018 Starters, we used the same data files as the 2017 Starters but for the following year (e.g., Medicare claims and enrollment data from 2015–2017). Categorical (rather than continuous) versions of measures were often used in the matching.

^a For the 2017 Starters, we initially matched on whether practices ever participated in an SSP ACO. For the 2018 Starters, we also matched on whether practices participated in an SSP ACO as of January 1 of the first intervention year.

^b We initially matched on this variable for the 2017 Starters only.

^c For the 2017 Starters, we grouped CPC+ regions into four market areas (Northeast, Midwest, South and Plains, and West) using the four U.S. Census regions. For the 2018 Starters, we identified comparison market areas for each CPC+ region based on geographic proximity, the primary care landscape, and the number of available potential comparison practices (see Section 6.C.1).

^d We calculated these practice characteristics based on a sample of Medicare FFS beneficiaries defined for each practice during the baseline period. However, we defined the baseline beneficiary population slightly differently for the

Table 6.C.3. (continued)

2017 Starters than for the 2018 Starters. For the 2017 Starters, the beneficiary sample included Medicare beneficiaries attributed to CPC+ or potential comparison practices in the first quarter of the initiative (2017) based on the visits they made to health care practitioners between October 1, 2014, and September 30, 2016. For the 2018 Starters, we first attributed beneficiaries in each quarter of the baseline year (2017) based on visits in the two years before the first date of the quarter. We then assigned beneficiaries to the first practice they were attributed to in the baseline year. These differences are described in more detail following this table.

^e We initially matched on this variable for the 2018 Starters only.

^f We selected these six chronic conditions due to both their high prevalence among the Medicare FFS population and their strong association with spending.

AAAHHC = Accreditation Association for Ambulatory Health Care; ACO = accountable care organization; CMS = Centers for Medicare & Medicaid Services; E&M = evaluation and management; EHR = electronic health record; ER = emergency room; FFS = fee-for-service; 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 & Provider Enumeration System; PA = physician assistant; PCP = primary care practitioner; SNF = skilled nursing facility; SSP = Medicare Shared Savings Program; TIN = tax identification number; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

To characterize the number, demographics, and cost and use history of each practice's patients, we used Medicare FFS beneficiaries attributed to practices. For the initial step of propensity score matching, we defined these matching characteristics slightly differently for the 2017 Starters than for 2018 Starters, reflecting changes we had made to our empirical strategy for estimating the impact of CPC+ on claims-based outcomes, as we describe below.

Defining beneficiary characteristics for the 2017 Starters. For the 2017 Starters, we used the same approach to defining the baseline Medicare FFS population as used on CPC Classic; under this approach, the beneficiary sample includes the Medicare beneficiaries attributed to CPC+ or potential comparison practices in the first quarter of the initiative (2017) based on the visits they made to health care practitioners between October 1, 2014, and September 30, 2016. However, we calculated all baseline-period outcome variables—for example, average Medicare Parts A and B spending—for these beneficiaries over the two-year period from August 1, 2014, to July 31, 2016, as doing so allowed three months of run-out from the time that we pulled claims data, in November 2016. To support comparison group selection for 2017 Starters, CMS contractor Actuarial Research Corporation (ARC) attributed beneficiaries for the first quarter of 2017 to both CPC+ and potential comparison practices using Medicare claims data and unique combinations of tax identification numbers (TINs) and NPIs. ARC's attribution process used the same rules CMS used when assessing practice applications for 2017 Starters. Specifically, beneficiaries meeting CPC+ eligibility criteria as of October 1, 2016, were attributed to a practice based on how recently they received CCM services or the plurality of eligible primary care visits for that beneficiary during the two-year period October 1, 2014, through September 30, 2016.

For CPC+, practices are defined by unique combinations of TINs and NPIs. To facilitate attribution, we provided ARC with a roster of TINs and NPIs for each CPC+ and potential comparison practice. Our roster used SK&A's roster of practitioner NPIs as a starting point; however, because the SK&A data does not include practice or practitioner TINs, we needed to assign TINs to each practice. To do so, we used 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).⁵² We assigned a single TIN to a practice in each year of the two-year baseline period. If the practice TIN changed over time, we assigned both TINs to the practice for the full baseline period.

In some instances, the same NPI and TIN combination occurred at multiple practices identified in the SK&A data (approximately 13 percent of all 2017-Starter practitioner observations shared the same NPI and TIN). 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.

Defining beneficiary characteristics for the 2018 Starters. For the 2018 Starters, we followed a slightly different approach. We assigned NPI/TINs to practices as described for the 2017 Starters. However, we attributed and assigned beneficiaries using the same approach that we use for the CPC+ regression analyses, described in Appendix 6.E. Under this approach, we attributed beneficiaries in each quarter of the pre-intervention year (2017) based on visits in the two years before the first date of the quarter—for example, using visits from January 1, 2015, through December 31, 2016, to attribute beneficiaries for the first baseline quarter, starting January 1, 2017. We then assigned beneficiaries to the first practice they were attributed to in the baseline year. We calculated baseline-period outcome variables—for example, average Medicare Parts A and B spending—for assigned beneficiaries over the 12 months (January 1 to December 31, 2017) before the intervention start date. Importantly, with this approach, we did not have the industry-standard three months of claims run-out from December 31 when conducting our initial propensity score matching in spring 2018. We aligned the definition of variables across practice cohorts—that is, across the 2017 versus 2018 Starters—and used a longer run-out period when finalizing the comparison selection in Section 6.C.4, described later.

B. Narrow pool of potential comparison practices

Before conducting matching for the 2017 or 2018 Starters, we removed practices from the pool that we considered ineligible for CPC+ due to their target patient populations. As we note above,

⁵² CPC+ practices reported on their applications TINs that CMS uses for payment purposes. However, we did not use those TINs, because application data was not available for potential comparison practices. Instead, we assigned TINs for both CPC+ and comparison practices using an algorithm that chose the TIN that was billed most frequently in the Medicare claims data by the NPIs listed in SK&A data to ensure a consistent approach for both research groups. For CPC+ applicants, we examined the overlap between the assigned TINs and reported TINs: for 95 percent of applicants, at least one assigned TIN was also on the CPC+ application. (Among the 2017 Starters, 18 percent listed on their CPC+ application more than one TIN in use since January 1, 2013; among 2018 Starters, 4 percent listed more than one TIN.) Using the assigned TINs in attributing beneficiaries to CPC+ practices (rather than using TINs on the application) increases the risk of undercounting beneficiaries seen at CPC+ practices (if we did not assign a valid TIN for that practice) or incorrectly attributing beneficiaries to CPC+ practices (if we assigned an incorrect TIN to that practice).

our starting point for the SK&A sample included all practices with at least one practitioner (defined as a physician, nurse practitioner, or physician assistant) that had a “primary care” specialty (defined as family practice, general practice, geriatrician, or internist). Then, we manually reviewed all potential comparison practices, removing practices that appeared to be specialty clinics (for example, surgery clinics, Planned Parenthood clinics, or urgent/emergency care clinics). Lastly, using SK&A’s measure for practice specialty, we removed practices with a specialty other than primary care, limiting the sample to practices with the following eight practice 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.⁵³ We also removed from the pool (1) practices that had 50 or fewer attributed Medicare FFS beneficiaries during the baseline period (because the small number of attributed or assigned beneficiaries led to instability in aggregate patient characteristics such as hospitalizations and Medicare expenditures); (2) for the 2017 Starters, practices beneath the minimum primary care billing percentage of 9.25 that we observed among CPC+ practices at baseline; (3) for the 2018 Starters, practices we identified in administrative data as federally qualified health centers (FQHCs) or rural health clinics (RHCs) or practices identified in the CMS master data management system (MDM) as participating in the Next Generation (NextGen) Accountable Care Organization (ACO) model (all restrictions that we also imposed on the 2017 Starters in Section 6.C.4); and (4) also for the 2018-Starter cohort, practices that had already been selected as comparison practices for the CPC+ 2017 Starters. This last restriction ensured that a practice could not appear more than once in the final comparison group (that is, the comparison group pooled across the 2017 and 2018 cohorts).

C. Use propensity score matching to create a narrower pool of potential comparison practices containing matched comparison practices for each CPC+ practice

We used propensity score methods to select potential comparison practices that were similar to the CPC+ practices on the matching variables. Specifically, we estimated a logistic regression model with a binary dependent variable for participation status—one for CPC+ practices and zero for potential comparison practices. The propensity score for a given practice is the predicted probability, based on all matching variables, that the practice is participating in the intervention (Rosenbaum and Rubin 1983). The score summarizes information from all of the matching variables in a single value for each practice, so practices with similar propensity scores on average should have similar values on the matching characteristics. Notably, matching based on propensity scores does not necessarily match each CPC+ practice to a comparison practice (or practices) with similar or identical characteristics (although we can achieve this objective through a combination of exact matching and matching on propensity scores); rather, by matching on the score, a matching method finds a *group* of comparison practices that is on average comparable to the CPC+ practices.

⁵³ Pediatricians are not considered primary care physicians for CPC+. However, some *practices* with pediatric specialties are participating in CPC+, because they have at least one practitioner with a primary care specialty; therefore, we included practices with pediatric or other specialties in our potential comparison sample as long as they had at least one practitioner with a non-pediatric primary care specialty.

For the 2017 Starters, we divided the CPC+ practices into four strata defined by track and SSP status. This approach enabled us to use one matching model to select comparison practices for Track 1 SSP participants among the 2017 Starters and a second model to select comparison practices for Track 1 non-SSP participants among the 2017 Starters. Estimating the matching models in this way helped to ensure that, within each stratum, CPC+ and comparison practices are similar on all matching characteristics, an important precondition for analyses of the SSP subgroups. Similarly, for the 2018 Starters, we stratified the Track 2 practices by track and SSP status, although—for ease of computation—for the Track 1 practices, we stratified only by track and then exact-matched on SSP participation. Within each practice cohort (2017 or 2018 Starters), we used the same pool of comparison practices for Track 1 and Track 2, so a potential comparison practice could be matched to CPC+ practices in both tracks (because comparison practices do not have a track).

Our propensity score matching models prioritized matching CPC+ and comparison practices on several key characteristics. We used exact-matching techniques to ensure the narrowed pool of comparison group practices (1) was located in the same market area as their matched CPC+ practice, and (2) had similar ownership—that is, practices were either owned by a hospital or health care system or were not. In addition, for the 2017 Starters only, because of the larger number of practices used in the models, we were able to exact-match on whether the practices (1) had similar experience in selected practice transformation activities (as measured by participation in CPC Classic or CMS’ Multi-Payer Advanced Primary Care Practice [MAPCP] demonstration, or recognition as a patient-centered medical home); and (2) were a similar size, as measured by the number of practitioners working in the practice (1 or 2, 3 to 24, 25 or more). For all other variables, we matched using a combination of propensity scores and calipers (that is, forcing each matched comparison practice to have a value within a specified range of the CPC+ practice’s value). We set caliper values based on the variation in the variable in the CPC+ group, the variable’s importance in ensuring unbiased impact estimation, and the desired balance on the variable.⁵⁴

We used a propensity score matching method called “full optimal matching,” which forms matched sets that contain one CPC+ and multiple comparison practices or one comparison and multiple CPC+ practices. This technique combines two ideas: (1) optimal matching minimizes the overall difference between intervention practices and their matched comparisons as measured by the propensity score, and (2) full matching maximizes the size of the comparison sample by permitting each intervention practice to match to more than one comparison practice. Full matching also allows the number of comparison practices selected for each CPC+ practice to vary depending on how many good comparisons are available for that CPC+ practice. For example, CPC+ practices with a combination of exact-match characteristics and propensity scores that were difficult to match had relatively fewer available comparison practices with similar characteristics; thus, these practices may be included in matched sets that contained, for example, two CPC+ practices and one comparison practice. In contrast, CPC+ practices with characteristics more similar to the comparison practices could be matched to multiple comparisons to maximize the size of the analytic sample and increase statistical power. For the

⁵⁴ For example, for the 2017 Starters, we used a caliper of 0.75 standard deviations among the intervention practices for Medicare expenditures. Therefore, we could match a CPC+ practice only to a comparison practice with Medicare expenditures within +/- 0.75 intervention-practice standard deviations of its Medicare expenditures.

easy-to-match cases, we allowed as many as five comparison practices to match to one CPC+ practice. For practices that were difficult to match, we allowed a comparison practice to serve as the match for two CPC+ practices in a given stratum.⁵⁵ Our target ratio of comparison to CPC+ practices was 3:1. To assess balance between the CPC+ and comparison practices, we weighted the comparison practices by the ratio of CPC+ to comparison practices within a matched set; for example, if five comparison practices were matched to one CPC+ practice, each of those comparison practices received a weight of one-fifth.

D. Perform diagnostic tests

During the iterative matching process, we used several metrics to check for baseline equivalence between CPC+ practices and their matched comparison practices. The diagnostic tests included calculating the weighted mean difference between the CPC+ and selected comparison practices on each of the matching variables and the standardized differences⁵⁶ of those variables. We also ran several diagnostic tests to assess equivalence of baseline trends in Medicare spending, hospitalizations, and ED visits.

As part of our diagnostics, we produced tables showing two types of results: (1) means for the potential comparison, CPC+, and selected comparison groups and (2) unstandardized and standardized differences between the CPC+ group means and the weighted means for the selected comparison group for all characteristics used in the matching process. Separately for the 2017 and 2018 Starters, we produced these tables for each track overall and for SSP participants versus non-SSP participants within each track to ensure that our stratification strategy achieved its goal. To assess the quality of the matching, we set a matching target for each characteristic used in the matching model at a standard of 0.25 standardized differences but attempted to get much smaller differences on key variables (such as Medicare expenditures).⁵⁷ In practice, this objective was easier to achieve for the 2017-Starter population than for the much smaller population of CPC+ 2018 Starters.

Overall, after matching on administrative and secondary data, our initial-selected comparison groups for the 2017 Starters included 5,565 practices in Track 1, and 4,291 practices in Track 2. Because we used the same pool of potential comparison practices for both tracks, some (2,300) comparison practices serve as initial comparisons in both Track 1 and Track 2. Thus, we have a total of 7,556 unique initial-comparison practices for the 2017 Starters, at the end of this step, with about 30 percent serving as initial-comparison practices in both tracks.

For the 2018 Starters, our initial-selected comparison groups included 395 practices in Track 1, and 305 practices in Track 2. Because 106 practices were included in both the Track 1 and Track

⁵⁵ Because we used the same comparison pool for Track 1 and Track 2, a single comparison practice could match to as many as four CPC+ practices in the initial matching. However, this situation was rare.

⁵⁶ The standardized difference is the difference in means between the matched intervention and comparison practices divided by the standard deviation of the variable among the intervention practices. Standardized differences are the preferred metric for assessing balance, because unlike hypothesis tests and p -values, they do not conflate balance with statistical power. Further, hypothesis tests implicitly refer to a larger target population, while standardized differences assess balance based on more relevant in-sample metrics. (See Stuart 2010.)

⁵⁷ The 0.25 target is an industry standard; see Ho et al. (2007).

2 initial comparison groups, we have a total of 604 unique initial-comparison practices for the 2018 Starters.

6.C.4. Select the final comparison group using trimming and weighting

After using propensity score matching to narrow the potential comparison group pool, we conducted a second round of propensity score modeling to restrict the initial comparison group and reweight practices to form the final comparison group. The sub-steps to select the final comparison group were as follows:

1. Create additional matching variables and restrict the pool of potential comparison practices based on new information (that was not available initially for matching) to make the pool better resemble the CPC+ practices.
2. Separately for the 2017 and 2018 Starters, reweight the remaining practices to achieve balance on matching characteristics.
3. Assess the quality of the selected comparison group, in terms of similarity to the CPC+ practices on the matching variables and trends in outcomes during the baseline period, distribution of the weights, and likely statistical power.
4. Combine the comparison practices selected for the 2017 and 2018 Starters to form the final pooled comparison group and, again, assess the quality of this group in terms of balance, trends, weight distribution, and likely statistical power.

We describe each of these sub-steps in detail next.

A. Refine baseline matching characteristics and restrict sample

For both the 2017 and 2018 Starters, we updated the matching variables between selecting the initial comparison group and finalizing the comparison group some months later. (As noted previously, by selecting an initial comparison group based on preliminary data, we were able to begin primary data collection at likely comparison practices even before the final data were available.) The variables used in reweighting the comparison group were generally the same for the two practice cohorts. However the updates to the matching variables for selecting the final comparison group (from the definitions used in selecting the initial comparison group) differed by practice cohort. These differences were largely due to using the CPC Classic approach to define the baseline study population (used in creating many of the characteristics describing beneficiaries assigned to practices) for the 2017 Starters and our updated approach for 2018 Starters.

2017 Starters. We constructed several new matching variables that we had not used for the initial matching for 2017 Starters described in Section 6.C.3. These variables fell into two categories:

- **Characteristics of Medicare beneficiaries assigned to CPC+ and potential comparison practices, using an updated definition of the baseline study population definition.** For convenience in the initial matching and, notably, because we needed to field the 2017 practice survey as close as possible to the CPC+ start date, we defined matching

characteristics for this initial step using the definition of the baseline Medicare FFS population that we had used on CPC Classic. Specifically, this population included beneficiaries who were attributed to practices in the first quarter of the initiative (January 2017) and alive as of the start of the prior quarter (October 1, 2016).⁵⁸ Later in 2017, however, we updated this definition so that our baseline study population would reflect the baseline sample we used in the regression models, described in Appendix 6.E. In this approach, we instead attribute beneficiaries to practices in both the baseline and intervention periods, and the study population in the baseline period comprises beneficiaries attributed to a practice *in the first quarter of 2016, or in any subsequent quarter of the baseline year if they have not previously been attributed to another intervention or comparison practice*. Importantly, this study population includes beneficiaries who died during the yearlong baseline period.

For comparison selection, we then created practice-level variables describing the characteristics of the beneficiaries assigned in the baseline period—for example, their Medicare FFS spending, service use, demographics, and chronic conditions, among others—similar to the variables used for the 2018 Starters’ initial matching, described previously. We imputed values for these practice-level variables for CPC+ practices with 50 or fewer assigned beneficiaries in 2016, to avoid overly noisy matching variables—for example, practices with mean spending based on spending among just a handful of beneficiaries. We imputed values for 13 of the 3,051 (or 0.4 percent of) CPC+ practices (both tracks and both practice cohorts combined). We did not impute values for comparison practices at this stage, but as we describe later in this section, we excluded small comparison practices.⁵⁹

- **Other new variables not available for initial matching.** Finally, we constructed a set of additional matching variables that (1) we had not constructed in time for matching, (2) we could not have constructed given data availability in March 2017, or (3) were not relevant given the earlier definition of the baseline study population that excluded beneficiaries who

⁵⁸ CMS’ attribution methodology assesses beneficiary eligibility three months prior to the start of a given quarter; here, eligibility on October 1, 2016, is used to attribute beneficiaries as of the start of the intervention on January 1, 2017.

⁵⁹ Although we removed practices without many attributed beneficiaries from the comparison pool, we retained 13 CPC+ practices with 50 or fewer beneficiaries (12 among the 2017 Starters and one 2018 Starter). CPC+ eligibility rules required that practices have at least 125 attributed beneficiaries. Thus, these 13 CPC+ practices must have had at least 125 beneficiaries attributed to the TINs and NPIs that the practices provided on their applications, or they would not have been accepted to the program. We know, therefore, that low beneficiary counts among the CPC+ practices are artificial—most likely caused by a data error in the NPI roster from SK&A that we used for attribution, relative to the practice’s true roster submitted to CMS. They are likely to be corrected in a future year of the evaluation, when we receive an updated NPI roster from SK&A or another IQVIA data source. For the CPC+ practices with low beneficiary counts, we imputed values of claims-based variables based on the values observed among other CPC+ practices in the same CPC+ track, in the same state, with the same SSP participation status and the same total practitioner count category (1 to 2, 3 to 24, or 25+). In contrast, we did not initially impute values for comparison practices, because we could not know whether apparently small comparison practices also reflected data errors or, instead, truly reflected practices that served few Medicare beneficiaries. (Following new TIN assignment and attribution in 2018–2019, the baseline beneficiary counts changed somewhat from those used in matching, and 20 of the final selected comparison practices no longer had more than 50 beneficiaries assigned in the baseline period. We then imputed values of claims-based characteristics for these practices for those analyses that required them, but we did not reselect comparison practices.)

died during the year. For example, we added variables for (1) the proportion of beneficiaries assigned at the start of 2016 who died, used hospice services, or used home health services by the end of 2016 (three separate variables); (2) the 2015 Medicare price index of the hospital referral region in which a practice was located; and (3) whether an SSP practice was participating in Tracks 2 or 3 of the SSP. This list is not exhaustive; we present the full list of matching variables in Tables 6.C.5–6.C.16. We also updated the main SSP variable to reflect participation in SSP as of January 1, 2017, rather than whether a practice had *ever* participated in SSP as of that date.

In consultation with CMS, we classified each matching variable as “high,” “medium,” or “low” priority for matching. High-priority variables were those we considered essential as balance variables when constructing a credible comparison group.

From the group of potential comparison practices, we then removed (1) practices we identified in administrative data as FQHCs or RHCs; (2) practices identified in the MDM as participating in the NextGen ACO model as of January 1, 2017; and (3) practices with 50 or fewer assigned beneficiaries in 2016, using the updated definition of the baseline study population. We applied these restrictions to mimic CPC+ exclusion criteria related to FQHC/RHC status, NextGen ACO participation, and minimum attributed beneficiary count.⁶⁰

These restrictions yielded a final pool of 7,166 unique potential comparison practices, 5,335 Track 1 comparison practices and 4,024 Track 2 comparison practices (2,193 are potential comparison practices in both Track 1 and Track 2).

2018 Starters. Compared with the changes for the 2017 Starters, the changes in matching variables for 2018 Starters were relatively minor. We had already used the definition of the baseline study population, as we describe in Appendix 6.E, for the initial round of matching for 2018 Starters. However, this definition required claims data for the baseline period through December 31, 2017, and because we did not have three full months of claims run-out between this date and the initial round of propensity score matching for the 2018 Starters, we updated the matching variables with refreshed claims data as well as made definitional changes to a handful of measures to align with final definitions of our outcome measures before selecting the final comparison group. This change did not affect the number of potential comparison practices available to form the final group: 395 in Track 1 and 305 in Track 2 (including 106 initial comparison practices in both tracks).

B. Select the final comparison group

To select the final comparison group, we used a propensity score weighting method to reweight the potential comparison practices. We conducted this reweighting separately for 2017 Starters and 2018 Starters and, within cohort, by track (in other words, we ran four separate models). As

⁶⁰ CMS required practices to have at least 125 assigned beneficiaries to be eligible for CPC+; however, because the SK&A roster of clinicians differs from the CMS roster, and because we define the study population based on assignment (that is, attribution in any quarter of the baseline period, rather than attribution as of the model start), some CPC+ practices had fewer than 125 assigned beneficiaries. We imposed a threshold of 50 beneficiaries for comparison practices to ensure that CPC+ practices and comparison practices were qualitatively similar.

is typical for propensity score weighting, we fixed the weights for the intervention practices at 1, meaning that each intervention practice would count equally in practice-level analysis and each intervention beneficiary would count equally in beneficiary-level analysis. However, to achieve better balance between the intervention and comparison practices, we allowed the comparison practice weights to vary based on the practice’s similarity to the intervention group practices. Although we implemented a propensity score weighting approach rather than a matching approach, we refer to the resulting weights as “matching weights” to distinguish them from other types of weights described in this report.

One implication of weighting is that our resulting analytic sample does not include a comparison practice, or group of comparison practices, that is matched to each CPC+ practice. That is, there are no matched sets.

B.1. Detailed methods of reweighting

The methodology for selecting the final comparison group has four main components:

- A recently developed propensity score weighting method called covariate-balancing propensity scores (CBPS)
- Trimming the full sample of potential comparison practices—that is, 5,335 for Track 1 2017 Starters, 4,024 for Track 2 2017 Starters, 395 for Track 1 2018 Starters, and 305 for Track 2 2018 Starters—to exclude practices dissimilar to the CPC+ practices in the relevant track and practice cohort
- A generalized version of CBPS that optimizes balance subject to a constraint on the distribution of the matching weights; we call this method Penalized CBPS
- Winsorization of the matching weights—that is, recoding extreme values so that they do not exceed a pre-specified minimum or maximum value—to improve their face validity and reduce the risk of future imbalance if some practices become unobservable over time

We describe each of these components in turn.

CBPS. To reweight the comparison practices, we used the CBPS method of Imai and Ratkovic (2014). CBPS extends the standard propensity score weighting approach, in which the fitted values from a propensity score model represent predicted probabilities of receiving the intervention conditional on the covariates included in the model. These estimated propensity scores determine the weight that each practice receives; when estimating the average treatment effect on the treated population, CPC+ practices receive a weight of 1, and comparison practice i receives a weight as follows:

$$(1) \quad w_i = \frac{1}{1 - \hat{p}_i},$$

where \hat{p}_i is the estimated propensity score for practice i (Mansournia and Altman 2016). CBPS adheres to this general procedure, but instead of fitting the propensity score model by maximizing the likelihood of a logistic regression model, as is conventional, CBPS uses an

estimation procedure that *maximizes the balance* between intervention and comparison units on the regression covariates. Specifically, it minimizes the mean standardized difference between the intervention and comparison groups across the regression covariates; the standardized difference for each variable is the weighted difference in intervention and comparison group means divided by the standard deviation. Estimating the propensity score model in this way means that CBPS weights balance the intervention and comparison groups almost exactly on the matching characteristics.

This tight balance comes at a cost: the distribution of CBPS weights can be diffuse, with some comparisons that are dissimilar to the intervention group receiving weights of essentially zero, and some comparisons that are highly similar to the intervention group receiving weights 50 times larger or more than the mean weight in the intervention group. These extremely high and low weights detract from the face validity of the weighting scheme and reduce statistical power relative to a tighter weight distribution. As we describe in the next few pages, we addressed this concern by compromising among good covariate balance, a reasonable weight distribution, and sample size, focusing first on sample size.

Trimming the sample. After incorporating revisions to the set of matching characteristics and running preliminary propensity score models to support reweighting, we found that some potential comparison practices did not resemble the CPC+ practices closely. Including dissimilar comparisons in the CPBS model distorts the propensity score estimation, resulting in extremely high weights among practices that closely resemble the CPC+ practices and extremely low weights among practices that do not resemble the CPC+ practices. Thus, to obtain both good balance and a reasonable weight distribution, we removed dissimilar comparison practices from the sample *before* estimating final propensity scores and weights. This approach not only removes practices that would otherwise receive very low weights in the final analytic sample but also reins in the weight values of practices that would remain.

We trimmed dissimilar practices from the potential comparison group based on provisional weights from a CBPS model. For the 2017 Starters, we ran the CBPS model once in each track using the pool of 5,335 potential comparison practices in Track 1, and 4,024 potential comparison practices in Track 2. Among the model covariates, we included interactions between SSP status and the other matching variables we considered high priority. This approach ensures the CBPS propensity scores account for differences between intervention and potential comparisons by SSP status, as well as overall within the track, so that our eventual weights produce balance for both the overall group and SSP subgroups. Having run the CPBS model once in each track, we then removed from the sample the potential comparison practices that were least similar to the CPC+ practices, by track, as measured by their provisional CBPS weights. Similarly for the 2018 Starters, we ran the CBPS model once in each track using the pool of 395 potential comparison practices in Track 1, and 305 potential comparison practices in Track 2. We used a smaller set of model covariates than for the 2017 Starters given the smaller sample sizes available. As with the 2017 Starters, we then removed from the sample the potential comparison practices that were least similar to the CPC+ practices, by track, as measured by their provisional CBPS weights.

For each track within each practice cohort, we created several data sets with different amounts of trimming of potential comparison practices, ranging from 0 percent—retaining all potential

comparison practices—to 20 or 50 percent (depending on practice cohort) of the comparison practices. Considering several comparison group sample sizes enabled us to identify the minimum amount of trimming that would provide a good combination of balance and a compact weight distribution.

Penalized CBPS. Although removing dissimilar potential comparison practices helps to narrow the distribution of CBPS weights, the CBPS algorithm optimizes balance with no regard for the distribution of weights, so trimming alone may not suffice to constrain the weight distribution. To incorporate our desired compromise between balance and a tight weight distribution into the procedure, we modified Imai and Ratkovic’s method. We created a custom program—Penalized CBPS—to optimize balance subject to a constraint on the standard deviation of the weight distribution. Constraining the optimization means that the modified CBPS procedure will produce slightly worse balance than the original version, but the tighter weight distribution should increase statistical power and thus reduce the mean squared error of the treatment effect estimates relative to using a comparison group created through unconstrained CBPS.

We fit models from this Penalized CBPS approach to each of our trimmed data sets. We selected a value for the standard deviation constraint for each data set by fitting the Penalized CBPS model iteratively, with successively tighter constraints in each iteration. Constraining the weights too aggressively produces unacceptable balance, so in each data set—that is, for each amount of trimming in each track in each cohort—we aimed to select the tightest constraint that achieved good balance on the matching variables (including interactions between SSP status and select other variables we considered especially important). We typically defined “good balance” as having a maximum (in absolute value) standardized CPC+-comparison difference on the matching variables of roughly 0.1. We were able to achieve this standard for all high-priority variables for both tracks of the 2017 Starters. However, for the 2018 Starters, balance was more difficult to achieve, so we prioritized balance on the variables we considered most important: SSP status and total Medicare Part A and B spending. (We do not plan to estimate impacts separately for the 2018 Starters.)

Winsorization. In addition to having a low standard deviation of the weights, which enhances statistical power, we aimed for final matching weights in each track that fall between 0.1 and 10 on a scale with mean 1. (As noted previously, each intervention practice receives a weight of exactly 1.) Keeping the matching weights within a moderate range improves face validity. Specifically, very large weights decrease face validity, because they amplify the influence any single comparison practice has on the impact analyses. Very large weights could also introduce imbalance if highly weighted practices closed and no longer had new patients attributed to them, or, in survey analyses, if the practices stopped responding to surveys. Very small weights also detract from face validity, because they contribute essentially no information to our analysis; having very small weights also complicates survey logistics, because we would need to survey practices—and potentially large numbers of practices—each contributing essentially no information.

Imposing a minimum and maximum weight is difficult to achieve directly as part of the weighting procedure, because our Penalized CBPS approach constrains the distribution of the weights—their standard deviation or higher order moments of the distribution (skewness and kurtosis)—not the endpoints of that distribution. We implemented the constraint in this way,

because the distribution of the weights, specifically their standard deviation, is most relevant for statistical power, and because this approach is more computationally tractable than the alternatives.⁶¹

Without a direct way to constrain the endpoints of the weight distribution as part of the optimization procedure, we chose to Winsorize the constrained CBPS weights, so that for the comparison practices in each track, the maximum value was 10 and the minimum was 0.1 on a scale with mean 1. That is, we set weight values greater than 10 to be equal to exactly 10 and weight values less than 0.1 to be exactly 0.1, while maintaining the mean comparison group weight at 1. Relative to the un-Winsorized weights, the Winsorized results produced comparable balance, better power, and greater face validity.

B.2. Selecting the comparison group from among possible comparison group options

The methodology described above generated several possible comparison groups for each track within each practice cohort, one for each of the trimmed data sets. We chose the final comparison group as the group in each track and cohort with the best combination of balance, measured through the matching diagnostics described in Sub-step 3 below, and statistical power, both overall for the track and within the track by SSP status. For the 2017 Starters, the final research sample in Track 1 contains all 1,373 CPC+ practices and 5,243 comparison practices (after removing 1 percent of the potential comparison sample). In Track 2, the final research sample contains all 1,515 CPC+ practices and 3,783 comparison practices (after removing 5 percent of the potential comparison sample).⁶² For the 2018 Starters, the final research sample in Track 1 contains all 117 CPC+ practices and 273 comparison practices (after removing 30 percent of the potential comparison sample). In Track 2, the final research sample contains all 46 CPC+ practices and 258 comparison practices (after removing 15 percent of the potential comparison sample).

C. Employ matching diagnostics

We used four sets of diagnostics to select the final comparison group from among the candidate groups:

- Standardized differences on the key matching variables
- Plots of the pre-intervention trends in CPC+ and comparison practices on the three primary outcome variables: total Medicare expenditures, hospitalizations, and ED visits

⁶¹ We attempted to implement a constraint on the maximum weight in addition to constraining the standard deviation, but it proved prohibitively challenging, computationally; no models that we tested with this constraint converged.

⁶² In addition to trimming practices from the potential comparison group based on provisional weights from a CBPS model, we also removed 41 practices from the final comparison group that self-reported they were not providing primary care (according to their practice survey responses) or did not have any assigned beneficiaries in the baseline period after we revised our attribution process. We further removed four comparison practices that, after correcting an address error, were deemed ineligible for the comparison group because they were located in a CPC+ region. These practices were removed after calculating final matching weights. After removing these practices, the CPC+ and comparison practices remained balanced in terms of the matching characteristics.

- Distribution of the matching weights
- Likely statistical power of analyses using the selected comparison group to detect CPC+ impacts

We describe the first three of these diagnostics in more detail in Sub-step 4 below, where we present the results for the final selected Track 1 and Track 2 comparison groups, pooled across the 2017 and 2018 Starters. For more information about the power calculations and the final power estimates, see Section 6.2.4.

D. Combine the comparison groups for the 2017 and 2018 Starters

Although we selected the comparison groups for the 2017 and 2018 Starters separately—which enabled us to report early impact estimates for the 2017 Starters starting in 2018—we combined the comparison practices for the 2017 and 2018 Starters to form the final comparison groups for Track 1 and Track 2.

When combining the weights, we ensured that the weighted percentages of 2018-Starter comparison practices in the two tracks in the combined comparison group were similar to the percentages of 2018 Starter CPC+ practices in the combined CPC+ sample by applying an adjustment factor. For example, roughly 3 percent of Track 2 CPC+ practices are 2018 Starters, so we scaled the weights for the Track 2 comparison practices so that the 2018 Starter comparison practices comprise the same percentage (roughly 3 percent) of the final Track 2 comparison group.⁶³ If we had not done this step, we would have risked conflating secular trends in outcomes with CPC+ impacts, simply because the CPC+ and comparison groups would have had different proportions of their observations coming from different time periods.

After rescaling the weights for the 2018-Starter comparison practices, we renormalized the weights for the combined comparison group, ensuring that the comparison practices had a mean weight of 1 in each track. Simultaneously, we re-Winsorized the weights for the 2018-Starter comparison practices so that the minimum value was 0.1 and the maximum was 10. However, because we wanted to preserve the relative weights that already existed among the 2017-Starter comparison practices (to maintain continuity between analyses in the first annual report and in future reports), we did not Winsorize those practices' weights again. The means that, for some comparison practices, the weights were pushed slightly beyond the Winsorization cutoffs, to a minimum of 0.096 and a maximum of 10.17.

For Track 1, the final group comprises 5,516 comparison practices for the 2017 and 2018 CPC+ cohorts combined, serving 3.0 million Medicare FFS beneficiaries in the year before CPC+ began. These 3.0 million beneficiaries represent an effective sample size of 1.4 million when accounting for the uneven weights in the comparison group. For Track 2, the final group comprises 4,041 comparison practices for the 2017 and 2018 CPC+ cohorts combined, serving 2.6 million Medicare FFS beneficiaries in the year before CPC+ began. These 2.6 million beneficiaries represent an effective sample size of 1.0 million when accounting for the uneven

⁶³ This scalar adjustment factor is equal to (1) the ratio of CPC+ to comparison beneficiaries in the baseline period among the 2018 Starters, divided by (2) the same ratio among 2017 Starters.

weights in the comparison group. Table 6.C.4 shows the distribution of weighted eligible beneficiary months during the baseline period for our combined (2017 and 2018 cohorts) Track 1 and Track 2 comparison groups, by state of residence.

Table 6.C.4. Distribution of eligible beneficiary months at baseline in the comparison group for 2017 and 2018 Starters combined, by track and state

State	Track 1		Track 2	
	Number of eligible months during baseline for beneficiaries assigned to comparison practices	Percentage of eligible beneficiary months	Number of eligible months during baseline for beneficiaries assigned to comparison practices	Percentage of eligible beneficiary months
Alabama	356,699	1%	267,847	1%
Arizona	439,563	1%	523,342	2%
California	1,356,558	4%	1,117,186	4%
Connecticut	1,076,389	3%	574,076	2%
District of Columbia	85,415	0%	65,366	0%
Georgia	1,018,603	3%	675,944	3%
Iowa	1,650,481	5%	1,158,088	4%
Idaho	411,810	1%	219,356	1%
Illinois	3,977,988	12%	3,131,001	12%
Indiana	1,922,371	6%	1,274,078	5%
Kansas	772,573	2%	183,933	1%
Massachusetts	1,254,003	4%	1,003,057	4%
Minnesota	501,046	1%	702,760	3%
Missouri	1,739,577	5%	1,317,196	5%
Mississippi	617,330	2%	236,125	1%
North Carolina	1,353,270	4%	1,016,063	4%
New Mexico	562,403	2%	263,012	1%
Nevada	334,124	1%	191,249	1%
New York	3,070,320	9%	2,561,762	10%
Pennsylvania	3,877,772	11%	3,300,315	12%
South Carolina	809,473	2%	529,087	2%
South Dakota	750,420	2%	467,630	2%
Texas	1,975,745	6%	1,545,559	6%
Utah	606,152	2%	195,192	1%
Vermont	121,033	0%	41,265	0%
Washington	1,513,295	4%	1,949,882	7%
Wisconsin	1,282,138	4%	1,091,819	4%
West Virginia	581,268	2%	692,184	3%
Wyoming	445,775	1%	271,931	1%
All States	34,463,596	100%	26,566,305	100%

Source: Mathematica's analysis of data on the number of Medicare beneficiaries assigned to selected comparison practices from Medicare Enrollment Database. Eligible beneficiary months weighted by the practice matching weight. Analytic sample used covers attribution from January 1, 2016 through September 30, 2018.

Once we had pooled the comparison groups for the 2017 and 2018 Starters, we used the same four sets of diagnostics as described in Sub-step 3 to assess the quality of the final comparison group.

D.1. Standardized differences

The standardized difference, calculated as the difference in weighted means between the CPC+ and comparison groups on the standard deviation scale, is the accepted metric for assessing balance in a matched comparison group. Standardized differences less than 0.25 in absolute value are typically considered adequate to proceed with impact analysis, using regression adjustment to account for differences that persist after matching (Stuart 2010). For the CPC+ comparison group, we achieved standardized differences less than 0.25 in absolute value—that is, between -0.25 and 0.25—for all, and less than 0.1 in absolute value for most, of the matching variables.

Tables 6.C.5 and 6.C.6 show overall balance for 2017 Starters in Track 1 and Track 2, respectively. Tables 6.C.7 to 6.C.10 show balance in each track by SSP status for the 2017 Starters. Similarly, Tables 6.C.11 and 6.C.12 show overall balance for combined 2017 and 2018 Starters in Track 1 and Track 2, respectively. Tables 6.C.13 to 6.C.16 show balance in each track by SSP status for combined 2017 and 2018 Starters.

Columns two through four of these tables show the mean value for each variable. In the second column, with values for the comparison group without matching weights applied, observations are weighted by practice size only. Weighting by practice size scales the practice-level values by the number of assigned beneficiaries in each practice, which approximates the balance we would see in the beneficiary-level data that we use to conduct primary impact analyses of Medicare claims-based outcomes (described in Appendix 6.D). In the third and fourth columns, representing the means with matching weights in the comparison and CPC+ groups, observations are weighted using a combination of practice size and matching weights.

The fifth column gives the difference in means with matching weights between the CPC+ and comparison groups on the variable's original scale, while the sixth column gives the standardized difference—the adjusted difference divided by the variable's standard deviation in the CPC+ group. The standardized difference column is color-coded to draw attention to values that fall outside the desired threshold of ± 0.1 standardized differences (yellow) or the acceptable threshold of ± 0.25 standardized differences (red; no differences fell outside this threshold).

Because the differences between the two groups in matching characteristics were small in magnitude and all fell within our target of 0.25 standardized differences, we considered any remaining differences in matching characteristics between groups acceptable.

Table 6.C.5. Post-matching balance for the Track 1 comparison group, 2017 Starters only: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 5,243)			Adjusted difference ^a	Standardized difference ^b
	Pre- matching weights	Post- matching weights	CPC+ practice mean (N = 1,373)		
High-priority variables (percentage, unless otherwise noted)					
Participant in SSP ACO as of January 1 of the first intervention year	58.0	52.3	51.4	-0.9	-0.019
Hospital ownership or health system management or ownership (SK&A, baseline year)	57.6	55.3	54.8	-0.5	-0.009
Experience in selected practice transformation activities ^c	48.7	52.6	53.5	1.0	0.019
Urbanicity of practice's county (Area Resource File) ^d					
Rural	7.4	9.8	10.3	0.5	0.015
Suburban	16.8	18.4	18.0	-0.4	-0.012
Urban	75.8	71.8	71.7	0.0	0.000
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	20.7	20.9	20.8	-0.1	-0.003
Medium (3 to 24 practitioners)	74.2	74.2	73.9	-0.3	-0.008
Large (25 or more practitioners)	5.1	4.9	5.3	0.4	0.020
Number of Medicare beneficiaries assigned in the baseline year	1,053	1,137	1,196	59.1	0.058
Percentage of charges that are primary care ^e	71.6	71.4	71.3	-0.1	-0.008
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	794	793	794	1.7	0.012
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	889	885	881	-3.3	-0.017
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	279.1	284.0	285.4	1.468	0.019
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	502.5	498.2	493.8	-4.373	-0.023
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	868	866	862	-3.8	-0.017
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	898	894	893	-0.7	-0.004
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	885	880	876	-4.4	-0.021
Mean PBPM Medicare spending, in the fourth quarter of the baseline year ^f	901	897	892	-4.2	-0.021

Table 6.C.5. (continued)

Variable	Comparison group mean (N = 5,243)			Adjusted difference ^a	Standardized difference ^b
	Pre- matching weights	Post- matching weights	CPC+ practice mean (N = 1,373)		
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.100	1.100	0.000	-0.003
Indian Health Center ^h	0.1	0.3	0.5	0.2	0.028
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	21.8	21.5	21.3	-0.2	-0.006
Three to four	23.9	24.0	23.2	-0.9	-0.020
Five to seven	26.2	25.5	25.8	0.3	0.008
Eight or more	28.1	29.0	29.8	0.8	0.017
Hospital-owned (SK&A, baseline year)	26.8	27.9	28.0	0.1	0.001
Participant in SSP ACO, Track 2 or 3	7.1	5.3	5.2	-0.1	-0.006
Practice is multispecialty ⁱ	21.8	20.1	19.6	-0.6	-0.015
HRR price index (CMS' Medicare Geographic Variation data, 2015) ^j	1.072	1.058	1.051	-0.007	-0.095
Meaningful EHR use ^k					
Never attested	9.4	8.5	8.0	-0.5	-0.018
Attested since 2011 or 2012	79.2	78.5	78.9	0.4	0.011
Attested since 2013 or later	11.4	13.0	13.1	0.1	0.002
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^l	211	226	231	5.6	0.042
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.8	13.8	13.8	0.0	0.007
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	17.0	17.1	17.0	-0.1	-0.026
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	580	582	584	2.3	0.017
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.9	3.9	3.9	0.0	-0.021
Area with a shortage of (primary care) health professionals (Area Resource File) ^l	1.5	1.1	0.9	-0.2	-0.025
County median household income (\$) (Area Resource File) ^l	58,379	57,776	57,938	162.3	0.010

Table 6.C.5. (continued)

Variable	Comparison group mean (N = 5,243)			Adjusted difference ^a	Standardized difference ^b
	Pre- matching weights	Post- matching weights	CPC+ practice mean (N = 1,373)		
County percentage of population in poverty (Area Resource File) ^l	14.2	14.0	13.8	-0.2	-0.030
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^l	29.2	28.8	28.6	-0.3	-0.021
Percentage male ^f	41.9	41.8	41.7	-0.1	-0.009
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	79.3	79.6	79.8	0.2	0.018
Within-state quintile of dually eligible patients ^m					
1st quintile (lowest)	22.2	24.3	25.1	0.8	0.018
2nd quintile	32.4	31.5	31.9	0.4	0.009
3rd quintile	23.4	23.6	22.8	-0.9	-0.021
4th quintile	15.8	14.7	14.1	-0.6	-0.017
5th quintile (highest)	6.2	5.9	6.1	0.3	0.011
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,600.5	4,629.7	4,482.4	-147.3	-0.139
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ⁿ	68.2	68.3	68.5	0.2	0.021
Age ^f					
Under 50	4.7	4.6	4.3	-0.2	-0.056
50–64	10.9	10.9	10.7	-0.1	-0.022
65–74	45.8	46.0	46.4	0.4	0.056
75–84	26.2	26.2	26.2	0.0	0.004
85+	12.4	12.4	12.3	-0.1	-0.018
Race ^f					
Percentage black	6.3	5.9	5.7	-0.2	-0.022
Percentage Hispanic	1.1	0.9	0.7	-0.2	-0.056
Percentage with ESRD	0.9	0.9	0.9	0.0	-0.031

Table 6.C.5. (continued)

Variable	Comparison group mean (N = 5,243)			Adjusted difference ^a	Standardized difference ^b
	Pre- matching weights	Post- matching weights	CPC+ practice mean (N = 1,373)		
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.7	2.7	0.0	0.021
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	10.0	9.9	9.9	0.0	0.006
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.3	5.4	5.4	0.1	0.034
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.3	88.0	87.6	-0.4	-0.084
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	4.8	5.0	5.2	0.2	0.020
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.4	25.4	25.4	0.0	-0.006
Percentage of beneficiaries with cancer	8.1	8.2	8.2	0.0	0.008
Percentage of beneficiaries with COPD	9.8	10.1	10.2	0.2	0.040
Percentage of beneficiaries with CKD	16.4	15.8	15.4	-0.3	-0.065
Percentage of beneficiaries with Alzheimer's and related dementia	7.4	7.4	7.4	-0.1	-0.019
Percentage of beneficiaries with heart failure	10.7	10.9	11.0	0.0	0.011
Practice employs at least one NP/PA (SK&A, baseline year)	62.1	61.5	61.6	0.2	0.003
Hospital beds in county per 10,000 population (Area Resource File) ^l					
1st quartile (fewest beds)	22.0	22.2	21.8	-0.4	-0.009
2nd quartile	28.9	25.8	27.7	1.9	0.041
3rd quartile	28.2	26.7	25.9	-0.9	-0.020
4th quartile (most beds)	20.9	25.3	24.7	-0.6	-0.014
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^l	30.8	31.1	31.6	0.5	0.045
Ever participated in SSP ACO as of January 1 of the first intervention year	62.1	56.9	59.6	2.7	0.056

Table 6.C.5. (continued)

Variable	Comparison group mean (N = 5,243)			Adjusted difference ^a	Standardized difference ^b
	Pre- matching weights	Post- matching weights	CPC+ practice mean (N = 1,373)		
Select other variables (percentage; not included in matching)					
U.S. census region ^g					
Northeast	26.9	28.0	28.4	0.4	0.008
Midwest	33.4	34.5	37.6	3.1	0.064
South	21.1	19.4	15.4	-4.0	-0.112
West	18.6	18.1	18.6	0.6	0.014

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource File: 2015–2016 for 2017 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample that we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

^d 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 ARF.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016.

^g The HCC score in the baseline year is based on beneficiaries' diagnoses in 2015.

Table 6.C.5. (continued)

^h We identified Indian Health Centers by first flagging practices where 90 percent of Medicare beneficiaries assigned in the baseline year were American Indian/Alaska Native; we then confirmed these practices as Indian Health Centers by comparing practice name and address with the Indian Health Service website list of Indian Health Service facilities.

ⁱ We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

^j The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015.

^k Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^l Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014. For hospital beds in the practice's county, we used data from 2013 and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014.

^m Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

ⁿ This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

^o For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices. Details on the selection of external regions are available in Section 6.C.1.

AAHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.6. Post-matching balance for the Track 2 comparison group, 2017 Starters only: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 3,783)		CPC+ practice mean (N = 1,515)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Participant in SSP ACO as of January 1 of the first intervention year	50.1	44.2	44.2	0.000	0.000
Hospital ownership or health system management or ownership (SK&A, baseline year)	61.1	59.8	58.2	-1.6	-0.032
Experience in selected practice transformation activities ^c	61.9	75.4	80.9	5.6	0.142
Urbanicity of practice's county (Area Resource File) ^d					
Rural	7.1	7.7	7.7	0.0	-0.002
Suburban	17.1	16.8	16.0	-0.8	-0.021
Urban	75.9	75.5	76.3	0.8	0.019
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	14.4	12.8	12.4	-0.5	-0.014
Medium (3 to 24 practitioners)	77.2	78.5	77.4	-1.1	-0.025
Large (25 or more practitioners)	8.3	8.7	10.2	1.5	0.050
Number of Medicare beneficiaries assigned in the baseline year	1,357	1,314	1,373	58.8	0.046
Percentage of charges that are primary care ^e	70.1	71.1	71.1	0.0	0.001
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	792	788	791	3.3	0.022
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	886	879	877	-1.4	-0.007
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	279.9	283.5	287.4	3.862	0.051
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	490.5	492.5	492.6	0.079	0.000
Mean PBPM Medicare spending in the first quarter of the baseline year	864	861	863	1.6	0.007

Table 6.C.6. (continued)

Variable	Comparison group mean (N = 3,783)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 1,515)		
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	895	889	890	0.2	0.001
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	883	875	871	-3.9	-0.020
Mean PBPM Medicare spending, in the fourth quarter of the baseline year ^f	898	886	884	-2.0	-0.010
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.103	1.101	-0.002	-0.013
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	15.1	13.5	12.9	-0.6	-0.019
Three to four	20.9	22.1	22.4	0.3	0.008
Five to seven	24.8	26.3	26.0	-0.3	-0.007
Eight or more	39.3	38.1	38.7	0.6	0.012
Hospital-owned (SK&A, baseline year)	28.3	30.2	29.1	-1.1	-0.024
Participant in SSP ACO, Track 2 or 3	6.4	6.0	7.6	1.6	0.060
Practice is multispecialty ^h	27.4	26.2	26.2	0.0	0.001
HRR price index (CMS' Medicare Geographic Variation data, 2015) ⁱ	1.070	1.054	1.047	-0.007	-0.089
Meaningful EHR use ^j					
Never attested	4.0	3.7	3.5	-0.3	-0.015
Attested since 2011 or 2012	88.1	87.9	88.2	0.4	0.012
Attested since 2013 or later	8.0	8.4	8.3	-0.1	-0.005
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	211	202	197	-4.6	-0.041
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.8	13.9	13.8	-0.1	-0.038
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	16.9	17.2	16.9	-0.3	-0.050
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	577	577	578	0.4	0.003

Table 6.C.6. (continued)

Variable	Comparison group mean (N = 3,783)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 1,515)		
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.9	3.9	4.0	0.0	0.005
Area with a shortage of (primary care) health professionals (Area Resource File) ^k	1.3	1.3	1.2	-0.1	-0.006
County median household income (\$) (Area Resource File) ^k	57,972	57,318	57,067	-251.1	-0.018
County percentage of population in poverty (Area Resource File) ^k	14.3	14.2	14.2	-0.0	-0.009
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^k	29.4	30.7	31.5	0.8	0.061
Percentage male ^f	42.2	42.0	42.0	0.1	0.011
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	79.8	79.4	79.7	0.4	0.034
Within-state quintile of dually eligible patients ^l					
1st quintile (lowest)	22.0	20.8	22.4	1.6	0.039
2nd quintile	33.6	35.1	35.7	0.6	0.013
3rd quintile	24.6	25.6	25.3	-0.3	-0.007
4th quintile	15.1	13.5	12.0	-1.5	-0.046
5th quintile (highest)	4.8	5.1	4.6	-0.4	-0.021
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,611.5	4,701.0	4,595.2	-105.8	-0.100
Percentage of eligibility inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ^m	68.7	68.7	69.1	0.4	0.055
Age ^f					
Under 50	4.5	4.7	4.5	-0.2	-0.058
50–64	10.6	11.1	10.8	-0.3	-0.065
65–74	45.8	45.9	46.7	0.8	0.107
75–84	26.5	26.0	25.8	-0.2	-0.031
85+	12.6	12.3	12.2	-0.1	-0.013

Table 6.C.6. (continued)

Variable	Comparison group mean (N = 3,783)		CPC+ practice mean (N = 1,515)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Race ^f					
Percentage black	6.5	6.7	6.2	-0.4	-0.040
Percentage Hispanic	1.0	0.9	0.7	-0.1	-0.053
Percentage with ESRD	0.9	0.9	0.9	0.0	-0.030
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.7	2.7	0.0	0.018
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	9.9	10.0	10.1	0.1	0.031
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.3	5.2	5.3	0.1	0.061
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.4	87.6	86.7	-0.9	-0.183
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	4.6	5.0	5.5	0.5	0.045
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	24.9	24.6	24.4	-0.2	-0.037
Percentage of beneficiaries with cancer	8.2	8.2	8.2	0.0	0.002
Percentage of beneficiaries with COPD	9.5	9.8	9.8	0.0	0.012
Percentage of beneficiaries with CKD	16.4	16.4	16.3	-0.1	-0.017
Percentage of beneficiaries with Alzheimer's and related dementia	7.3	7.4	7.3	-0.1	-0.026
Percentage of beneficiaries with heart failure	10.6	10.7	10.8	0.0	0.009
Practice employs at least one NP/PA (SK&A, baseline year)	67.1	68.5	69.6	1.1	0.024

Table 6.C.6. (continued)

Variable	Comparison group mean (N = 3,783)			CPC+ practice mean (N = 1,515)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
Hospital beds in county per 10,000 population (Area Resource File) ^k						
1st quartile (fewest beds)	21.4	23.6	24.9	1.3	0.029	
2nd quartile	26.4	24.1	24.1	-0.1	-0.002	
3rd quartile	29.6	26.2	24.1	-2.1	-0.049	
4th quartile (most beds)	22.5	26.1	27.0	0.9	0.021	
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^k	30.8	31.0	31.2	0.2	0.023	
Ever participated in SSP ACO as of January 1 of the first intervention year	53.1	47.1	49.5	2.4	0.049	
Select other variables (percentage; not included in matching)						
U.S. census region ⁿ						
Northeast	26.0	27.6	26.8	-0.8	-0.018	
Midwest	35.5	34.5	35.1	0.7	0.014	
South	19.3	19.3	19.0	-0.3	-0.008	
West	19.2	18.6	19.0	0.4	0.011	

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource File: 2015–2016 for 2017 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample that we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status See comment re: yellow shading (whether practice is a medical home).

Table 6.C.6. (continued)

^d 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 ARF.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016.

^g The HCC score in the baseline year is based on beneficiaries' diagnoses in 2015.

^h We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

ⁱ The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015.

^j Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^k Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014. For hospital beds in the practice's county, we used data from 2013 and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014.

^l Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

^m This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

ⁿ For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices. Details on the selection of external regions are available in Section 6.C.1.

AAAHHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.7. Post-matching balance for the Track 1-non-SSP comparison group, 2017 Starters only: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 2,264)		CPC+ practice mean (N = 635)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	52.9	53.4	53.1	-0.3	-0.005
Experience in selected practice transformation activities ^c	44.5	56.4	59.9	3.5	0.072
Urbanicity of practice's county (Area Resource File) ^d					
Rural	10.7	14.7	15.9	1.2	0.032
Suburban	22.4	21.0	19.2	-1.8	-0.047
Urban	66.9	64.3	65.0	0.7	0.014
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	23.4	20.1	19.3	-0.8	-0.019
Medium (3 to 24 practitioners)	70.3	72.7	73.0	0.2	0.006
Large (25 or more practitioners)	6.3	7.2	7.7	0.5	0.019
Number of Medicare beneficiaries assigned in the baseline year	1,028	1,243	1,323	79.5	0.070
Percentage of charges that are primary care ^e	71.8	71.4	71.4	0.1	0.005
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	788	775	774	-0.5	-0.003
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	883	863	856	-7.0	-0.037
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	280.4	284.3	285.3	1.033	0.013
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	530.3	519.0	511.3	-7.635	-0.038
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	863	848	844	-4.1	-0.018
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	891	870	866	-4.2	-0.020

Table 6.C.7. (continued)

Variable	Comparison group mean (N = 2,264)		CPC+ practice mean (N = 635)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	880	858	848	-10.0	-0.049
Mean PBPM Medicare spending, in the fourth quarter of the baseline year ^f	896	873	865	-7.7	-0.038
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.088	1.080	-0.008	-0.050
Indian Health Center ^h	0.2	0.6	1.0	0.4	0.038
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	24.2	20.4	19.6	-0.8	-0.019
Three to four	22.9	23.4	21.3	-2.1	-0.052
Five to seven	23.4	23.3	23.6	0.3	0.008
Eight or more	29.5	33.0	35.6	2.6	0.053
Hospital-owned (SK&A, baseline year)	31.7	33.2	28.7	-4.5	-0.100
Practice is multispecialty ⁱ	24.1	23.5	22.3	-1.3	-0.031
HRR price index (CMS' Medicare Geographic Variation data, 2015) ^j	1.066	1.043	1.034	-0.009	-0.116
Meaningful EHR use ^k					
Never attested	13.4	10.7	9.3	-1.4	-0.050
Attested since 2011 or 2012	75.6	76.9	79.4	2.4	0.060
Attested since 2013 or later	11.0	12.3	11.3	-1.0	-0.032
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	220	237	231	-5.8	-0.044
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.9	13.7	13.7	0.0	-0.016
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	17.2	17.0	16.7	-0.3	-0.065
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	570	567	573	6.2	0.042

Table 6.C.7. (continued)

Variable	Comparison group mean (N = 2,264)		CPC+ practice mean (N = 635)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.9	3.9	3.9	0.0	0.013
Area with a shortage of (primary care) health professionals (Area Resource File) ^l	1.6	1.2	0.7	-0.6	-0.071
County median household income (\$) (Area Resource File) ^l	55,708	54,786	55,233	446.9	0.031
County percentage of population in poverty (Area Resource File) ^l	14.9	14.7	14.6	-0.2	-0.036
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^l	29.4	28.4	29.3	0.9	0.068
Percentage male ^f	41.9	41.5	42.0	0.4	0.068
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	78.1	78.8	79.1	0.3	0.029
Within-state quintile of dually eligible patients ^m					
1st quintile (lowest)	20.7	22.9	23.8	0.9	0.021
2nd quintile	31.3	32.0	31.4	-0.6	-0.014
3rd quintile	23.9	22.9	21.3	-1.7	-0.041
4th quintile	16.8	16.4	17.3	0.9	0.024
5th quintile (highest)	7.2	5.8	6.3	0.5	0.021
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,632.0	4,628.1	4,553.2	-74.9	-0.071
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ⁿ	66.5	66.4	66.6	0.1	0.017
Age ^f					
Under 50	4.9	4.7	4.6	-0.2	-0.035
50–64	11.5	11.2	11.1	-0.1	-0.027
65–74	45.3	46.0	46.8	0.8	0.104
75–84	26.1	26.2	25.8	-0.4	-0.073
85+	12.2	11.9	11.8	-0.1	-0.024

Table 6.C.7. (continued)

Variable	Comparison group mean (N = 2,264)		CPC+ practice mean (N = 635)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Race ^f					
Percentage black	6.7	6.3	5.8	-0.4	-0.033
Percentage Hispanic	1.2	1.0	0.7	-0.3	-0.116
Percentage with ESRD	1.0	0.9	0.9	0.0	0.012
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.6	2.7	0.1	0.080
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	9.6	9.3	9.7	0.4	0.096
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.2	5.1	5.2	0.1	0.055
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.5	88.2	87.3	-1.0	-0.213
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	5.4	5.3	6.1	0.9	0.056
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.8	25.3	24.8	-0.4	-0.056
Percentage of beneficiaries with cancer	7.9	7.9	7.9	-0.1	-0.030
Percentage of beneficiaries with COPD	9.9	10.2	10.2	-0.1	-0.018
Percentage of beneficiaries with CKD	16.3	15.3	15.1	-0.2	-0.046
Percentage of beneficiaries with Alzheimer's and related dementia	7.4	7.3	7.2	-0.1	-0.026
Percentage of beneficiaries with heart failure	11.0	10.9	10.6	-0.3	-0.084
Practice employs at least one NP/PA (SK&A, baseline year)	59.8	61.9	64.3	2.4	0.051

Table 6.C.7. (continued)

Variable	Comparison group mean (N = 2,264)			CPC+ practice mean (N = 635)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
Hospital beds in county per 10,000 population (Area Resource File) ^l						
1st quartile (fewest beds)	24.2	23.1	22.6	-0.5	-0.013	
2nd quartile	27.5	25.6	31.1	5.5	0.119	
3rd quartile	25.7	24.0	18.0	-6.1	-0.158	
4th quartile (most beds)	22.6	27.3	28.3	1.1	0.024	
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^l	29.1	29.7	30.8	1.1	0.094	
Ever participated in SSP ACO as of January 1 of the first intervention year	9.7	9.5	16.9	7.4	0.197	
Select other variables (percentage; not included in matching)						
U.S. census region ^o						
Northeast	18.8	17.3	17.4	0.2	0.004	
Midwest	33.0	34.3	38.7	4.5	0.092	
South	24.0	25.8	19.6	-6.2	-0.156	
West	24.1	22.6	24.2	1.6	0.037	

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource File: 2015–2016 for 2017 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample which we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

Table 6.C.7. (continued)

^d 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 ARF.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016.

^g The HCC score in the baseline year is based on beneficiaries' diagnoses in 2015.

^h We identified Indian Health Centers by first flagging practices where 90 percent of Medicare beneficiaries assigned in the baseline year were American Indian/Alaska Native; we then confirmed these practices as Indian Health Centers by comparing practice name and address with the Indian Health Service website list of Indian Health Service facilities.

ⁱ We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

^j The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015.

^k Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^l Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014. For hospital beds in the practice's county, we used data from 2013 and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014.

^m Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

ⁿ This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

^o For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices. Details on the selection of external regions are available in Section 6.C.1.

AAAH = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.8. Post-matching balance for the Track 1-SSP comparison group, 2017 Starters only: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 2,979)		CPC+ practice mean (N = 738)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	61.0	57.0	56.4	-0.6	-0.012
Experience in selected practice transformation activities ^c	51.7	49.1	47.5	-1.6	-0.032
Urbanicity of practice's county (Area Resource File) ^d					
Rural	4.9	5.3	5.0	-0.4	-0.018
Suburban	12.7	16.1	16.9	0.8	0.021
Urban	82.3	78.6	78.1	-0.4	-0.010
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	18.8	21.7	22.2	0.5	0.013
Medium (3 to 24 practitioners)	77.0	75.6	74.8	-0.8	-0.019
Large (25 or more practitioners)	4.2	2.7	3.0	0.3	0.018
Number of Medicare beneficiaries assigned in the baseline year	1,071	1,039	1,075	36.1	0.041
Percentage of charges that are primary care ^e	71.4	71.5	71.2	-0.3	-0.020
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	798	809	813	4.5	0.031
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	893	905	906	0.9	0.005
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	278.2	283.7	285.6	1.869	0.025
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	482.3	479.3	477.3	-2.016	-0.011
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	872	883	880	-2.8	-0.012
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	902	916	919	3.4	0.016
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	889	900	902	1.8	0.009

Table 6.C.8. (continued)

Variable	Comparison group mean (N = 2,979)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 738)		
Mean PBPM Medicare spending, in the fourth quarter of the baseline year ^f	905	918	918	-0.2	-0.001
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.112	1.119	0.007	0.042
Indian Health Center ^h	0.0	0.0	0.0	0.0	N.A.
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	20.0	22.6	22.9	0.3	0.007
Three to four	24.7	24.6	25.0	0.4	0.009
Five to seven	28.2	27.5	27.9	0.4	0.009
Eight or more	27.1	25.3	24.3	-1.1	-0.025
Hospital-owned (SK&A, baseline year)	23.3	23.1	27.3	4.2	0.094
Participant in SSP ACO, Track 2 or 3	12.2	10.2	10.1	-0.1	-0.003
Practice is multispecialty ⁱ	20.1	17.1	17.0	0.0	-0.001
HRR price index (CMS' Medicare Geographic Variation data, 2015) ^j	1.077	1.072	1.066	-0.005	-0.072
Meaningful EHR use ^k					
Never attested	6.5	6.4	6.7	0.3	0.012
Attested since 2011 or 2012	81.9	79.9	78.5	-1.4	-0.034
Attested since 2013 or later	11.7	13.7	14.8	1.1	0.031
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	205	215	231	15.9	0.120
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.7	13.8	13.9	0.1	0.029
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	16.8	17.2	17.3	0.0	0.008
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	587	595	594	-0.848	-0.007
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.8	3.9	3.9	-0.1	-0.052

Table 6.C.8. (continued)

Variable	Comparison group mean (N = 2,979)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 738)		
Area with a shortage of (primary care) health professionals (Area Resource File) ^l	1.5	1.1	1.1	0.1	0.007
County median household income (\$) (Area Resource File) ^l	60,310	60,499	60,497	-1.888	0.000
County percentage of population in poverty (Area Resource File) ^l	13.7	13.3	13.2	-0.1	-0.030
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^l	29.0	29.2	27.9	-1.3	-0.111
Percentage male ^f	41.9	42.0	41.5	-0.5	-0.075
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	80.1	80.3	80.4	0.1	0.010
Within-state quintile of dually eligible patients ^m					
1st quintile (lowest)	23.4	25.6	26.3	0.8	0.017
2nd quintile	33.1	31.1	32.5	1.4	0.030
3rd quintile	23.1	24.3	24.2	-0.1	-0.002
4th quintile	15.0	13.2	11.1	-2.1	-0.066
5th quintile (highest)	5.4	5.9	5.9	0.0	0.001
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,577.7	4,631.2	4,415.5	-215.76	-0.203
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ⁿ	69.5	70.0	70.3	0.3	0.036
Age ^f					
Under 50	4.5	4.4	4.1	-0.3	-0.081
50–64	10.6	10.5	10.4	-0.1	-0.020
65–74	46.1	45.9	46.0	0.1	0.010
75–84	26.3	26.3	26.7	0.4	0.077
85+	12.6	12.8	12.7	-0.1	-0.011
Race ^f					
Percentage black	6.1	5.6	5.5	-0.1	-0.009
Percentage Hispanic	1.1	0.8	0.8	0.0	-0.014
Percentage with ESRD	0.9	0.9	0.8	-0.1	-0.072

Table 6.C.8. (continued)

Variable	Comparison group mean (N = 2,979)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 738)		
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.5	2.7	2.6	-0.1	-0.038
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	10.3	10.4	10.1	-0.3	-0.097
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.4	5.6	5.6	0.0	0.020
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.2	87.8	87.9	0.2	0.041
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	4.5	4.8	4.4	-0.3	-0.041
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.2	25.5	25.8	0.3	0.039
Percentage of beneficiaries with cancer	8.3	8.5	8.6	0.1	0.048
Percentage of beneficiaries with COPD	9.6	9.9	10.3	0.4	0.092
Percentage of beneficiaries with CKD	16.5	16.2	15.8	-0.4	-0.080
Percentage of beneficiaries with Alzheimer's and related dementia	7.3	7.5	7.5	0.0	-0.011
Percentage of beneficiaries with heart failure	10.6	10.9	11.3	0.4	0.088
Practice employs at least one NP/PA (SK&A baseline year)	63.7	61.1	59.1	-2.0	-0.041
Hospital beds in county per 10,000 population (Area Resource File) ^l					
1st quartile (fewest beds)	20.5	21.3	21.1	-0.2	-0.006
2nd quartile	29.8	26.0	24.4	-1.6	-0.037
3rd quartile	30.0	29.2	33.3	4.1	0.088
4th quartile (most beds)	19.7	23.5	21.2	-2.3	-0.056

Table 6.C.8. (continued)

Variable	Comparison group mean (N = 2,979)			CPC+ practice mean (N = 738)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) [†]	32.1	32.3		32.4	0.0	0.002
Select other variables (percentage; not included in matching)						
U.S. census region ^g						
Northeast	32.6	37.8		38.7	0.9	0.019
Midwest	33.6	34.8		36.6	1.8	0.038
South	19.0	13.5		11.3	-2.2	-0.069
West	14.7	13.9		13.4	-0.6	-0.017

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource File: 2015–2016 for 2017 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample which we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

^d 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 ARF.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

[†] The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016.

^g The HCC score in the baseline year is based on beneficiaries' diagnoses in 2015.

Table 6.C.8. (continued)

^h We identified Indian Health Centers by first flagging practices where 90 percent of Medicare beneficiaries assigned in the baseline year were American Indian/Alaska Native; we then confirmed these practices as Indian Health Centers by comparing practice name and address with the Indian Health Service website list of Indian Health Service facilities.

ⁱ We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

^j The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015.

^k Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^l Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014. For hospital beds in the practice's county, we used data from 2013 and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014.

^m Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

ⁿ This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

^o For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices. Details on the selection of external regions are available in Section 6.C.1.

AAHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.9. Post-matching balance for the Track 2-non-SSP comparison group, 2017 Starters only: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 1,966)		CPC+ practice mean (N = 879)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	59.0	57.3	55.6	-1.7	-0.033
Experience in selected practice transformation activities ^c	55.9	74.2	80.4	6.2	0.157
Urbanicity of practice's county (Area Resource File) ^d					
Rural	8.9	10.3	10.6	0.3	0.010
Suburban	21.3	17.3	15.8	-1.4	-0.039
Urban	69.8	72.4	73.5	1.1	0.026
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	14.8	13.7	12.6	-1.1	-0.033
Medium (3 to 24 practitioners)	78.7	79.0	79.6	0.5	0.013
Large (25 or more practitioners)	6.5	7.2	7.8	0.6	0.021
Number of Medicare beneficiaries assigned in the baseline year	1,308	1,255	1,283	27.9	0.024
Percentage of charges that are primary care ^e	71.0	71.6	71.6	0.0	-0.001
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	785	779	781	1.9	0.013
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	878	867	862	-5.5	-0.030
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	278.2	281.2	281.9	0.672	0.009
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	513.0	507.0	502.9	-4.180	-0.022
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	858	850	848	-1.7	-0.008
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	886	874	869	-5.4	-0.026
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	877	865	858	-7.0	-0.035

Table 6.C.9. (continued)

Variable	Comparison group mean (N = 1,966)		CPC+ practice mean (N = 879)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Mean PBPM Medicare spending, in the fourth quarter of the baseline year ^f	889	877	872	-5.7	-0.029
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.096	1.099	1.090	-0.009	-0.059
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	15.2	14.4	13.3	-1.1	-0.034
Three to four	21.1	22.7	24.0	1.3	0.031
Five to seven	26.0	26.9	27.9	1.0	0.023
Eight or more	37.6	36.0	34.8	-1.2	-0.025
Hospital-owned (SK&A, baseline year)	30.8	34.0	31.2	-2.9	-0.062
Practice is multispecialty ^h	28.1	26.4	27.1	0.7	0.016
HRR price index (CMS' Medicare Geographic Variation data, 2015) ⁱ	1.067	1.043	1.041	-0.001	-0.016
Meaningful EHR use ^j					
Never attested	5.2	4.6	3.7	-1.0	-0.052
Attested since 2011 or 2012	86.6	86.4	88.1	1.7	0.052
Attested since 2013 or later	8.3	9.0	8.3	-0.7	-0.026
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	217	204	204	-0.5	-0.004
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.9	14.0	13.7	-0.3	-0.105
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	17.2	17.5	17.2	-0.4	-0.066
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 and Tier 5 (\$) ^f	565	564	569	4.9	0.033
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	4.0	4.0	4.0	0.0	-0.012

Table 6.C.9. (continued)

Variable	Comparison group mean (N = 1,966)		CPC+ practice mean (N = 879)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Area with a shortage of (primary care) health professionals (Area Resource File) ^k	1.2	1.3	1.5	0.2	0.017
County median household income (\$) (Area Resource File) ^k	56,522	56,368	56,725	356.7	0.025
County percentage of population in poverty (Area Resource File) ^k	14.8	14.5	14.5	0.0	-0.001
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^k	29.9	31.5	31.7	0.1	0.010
Percentage male ^f	42.1	41.9	42.1	0.2	0.030
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	78.8	78.4	78.8	0.4	0.039
Within-state quintile of dually eligible patients ^l					
1st quintile (lowest)	20.4	20.9	21.5	0.5	0.013
2nd quintile	33.6	35.6	35.5	-0.1	-0.003
3rd quintile	24.8	24.2	23.1	-1.2	-0.027
4th quintile	14.5	12.7	14.5	1.8	0.052
5th quintile (highest)	6.8	6.6	5.5	-1.1	-0.048
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,627.3	4,748.4	4,698.4	-50.0	-0.045
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ^m	67.1	67.1	68.1	1.0	0.131
Age ^f					
Under 50	4.8	5.0	4.7	-0.3	-0.067
50–64	11.1	11.5	11.1	-0.4	-0.070
65–74	45.4	45.4	46.3	0.8	0.105
75–84	26.4	26.0	25.8	-0.2	-0.029
85+	12.4	12.1	12.1	0.0	-0.003
Race ^f					
Percentage black	6.9	6.2	5.7	-0.5	-0.050
Percentage Hispanic	1.0	0.8	0.6	-0.2	-0.086
Percentage with ESRD	1.0	1.0	0.9	0.0	-0.037

Table 6.C.9. (continued)

Variable	Comparison group mean (N = 1,966)		CPC+ practice mean (N = 879)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.8	2.8	0.0	-0.004
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	9.6	9.7	10.0	0.3	0.075
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.0	5.0	5.0	0.1	0.046
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.6	87.8	87.0	-0.8	-0.144
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	5.4	5.6	6.7	1.1	0.079
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.2	24.7	24.4	-0.3	-0.054
Percentage of beneficiaries with cancer	8.0	8.0	7.9	-0.1	-0.043
Percentage of beneficiaries with COPD	9.5	9.8	9.9	0.2	0.046
Percentage of beneficiaries with CKD	16.4	16.1	16.3	0.3	0.046
Percentage of beneficiaries with Alzheimer's and related dementia	7.4	7.6	7.6	0.0	-0.007
Percentage of beneficiaries with heart failure	10.6	10.7	10.7	0.0	0.012
Practice employs at least one NP/PA (SK&A, baseline year)	66.1	68.1	69.3	1.2	0.025
Hospital beds in county per 10,000 population (Area Resource File) ^k					
1st quartile (fewest beds)	26.3	28.3	26.3	-2.0	-0.045
2nd quartile	25.3	23.1	25.3	2.2	0.051
3rd quartile	24.3	21.9	23.9	2.0	0.046
4th quartile (most beds)	24.1	26.7	24.5	-2.2	-0.051
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^k	30.3	31.1	31.2	0.0	0.005

Table 6.C.9. (continued)

Variable	Comparison group mean (N = 1,966)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 879)		
Ever participated in SSP ACO as of January 1 of the first intervention year	6.1	5.2	9.6	4.4	0.148
Select other variables (percentage; not included in matching)					
U.S. census region ⁿ					
Northeast	20.0	22.6	22.8	0.2	0.004
Midwest	31.3	30.0	27.7	-2.3	-0.052
South	23.0	24.8	25.2	0.4	0.009
West	25.7	22.5	24.2	1.8	0.041

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource File: 2015–2016 for 2017 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample which we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is in a medical home and level of NCQA medical home).

^d 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 ARF.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016.

^g The HCC score in the baseline year is based on beneficiaries' diagnoses in 2015.

Table 6.C.9. (continued)

^h We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

ⁱ The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015.

^j Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^k Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014. For hospital beds in the practice's county, we used data from 2013 and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014.

^l Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

^m This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

ⁿ For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices. Details on the selection of external regions are available in Section 6.C.1.

AAHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.10. Post-matching balance for the Track 2-SSP comparison group, 2017 Starters only: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 1,817)		CPC+ practice mean (N = 636)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	63.3	63.0	61.5	-1.5	-0.031
Experience in selected practice transformation activities ^c	67.9	76.9	81.6	4.7	0.122
Urbanicity of practice's county (Area Resource File) ^d					
Rural	5.2	4.4	3.9	-0.5	-0.024
Suburban	12.8	16.2	16.3	0.1	0.002
Urban	82.0	79.4	79.8	0.4	0.010
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	14.0	11.7	12.1	0.3	0.011
Medium (3 to 24 practitioners)	75.8	77.7	74.7	-3.1	-0.071
Large (25 or more practitioners)	10.2	10.6	13.3	2.7	0.080
Number of Medicare beneficiaries assigned in the baseline year	1,406	1,388	1,486	97.9	0.070
Percentage of charges that are primary care ^e	69.1	70.5	70.6	0.1	0.003
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	799	799	804	5.1	0.035
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	893	893	897	3.9	0.020
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	281.6	286.4	294.3	7.889	0.107
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	468.1	474.2	479.6	5.460	0.037
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	871	876	882	5.8	0.025
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	904	909	916	7.3	0.034
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	890	889	889	0.0	0.000

Table 6.C.10. (continued)

Variable	Comparison group mean (N = 1,817)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 636)		
Mean PBPM Medicare spending, in the fourth quarter of the baseline year ^f	906	898	900	2.6	0.013
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.100	1.108	1.115	0.007	0.046
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	14.9	12.4	12.4	0.0	0.001
Three to four	20.6	21.3	20.4	-0.9	-0.022
Five to seven	23.6	25.6	23.6	-2.0	-0.048
Eight or more	40.9	40.7	43.6	2.9	0.058
Hospital-owned (SK&A, baseline year)	25.8	25.5	26.6	1.1	0.025
Participant in SSP ACO, Track 2 or 3	12.8	13.6	17.3	3.6	0.096
Practice is multispecialty ^h	26.7	25.9	25.0	-0.8	-0.019
HRR price index (CMS' Medicare Geographic Variation data, 2015) ⁱ	1.074	1.068	1.053	-0.014	-0.203
Meaningful EHR use ^j					
Never attested	2.8	2.6	3.2	0.6	0.036
Attested since 2011 or 2012	89.6	89.7	88.5	-1.2	-0.039
Attested since 2013 or later	7.6	7.7	8.3	0.6	0.022
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	205	198	188	-9.9	-0.100
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.7	13.8	13.9	0.1	0.054
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	16.6	16.8	16.7	-0.2	-0.029
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 and Tier 5 (\$) ^f	589	594	589	-5.2	-0.042
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.8	3.8	3.9	0.0	0.025

Table 6.C.10. (continued)

Variable	Comparison group mean (N = 1,817)		CPC+ practice mean (N = 636)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Area with a shortage of (primary care) health professionals (Area Resource File) ^k	1.5	1.3	0.9	-0.4	-0.044
County median household income (\$) (Area Resource File) ^k	59,417	58,518	57,499	-1018.6	-0.072
County percentage of population in poverty (Area Resource File) ^k	13.8	13.9	13.9	-0.1	-0.018
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^k	28.8	29.6	31.2	1.6	0.145
Percentage male ^f	42.2	42.1	42.0	-0.1	-0.014
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	80.8	80.6	80.8	0.2	0.026
Within-state quintile of dually eligible patients ^l					
1st quintile (lowest)	23.5	20.7	23.6	3.0	0.070
2nd quintile	33.6	34.5	36.0	1.5	0.032
3rd quintile	24.4	27.4	28.1	0.8	0.017
4th quintile	15.7	14.4	8.7	-5.7	-0.201
5th quintile (highest)	2.8	3.1	3.5	0.4	0.021
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,595.8	4,641.1	4,465.0	-176.1	-0.182
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ^m	70.4	70.7	70.4	-0.4	-0.058
Age ^f					
Under 50	4.3	4.3	4.2	-0.1	-0.044
50–64	10.2	10.6	10.3	-0.3	-0.059
65–74	46.2	46.6	47.3	0.7	0.113
75–84	26.6	26.0	25.9	-0.1	-0.033
85+	12.7	12.4	12.3	-0.2	-0.029
Race ^f					
Percentage black	6.1	7.2	6.8	-0.3	-0.029
Percentage Hispanic	0.9	0.9	0.8	-0.1	-0.035
Percentage with ESRD	0.9	0.9	0.9	0.0	-0.021

Table 6.C.10. (continued)

Variable	Comparison group mean (N = 1,817)		CPC+ practice mean (N = 636)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.6	2.7	0.1	0.051
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	10.2	10.3	10.2	-0.1	-0.028
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.6	5.5	5.6	0.2	0.082
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.2	87.3	86.2	-1.1	-0.246
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	3.9	4.2	3.9	-0.3	-0.064
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	24.6	24.5	24.4	-0.1	-0.017
Percentage of beneficiaries with cancer	8.4	8.4	8.6	0.1	0.056
Percentage of beneficiaries with COPD	9.6	9.8	9.7	-0.1	-0.032
Percentage of beneficiaries with CKD	16.5	16.7	16.2	-0.5	-0.114
Percentage of beneficiaries with Alzheimer's and related dementia	7.1	7.2	7.0	-0.2	-0.051
Percentage of beneficiaries with heart failure	10.7	10.8	10.9	0.0	0.005
Practice employs at least one NP/PA (SK&A, baseline year)	68.0	69.0	70.0	1.0	0.022
Hospital beds in county per 10,000 population (Area Resource File) ^k					
1st quartile (fewest beds)	16.6	17.7	23.1	5.4	0.127
2nd quartile	27.5	25.5	22.6	-3.0	-0.071
3rd quartile	35.0	31.5	24.3	-7.2	-0.168
4th quartile (most beds)	20.9	25.3	30.1	4.8	0.105
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^k	31.3	30.9	31.3	0.4	0.042

Table 6.C.10. (continued)

Variable	Comparison group mean (N = 1,817)			CPC+ practice mean (N = 636)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
Select other variables (percentage; not included in matching)						
U.S. census region ^g						
Northeast	32.0	33.9	31.9	-2.0	-0.044	
Midwest	39.8	40.1	44.5	4.4	0.089	
South	15.6	12.4	11.2	-1.2	-0.037	
West	12.7	13.7	12.5	-1.2	-0.037	

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource File: 2015–2016 for 2017 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample which we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

^d 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 ARF.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016.

^g The HCC score in the baseline year is based on beneficiaries' diagnoses in 2015.

^h We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

ⁱ The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015.

Table 6.C.10. (continued)

^j Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^k Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014. For hospital beds in the practice's county, we used data from 2013 and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014.

^l Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

^m This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

ⁿ For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices. Details on the selection of external regions are available in Section 6.C.1.

AAHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.11. Post-matching balance for the Track 1 comparison group, combined 2017 and 2018 Starters: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 5,516)		CPC+ group mean (N = 1,490)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Participant in SSP ACO as of January 1 of the first intervention year	57.0	51.4	50.6	-0.8	-0.016
Hospital ownership or health system management or ownership (SK&A, baseline year)	56.9	54.2	53.0	-1.2	-0.024
Experience in selected practice transformation activities ^c	47.8	50.2	52.4	2.2	0.043
Urbanicity of practice's county (Area Resource File) ^d					
Rural	7.8	10.4	10.4	0.0	-0.001
Suburban	19.0	22.1	20.9	-1.3	-0.031
Urban	73.3	67.5	68.8	1.3	0.028
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	20.4	20.3	19.8	-0.5	-0.013
Medium (3 to 24 practitioners)	74.0	73.7	74.9	1.2	0.028
Large (25 or more practitioners)	5.6	6.0	5.3	-0.7	-0.031
Number of Medicare beneficiaries assigned in the baseline year	1,081	1,180	1,224	45	0.044
Percentage of charges that are primary care ^e	71.1	70.4	70.7	0.2	0.014
Mean PBPM Medicare expenditures in baseline year (Winsorized at 98th percentile) ^f	792	790	792	1.3	0.009
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	886	882	878	-3.1	-0.017
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	279.5	284.6	285.2	0.585	0.008
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	503.6	500.7	495.2	-5.504	-0.029
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	867	864	860	-3.6	-0.016

Table 6.C.11. (continued)

Variable	Comparison group mean (N = 5,516)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ group mean (N = 1,490)		
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	895	890	889	-1.0	-0.005
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	882	877	872	-4.1	-0.021
Mean PBPM Medicare spending in the fourth quarter of the baseline year ^f	899	894	890	-3.6	-0.018
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.101	1.101	0.000	0.003
Indian Health Center ^h	0.1	0.3	0.4	0.2	0.026
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	21.4	20.9	20.2	-0.7	-0.018
Three to four	23.7	23.5	22.5	-1.0	-0.024
Five to seven	26.1	25.4	26.0	0.6	0.013
Eight or more	28.8	30.2	31.3	1.1	0.024
Hospital-owned (SK&A, baseline year)	26.5	27.2	27.5	0.3	0.007
Participant in SSP ACO, Track 2 or 3	6.8	5.1	4.7	-0.4	-0.020
Practice is multispecialty ⁱ	22.4	21.5	20.1	-1.4	-0.034
HRR price index (CMS' Medicare Geographic Variation data, 2015) ^j	1.069	1.053	1.046	-0.007	-0.087
Meaningful EHR use ^k					
Never attested	9.2	8.2	7.6	-0.6	-0.024
Attested since 2011 or 2012	79.6	79.1	78.8	-0.4	-0.009
Attested since 2013 or later	11.2	12.6	13.6	1.0	0.030
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	210	223	231	8.5	0.065
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.7	13.7	13.8	0.1	0.032
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	17.0	17.2	17.1	0.0	-0.007

Table 6.C.11. (continued)

Variable	Comparison group mean (N = 5,516)		CPC+ group mean (N = 1,490)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tiers 4 or 5 (\$) ^f	580	582	580	-1.4	-0.010
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.9	4.0	3.9	0.0	-0.027
Area with a shortage of (primary care) health professionals (Area Resource File) ^l	1.9	1.9	1.3	-0.5	-0.047
County median household income (\$) (Area Resource File) ^l	58,055	57,224	57,444	220.2	0.015
County percentage of population in poverty (Area Resource File) ^l	14.2	14.1	13.9	-0.2	-0.046
County Medicare Advantage penetration rate (Area Resource File) ^l	28.8	28.2	28.0	-0.2	-0.014
Percentage male ^f	42.0	41.9	41.8	-0.1	-0.011
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	79.2	79.4	79.6	0.2	0.016
Within-state quintile of dually eligible patients ^m					
1st quintile (lowest)	21.4	22.6	23.8	1.2	0.027
2nd quintile	32.6	32.0	32.0	0.0	0.000
3rd quintile	24.0	24.7	23.6	-1.1	-0.025
4th quintile	16.0	15.2	14.7	-0.5	-0.013
5th quintile (highest)	6.0	5.5	5.9	0.3	0.015
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,625.5	4,673.5	4,553.5	-120.0	-0.113
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ⁿ	68.3	68.4	68.7	0.3	0.038
Age ^f					
Under 50	4.7	4.6	4.4	-0.2	-0.047
50–64	10.9	10.9	10.8	-0.1	-0.021
65–74	45.7	45.8	46.2	0.4	0.047
75–84	26.2	26.3	26.3	0.0	0.001

Table 6.C.11. (continued)

Variable	Comparison group mean (N = 5,516)		CPC+ group mean (N = 1,490)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
85+	12.4	12.4	12.4	0.0	-0.010
Race ^f					
Percentage black	6.3	5.8	5.7	-0.2	-0.015
Percentage Hispanic	1.1	0.9	0.7	-0.2	-0.057
Percentage with ESRD	0.9	0.9	0.9	0.0	-0.026
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.7	2.7	0.0	-0.006
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	9.9	9.8	9.8	0.0	-0.011
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.3	5.4	5.4	0.1	0.029
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.4	88.1	87.8	-0.4	-0.082
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	4.7	4.8	5.0	0.2	0.017
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.4	25.4	25.3	-0.1	-0.008
Percentage of beneficiaries with cancer	8.1	8.2	8.2	0.0	0.020
Percentage of beneficiaries with COPD	9.8	10.1	10.3	0.2	0.038
Percentage of beneficiaries with CKD	16.5	16.1	15.9	-0.2	-0.039
Percentage of beneficiaries with Alzheimer's and related dementia	7.4	7.5	7.4	0.0	-0.011
Percentage of beneficiaries with heart failure	10.7	11.0	11.0	0.1	0.013
Practice employs at least one NP/PA (SK&A, baseline year)	62.9	62.9	62.8	-0.1	-0.003

Table 6.C.11. (continued)

Variable	Comparison group mean (N = 5,516)		CPC+ group mean (N = 1,490)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Hospital beds in county per 10,000 population (Area Resource File) ^l					
1st quartile (fewest beds)	22.0	22.2	20.6	-1.7	-0.041
2nd quartile	28.3	25.0	26.1	1.1	0.025
3rd quartile	28.2	26.6	24.8	-1.9	-0.044
4th quartile (most beds)	21.5	26.1	28.5	2.4	0.054
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^l	30.7	30.9	31.0	0.2	0.017
Ever participated in SSP ACO as of January 1 of the first intervention year	61.7	56.7	60.4	3.6	0.074
Select other variables (percentage; not included in matching)					
U.S. census region ^o					
Northeast	26.7	27.4	27.4	0.1	0.001
Midwest	34.5	36.5	39.6	3.2	0.065
South	21.1	19.7	16.1	-3.6	-0.098
West	17.7	16.5	16.8	0.4	0.010

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource Files: 2015–2016 for 2017 Starters and 2016–2017 for 2018 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, our analyses of Medicare claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), so we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample that we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAAHC, URAC, or state medical-home recognition status (whether practice is in a medical home).

Table 6.C.11. (continued)

^d 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 ARFs for both 2017 and 2018 Starters.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016 for the 2017 Starters and 2017 for the 2018 Starters.

^g For 2017 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2015. For 2018 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2016.

^h We identified Indian Health Centers by first flagging practices where 90 percent of Medicare beneficiaries assigned in the baseline year were American Indian/Alaska Native; we then confirmed these practices as Indian Health Centers by comparing practice name and address with the Indian Health Service website list of Indian Health Service facilities.

ⁱ We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

^j The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015 and is used for both the 2017 and 2018 Starters.

^k Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^l Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016 for the 2017 Starters and data from years 2016 and 2017 for the 2018 Starters. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014 for the 2017 Starters and data from 2015 for the 2018 Starters. For hospital beds in the practice's county, we used data from 2013 for the 2017 Starters and data from 2014 for the 2018 Starters and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data for both the 2017 and 2018 Starters. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014 for the 2017 Starters and years 2011–2015 for the 2018 Starters.

^m Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

ⁿ This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

^o For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices, separately for the 2017 and 2018 Starters. There were also some overlaps in the comparison market areas for the 2017 and 2018 Starters. Details on the selection of external regions are available in Section 6.C.1.

AAAHHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-Payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.12. Post-matching balance for the Track 2 comparison group, combined 2017 and 2018 Starters: practice values weighted by number of beneficiaries

Variable	Comparison group mean (N = 4,041)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ group mean (N = 1,561)		
High-priority variables (percentage, unless otherwise noted)					
Participant in SSP ACO as of January 1 of the first intervention year	48.8	43.4	43.5	0.0	0.001
Hospital ownership or health system management or ownership (SK&A, baseline year)	61.2	59.9	57.9	-2.1	-0.042
Experience in selected practice transformation activities ^c	60.0	73.2	79.3	6.0	0.149
Urbanicity of practice's county (Area Resource File) ^d					
Rural	7.6	8.3	7.7	-0.6	-0.021
Suburban	18.5	18.0	16.3	-1.7	-0.045
Urban	73.9	73.8	76.0	2.2	0.052
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	14.3	12.8	12.1	-0.7	-0.021
Medium (3 to 24 practitioners)	76.7	77.9	76.9	-1.0	-0.023
Large (25 or more practitioners)	9.0	9.3	10.9	1.6	0.052
Number of Medicare beneficiaries assigned in the baseline year	1,373	1,344	1,403	59.4	0.045
Percentage of charges that are primary care ^e	70.0	71.0	70.9	-0.1	-0.004
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	790	788	791	3.1	0.022
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	883	878	877	-1.1	-0.006
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	280.1	284.2	287.3	3.069	0.041
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	491.0	493.4	491.8	-1.572	-0.009
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	862	861	863	1.7	0.008

Table 6.C.12. (continued)

Variable	Comparison group mean (N = 4,041)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ group mean (N = 1,561)		
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	893	889	889	0.3	0.002
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	880	875	871	-3.6	-0.018
Mean PBPM Medicare spending in the fourth quarter of the baseline year ^f	895	886	884	-1.7	-0.009
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.104	1.103	-0.001	-0.009
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	15.0	13.4	12.6	-0.9	-0.026
Three to four	20.9	21.9	22.1	0.2	0.004
Five to seven	24.7	26.2	25.7	-0.5	-0.011
Eight or more	39.4	38.4	39.6	1.2	0.024
Hospital-owned (SK&A, baseline year)	28.4	30.3	28.9	-1.4	-0.031
Participant in SSP ACO, Track 2 or 3	6.2	5.8	7.5	1.6	0.063
Practice is multispecialty ^h	27.8	26.6	27.3	0.7	0.025
HRR price index (CMS' Medicare Geographic Variation data, 2015) ⁱ	1.068	1.052	1.046	-0.007	-0.084
Meaningful EHR use ^j					
Never attested	4.1	3.9	3.5	-0.5	-0.025
Attested since 2011 or 2012	87.8	87.6	88.4	0.7	0.023
Attested since 2013 or later	8.1	8.4	8.2	-0.3	-0.010
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	210	201	197	-3.7	-0.032
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.8	13.9	13.8	0.0	-0.019
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	16.9	17.2	17.0	-0.2	-0.039
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	577	578	576	-2.2	-0.016

Table 6.C.12. (continued)

Variable	Comparison group mean (N = 4,041)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ group mean (N = 1,561)		
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.9	4.0	4.0	0.0	0.009
Area with a shortage of (primary care) health professionals (Area Resource File) ^k	1.4	1.3	1.3	-0.1	-0.006
County median household income (\$) (Area Resource File) ^k	57,797	57,198	56,959	-238.4	-0.017
County percentage of population in poverty (Area Resource File) ^k	14.2	14.2	14.2	0.01	0.001
County Medicare Advantage penetration rate (%) (Area Resource File) ^k	29.2	30.5	31.6	1.1	0.082
Percentage male ^f	42.1	42.0	42.1	0.1	0.015
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	79.8	79.3	79.7	0.3	0.033
Within-state quintile of dually eligible patients ^l					
1st quintile (lowest)	21.4	20.3	22.2	1.9	0.046
2nd quintile	33.5	34.7	35.6	0.8	0.017
3rd quintile	25.5	26.6	25.2	-1.5	-0.034
4th quintile	15.0	13.4	12.4	-1.0	-0.029
5th quintile (highest)	4.6	4.9	4.6	-0.3	-0.015
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,624.1	4,712.8	4,609.2	-103.6	-0.098
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ^m	68.8	68.8	69.2	0.4	0.060
Age ^f					
Under 50	4.6	4.7	4.5	-0.2	-0.057
50–64	10.7	11.1	10.8	-0.3	-0.065
65–74	45.7	45.8	46.6	0.7	0.102
75–84	26.5	26.0	25.9	-0.1	-0.028
85+	12.6	12.3	12.3	-0.1	-0.010

Table 6.C.12. (continued)

Variable	Comparison group mean (N = 4,041)		CPC+ group mean (N = 1,561)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Race ^f					
Percentage black	6.3	6.5	6.2	-0.3	-0.027
Percentage Hispanic	0.9	0.9	0.7	-0.2	-0.055
Percentage with ESRD	0.9	0.9	0.9	0.0	-0.008
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.7	2.7	0.0	0.014
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	9.8	9.9	10.1	0.2	0.044
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.3	5.2	5.3	0.1	0.062
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.4	87.7	86.8	-0.9	-0.181
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	4.6	4.9	5.4	0.5	0.046
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	24.9	24.7	24.4	-0.3	-0.045
Percentage of beneficiaries with cancer	8.2	8.2	8.2	0.0	0.010
Percentage of beneficiaries with COPD	9.5	9.8	9.9	0.0	0.004
Percentage of beneficiaries with CKD	16.5	16.5	16.5	0.0	0.005
Percentage of beneficiaries with Alzheimer's and related dementia	7.3	7.5	7.4	-0.1	-0.019
Percentage of beneficiaries with heart failure	10.6	10.8	10.8	0.1	0.013
Practice employs at least one NP/PA (SK&A, baseline year)	67.6	68.9	70.2	1.3	0.028

Table 6.C.12. (continued)

Variable	Comparison group mean (N = 4,041)			CPC+ group mean (N = 1,561)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
Hospital beds in county per 10,000 population (Area Resource File) ^k						
1st quartile (fewest beds)	21.1	23.2		24.2	1.0	0.023
2nd quartile	26.4	24.3		23.2	-1.1	-0.026
3rd quartile	29.5	26.0		23.2	-2.7	-0.065
4th quartile (most beds)	23.0	26.6		29.4	2.9	0.063
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^k	30.6	30.8		31.3	0.4	0.044
Ever participated in SSP ACO as of January 1 of the first intervention year	52.7	47.0		49.9	2.9	0.057
Select other variables (percentage; not included in matching)						
U.S. census region ⁿ						
Northeast	26.7	28.2		27.2	-1.0	-0.023
Midwest	36.2	35.1		35.9	0.8	0.017
South	18.9	18.9		18.7	-0.2	-0.005
West	18.2	17.9		18.3	0.4	0.010

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS ; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource Files: 2015–2016 for 2017 Starters and 2016–2017 for 2018 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, our analyses of Medicare claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), so we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample used in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAAHC, URAC, or state medical-home recognition status (whether practice is in a medical home).

Table 6.C.12. (continued)

^d 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 ARFs for both 2017 and 2018 Starters.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016 for the 2017 Starters and 2017 for the 2018 Starters.

^g For 2017 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2015. For 2018 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2016.

^h We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

ⁱ The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015 and is used for both the 2017 and 2018 Starters.

^j Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^k Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016 for the 2017 Starters and data from years 2016 and 2017 for the 2018 Starters. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014 for the 2017 Starters and data from 2015 for the 2018 Starters. For hospital beds in the practice's county, we used data from 2013 for the 2017 Starters and data from 2014 for the 2018 Starters and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data for both the 2017 and 2018 Starters. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014 for the 2017 Starters and years 2011–2015 for the 2018 Starters.

^l Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

^m This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

ⁿ For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices, separately for the 2017 and 2018 Starters. There were also some overlaps in the comparison market areas for the 2017 and 2018 Starters. Details on the selection of external regions are available in Section 6.C.1.

AAAHHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-Payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.13. Post-matching balance for the Track 1-non-SSP comparison group, combined 2017 and 2018 Starters: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 2,470)		CPC+ practice mean (N = 722)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	53.8	54.8	53.8	-1.0	-0.021
Experience in selected practice transformation activities ^c	44.6	54.6	60.8	6.3	0.128
Urbanicity of practice's county (Area Resource File) ^d					
Rural	10.9	14.5	14.7	0.3	0.007
Suburban	25.2	25.2	23.0	-2.1	-0.050
Urban	63.9	60.4	62.2	1.9	0.038
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	23.1	20.1	18.3	-1.9	-0.049
Medium (3to 24 practitioners)	70.2	72.2	73.8	1.5	0.035
Large (25 or more practitioners)	6.7	7.6	8.0	0.4	0.014
Number of Medicare beneficiaries assigned in the baseline year	1,046	1,246	1,302	55.8	0.051
Percentage of charges that are primary care ^e	71.5	70.9	71.0	0.1	0.005
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	785	775	775	-0.5	-0.003
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	879	863	857	-6.0	-0.032
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	280.4	285.0	285.2	0.154	0.002
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	531.9	523.8	514.9	-8.898	-0.045
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	860	849	845	-3.2	-0.015
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	887	871	867	-3.8	-0.018
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	875	858	849	-8.9	-0.043

Table 6.C.13. (continued)

Variable	Comparison group mean (N = 2,470)		CPC+ practice mean (N = 722)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Mean PBPM Medicare spending, in the fourth quarter of the baseline year ^f	893	874	868	-6.5	-0.032
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.091	1.086	-0.005	-0.030
Indian Health Center ^h	0.2	0.6	0.9	0.3	0.036
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	23.9	20.5	18.5	-2.0	-0.052
Three to four	22.9	23.2	20.9	-2.3	-0.057
Five to seven	23.4	23.2	24.0	0.9	0.020
Eight or more	29.8	33.1	36.6	3.5	0.072
Hospital-owned (SK&A, baseline year)	31.8	33.1	29.6	-3.6	-0.078
Practice is multispecialty ⁱ	24.1	23.6	24.4	0.8	0.018
HRR price index (CMS' Medicare Geographic Variation data, 2015) ^j	1.063	1.040	1.032	-0.008	-0.112
Meaningful EHR use ^k					
Never attested	13.0	10.5	9.0	-1.5	-0.053
Attested since 2011 or 2012	76.0	77.1	77.7	0.6	0.014
Attested since 2013 or later	11.1	12.3	13.3	1.0	0.028
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	217	232	224	-7.8	-0.061
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.8	13.6	13.7	0.1	0.025
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	17.2	17.1	16.9	-0.2	-0.042
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	571	571	571	0.3	0.002
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	4.0	4.0	4.0	0.0	-0.014

Table 6.C.13. (continued)

Variable	Comparison group mean (N = 2,470)		CPC+ practice mean (N = 722)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
Area with a shortage of (primary care) health professionals (Area Resource File) ^l	2.3	2.4	0.8	-1.6	-0.173
County median household income (\$) (Area Resource File) ^l	55,500	54,549	55,065	515.9	0.037
County percentage of population in poverty (Area Resource File) ^l	14.9	14.8	14.6	-0.2	-0.043
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^l	29.1	28.0	29.6	1.6	0.120
Percentage male ^f	42.0	41.7	42.0	0.3	0.047
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	78.0	78.4	78.6	0.1	0.011
Within-state quintile of dually eligible patients ^m					
1st quintile (lowest)	19.6	21.0	22.2	1.1	0.028
2nd quintile	31.4	32.1	31.9	-0.2	-0.005
3rd quintile	24.9	24.4	21.9	-2.4	-0.059
4th quintile	17.2	16.9	17.7	0.9	0.023
5th quintile (highest)	6.9	5.6	6.3	0.7	0.027
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,654.4	4,665.7	4,597.7	-68.0	-0.065
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow up visit ⁿ	66.7	66.8	67.0	0.2	0.028
Age ^f					
Under 50	5.0	4.8	4.8	-0.1	-0.016
50–64	11.5	11.3	11.3	0.0	-0.006
65–74	45.2	45.6	46.3	0.8	0.098
75–84	26.1	26.2	25.7	-0.5	-0.091
85+	12.3	12.1	11.9	-0.2	-0.035
Race ^f					
Percentage black	6.5	6.2	6.1	-0.1	-0.009
Percentage Hispanic	1.1	0.9	0.7	-0.3	-0.120
Percentage with ESRD	1.0	0.9	1.0	0.0	0.033

Table 6.C.13. (continued)

Variable	Comparison group mean (N = 2,470)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 722)		
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.6	2.7	0.0	0.026
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	9.5	9.4	9.6	0.2	0.051
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.2	5.2	5.2	0.1	0.028
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.6	88.4	87.4	-1.0	-0.229
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	5.2	5.0	5.8	0.8	0.054
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.7	25.3	24.9	-0.4	-0.054
Percentage of beneficiaries with cancer	7.8	7.9	7.9	0.0	0.012
Percentage of beneficiaries with COPD	10.0	10.3	10.3	0.0	-0.006
Percentage of beneficiaries with CKD	16.4	15.7	15.7	0.0	0.006
Percentage of beneficiaries with Alzheimer's and related dementia	7.4	7.4	7.3	-0.1	-0.026
Percentage of beneficiaries with heart failure	10.9	11.0	10.7	-0.3	-0.077
Practice employs at least one NP/PA (SK&A, baseline year)	60.9	63.0	66.7	3.7	0.079
Hospital beds in county per 10,000 population (Area Resource File) ^l					
1st quartile (fewest beds)	23.9	22.9	21.2	-1.8	-0.043
2nd quartile	27.2	25.3	27.9	2.7	0.059
3rd quartile	26.2	24.7	17.2	-7.5	-0.197
4th quartile (most beds)	22.7	27.1	33.7	6.6	0.139
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^l	29.1	29.5	30.4	0.9	0.079

Table 6.C.13. (continued)

Variable	Comparison group mean (N = 2,470)			CPC+ practice mean (N = 722)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
Ever participated in SSP ACO as of January 1 of the first intervention year	10.8	11.1		19.8	8.8	0.220
Select other variables (percentage; not included in matching)						
U.S. census region ^o						
Northeast	0.203	0.195		0.192	-0.003	-0.008
Midwest	0.338	0.350		0.394	0.044	0.090
South	0.234	0.252		0.199	-0.053	-0.133
West	0.225	0.203		0.215	0.012	0.030

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource Files: 2015–2016 for 2017 Starters and 2016–2017 for 2018 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample that we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

^d 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 ARFs for both 2017 and 2018 Starters.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016 for the 2017 Starters and 2017 for the 2018 Starters.

^g For 2017 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2015. For 2018 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2016.

Table 6.C.13. (continued)

^h We identified Indian Health Centers by first flagging practices where 90 percent of Medicare beneficiaries assigned in the baseline year were American Indian/Alaska Native; we then confirmed these practices as Indian Health Centers by comparing practice name and address with the Indian Health Service website list of Indian Health Service facilities.

ⁱ We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

^j The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015 and is used for both the 2017 and 2018 Starters.

^k Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^l Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016 for the 2017 Starters and data from years 2016 and 2017 for the 2018 Starters. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014 for the 2017 starters and data from 2015 for the 2018 Starters. For hospital beds in the practice's county, we used data from 2013 for the 2017 Starters and data from 2014 for the 2018 starters and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data for both the 2017 and 2018 Starters. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014 for the 2017 Starters and years 2011–2015 for the 2018 Starters.

^m Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

ⁿ This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

^o For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices, separately for the 2017 and 2018 Starters. There were also some overlaps in the comparison market areas for the 2017 and 2018 Starters. Details on the selection of external regions are available in section 6.C.1.

AAHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.14. Post-matching balance for the Track 1-SSP comparison group, combined 2017 and 2018 Starters: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 3,046)		CPC+ practice mean (N = 768)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights			
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	59.3	53.6	52.3	-1.4	-0.027
Experience in selected practice transformation activities ^c	50.2	46.0	44.1	-2.0	-0.040
Urbanicity of practice's county (Area Resource File) ^d					
Rural	5.4	6.5	6.1	-0.4	-0.017
Suburban	14.3	19.3	18.7	-0.5	-0.014
Urban	80.3	74.2	75.2	1.0	0.022
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	18.4	20.4	21.2	0.8	0.020
Medium (3 to 24 practitioners)	76.8	75.0	76.0	1.0	0.023
Large (25 or more practitioners)	4.9	4.5	2.7	-1.8	-0.110
Number of Medicare beneficiaries assigned in the baseline year	1,108	1,117	1,149	31.6	0.033
Percentage of charges that are primary care ^e	70.8	70.0	70.4	0.3	0.021
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	797	805	808	3.5	0.024
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	891	899	899	0.3	0.001
Acute care hospitalizations in baseline year per 1,000 beneficiaries, annualized ^f	278.9	284.2	285.2	0.994	0.014
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	482.2	478.9	476.0	-2.898	-0.016
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	871	879	875	-3.5	-0.016
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	900	909	911	2.3	0.011
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	887	895	896	1.1	0.006

Table 6.C.14. (continued)

Variable	Comparison group mean (N = 3,046)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 768)		
Mean PBPM Medicare spending in the fourth quarter of the baseline year ^f	904	912	912	-0.1	0.000
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.098	1.111	1.117	0.006	0.037
Indian Health Center ^h	0.0	0.0	0.0	0.0	N/A
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	19.5	21.2	21.8	0.6	0.014
Three to four	24.3	23.8	24.1	0.3	0.007
Five to seven	28.1	27.5	27.9	0.4	0.009
Eight or more	28.1	27.5	26.2	-1.3	-0.029
Hospital-owned (SK&A, baseline year)	22.6	21.6	25.4	3.9	0.089
Participant in SSP ACO, Track 2 or 3	11.9	10.0	9.3	-0.7	-0.024
Practice is multispecialty ⁱ	21.2	19.4	15.9	-3.5	-0.096
HRR price index (CMS' Medicare Geographic Variation data, 2015) ^j	1.074	1.065	1.060	-0.005	-0.060
Meaningful EHR use ^k					
Never attested	6.3	6.1	6.2	0.1	0.006
Attested since 2011 or 2012	82.3	81.1	79.8	-1.2	-0.031
Attested since 2013 or later	11.4	12.9	14.0	1.1	0.032
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	205	214	238	24.2	0.181
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.7	13.8	13.9	0.1	0.038
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	16.8	17.2	17.4	0.1	0.025
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	587	593	590	-2.7	-0.021
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.9	4.0	3.9	-0.1	-0.040

Table 6.C.14. (continued)

Variable	Comparison group mean (N = 3,046)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 768)		
Area with a shortage of (primary care) health professionals (Area Resource File) ^l	1.6	1.4	1.8	0.4	0.032
County median household income (\$) (Area Resource File) ^l	59,981	59,758	59,772	13.6	0.001
County percentage of population in poverty (Area Resource File) ^l	13.8	13.5	13.3	-0.3	-0.054
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^l	28.6	28.4	26.5	-2.0	-0.156
Percentage male ^f	41.9	42.0	41.6	-0.4	-0.062
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	80.2	80.4	80.6	0.3	0.023
Within-state quintile of dually eligible patients ^m					
1st quintile (lowest)	22.8	24.2	25.4	1.2	0.028
2nd quintile	33.5	31.8	32.1	0.3	0.005
3rd quintile	23.4	24.9	25.2	0.3	0.007
4th quintile	15.0	13.6	11.8	-1.8	-0.056
5th quintile (highest)	5.2	5.5	5.5	0.0	0.002
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,603.7	4,680.9	4,510.3	-170.6	-0.157
Percentage of eligibility inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ⁿ	69.5	70.0	70.4	0.4	0.058
Age ^f					
Under 50	4.5	4.4	4.1	-0.3	-0.087
50–64	10.5	10.5	10.3	-0.2	-0.039
65–74	46.1	46.0	46.0	0.0	-0.004
75–84	26.3	26.3	26.8	0.5	0.093
85+	12.6	12.8	12.8	0.1	0.014
Race ^f					
Percentage black	6.1	5.5	5.3	-0.2	-0.027
Percentage Hispanic	1.1	0.8	0.8	0.0	-0.012
Percentage with ESRD	0.9	0.9	0.8	-0.1	-0.083

Table 6.C.14. (continued)

Variable	Comparison group mean (N = 3,046)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 768)		
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.7	2.7	-0.1	-0.039
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	10.2	10.2	9.9	-0.3	-0.086
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.4	5.6	5.7	0.1	0.035
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.3	87.9	88.1	0.3	0.064
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	4.4	4.6	4.2	-0.4	-0.047
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.2	25.5	25.8	0.3	0.033
Percentage of beneficiaries with cancer	8.3	8.4	8.5	0.1	0.031
Percentage of beneficiaries with COPD	9.6	9.9	10.3	0.4	0.079
Percentage of beneficiaries with CKD	16.6	16.5	16.0	-0.4	-0.083
Percentage of beneficiaries with Alzheimer's and related dementia	7.3	7.6	7.6	0.0	0.003
Percentage of beneficiaries with heart failure	10.6	10.9	11.4	0.4	0.092
Practice employs at least one NP/PA (SK&A, baseline year)	64.5	62.9	58.9	-3.9	-0.080
Hospital beds in county per 10,000 population (Area Resource File) ^l					
1st quartile (fewest beds)	20.6	21.5	20.0	-1.6	-0.039
2nd quartile	29.1	24.8	24.4	-0.4	-0.010
3rd quartile	29.7	28.5	32.1	3.6	0.078
4th quartile (most beds)	20.6	25.2	23.5	-1.6	-0.039
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^l	32.0	32.1	31.7	-0.4	-0.039

Table 6.C.14. (continued)

Variable	Comparison group mean (N = 3,046)			CPC+ practice mean (N = 768)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
Select other variables (percentage; not included in matching)						
U.S. census region ^c						
Northeast	31.4	34.9	35.5	0.7	0.014	
Midwest	35.0	37.8	39.9	2.0	0.041	
South	19.5	14.4	12.3	-2.1	-0.064	
West	14.1	12.8	12.3	-0.6	-0.018	

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource Files: 2015–2016 for 2017 Starters and 2016–2017 for 2018 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample which we will use in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

^d 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 ARFs for both 2017 and 2018 Starters.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016 for the 2017 Starters and 2017 for the 2018 Starters.

^g For 2017 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2015. For 2018 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2016.

Table 6.C.14. (continued)

^h We identified Indian Health Centers by first flagging practices where 90 percent of Medicare beneficiaries assigned in the baseline year were American Indian/Alaska Native; we then confirmed these practices as Indian Health Centers by comparing practice name and address with the Indian Health Service website list of Indian Health Service facilities.

ⁱ We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

^j The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015 and is used for both the 2017 and 2018 Starters.

^k Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^l Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016 for the 2017 Starters and data from years 2016 and 2017 for the 2018 Starters. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014 for the 2017 Starters and data from 2015 for the 2018 Starters. For hospital beds in the practice's county, we used data from 2013 for the 2017 Starters and data from 2014 for the 2018 Starters and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data for both the 2017 and 2018 Starters. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014 for the 2017 Starters and years 2011–2015 for the 2018 Starters.

^m Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

ⁿ This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

^o For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices, separately for the 2017 and 2018 Starters. There were also some overlaps in the comparison market areas for the 2017 and 2018 Starters. Details on the selection of external regions are available in Section 6.C.1.

AAHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.15. Post-matching balance for the Track 2-non-SSP comparison group, combined 2017 and 2018 Starters: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 2,176)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 918)		
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	59.3	57.4	55.9	-1.6	-0.032
Experience in selected practice transformation activities ^c	54.3	71.9	78.7	6.8	0.165
Urbanicity of practice's county (Area Resource File) ^d					
Rural	9.8	10.9	10.7	-0.2	-0.006
Suburban	22.7	18.5	16.6	-1.9	-0.052
Urban	67.5	70.6	72.7	2.1	0.047
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	14.5	13.6	12.2	-1.4	-0.043
Medium (3 to 24 practitioners)	78.2	78.6	78.5	-0.2	-0.005
Large (25 or more practitioners)	7.2	7.7	9.3	1.6	0.055
Number of Medicare beneficiaries assigned in the baseline year	1,286	1,243	1,285	42.0	0.037
Percentage of charges that are primary care ^e	70.9	71.4	71.3	-0.2	-0.011
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	783	779	781	1.6	0.011
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	875	868	863	-5.1	-0.027
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	278.6	282.0	282.0	0.017	0.000
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	513.2	507.9	501.9	-6.025	-0.032
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	855	850	849	-1.5	-0.007
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	882	874	869	-5.0	-0.024
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	873	865	858	-6.5	-0.032

Table 6.C.15. (continued)

Variable	Comparison group mean (N = 2,176)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 918)		
Mean PBPM Medicare spending in the fourth quarter of the baseline year ^f	886	878	873	-5.2	-0.027
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.097	1.101	1.093	-0.008	-0.049
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	15.0	14.3	12.8	-1.5	-0.045
Three to four	21.4	22.8	23.3	0.5	0.011
Five to seven	26.2	27.0	27.6	0.7	0.015
Eight or more	37.4	35.9	36.3	0.3	0.007
Hospital-owned (SK&A, baseline year)	30.7	33.7	31.3	-2.5	-0.054
Practice is multispecialty ^h	28.3	26.7	28.3	1.6	0.036
HRR price index (CMS' Medicare Geographic Variation data, 2015) ⁱ	1.064	1.042	1.041	-0.001	-0.015
Meaningful EHR use ^j					
Never attested	5.3	4.8	3.7	-1.1	-0.060
Attested since 2011 or 2012	86.4	86.2	88.1	1.9	0.059
Attested since 2013 or later	8.3	9.0	8.2	-0.8	-0.028
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	213	202	200	-2.4	-0.020
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.9	14.0	13.8	-0.2	-0.075
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	17.2	17.5	17.2	-0.3	-0.051
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	565	565	567	1.5	0.011
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	4.0	4.1	4.1	0.0	-0.005
Area with a shortage of (primary care) health professionals (Area Resource File) ^k	1.3	1.4	1.4	0.1	0.005

Table 6.C.15. (continued)

Variable	Comparison group mean (N = 2,176)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 918)		
County median household income (\$) (Area Resource File) ^k	56,383	56,270	56,569	299.3	0.021
County percentage of population in poverty (Area Resource File) ^k	14.7	14.4	14.4	0.0	0.009
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^k	30.0	31.5	32.1	0.6	0.039
Percentage male ^f	42.2	41.9	42.1	0.2	0.027
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	78.7	78.3	78.7	0.4	0.034
Within-state quintile of dually eligible patients ^l					
1st quintile (lowest)	19.5	20.2	20.5	0.3	0.007
2nd quintile	33.4	35.2	35.2	0.0	-0.001
3rd quintile	26.0	25.3	23.4	-1.9	-0.044
4th quintile	14.7	12.9	15.5	2.6	0.071
5th quintile (highest)	6.4	6.3	5.4	-0.9	-0.041
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,642.7	4,759.3	4,694.3	-65.0	-0.059
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ^m	67.3	67.3	68.3	1.0	0.138
Age ^f					
Under 50	4.8	5.0	4.8	-0.3	-0.063
50–64	11.1	11.5	11.2	-0.4	-0.065
65–74	45.3	45.3	46.1	0.8	0.097
75–84	26.3	26.0	25.8	-0.2	-0.035
85+	12.5	12.2	12.2	0.0	0.004
Race ^f					
Percentage black	6.6	6.1	5.7	-0.3	-0.033
Percentage Hispanic	1.0	0.8	0.6	-0.2	-0.088
Percentage with ESRD	1.0	1.0	1.0	0.0	-0.004
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.8	2.8	0.0	-0.009

Table 6.C.15. (continued)

Variable	Comparison group mean (N = 2,176)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 918)		
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	9.5	9.7	10.0	0.3	0.075
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.1	5.0	5.1	0.1	0.052
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.6	87.9	87.1	-0.7	-0.144
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	5.2	5.5	6.5	1.0	0.081
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	25.1	24.8	24.4	-0.4	-0.067
Percentage of beneficiaries with cancer	8.0	8.0	7.9	-0.1	-0.028
Percentage of beneficiaries with COPD	9.5	9.8	10.0	0.1	0.037
Percentage of beneficiaries with CKD	16.5	16.2	16.7	0.5	0.075
Percentage of beneficiaries with Alzheimer's and related dementia	7.4	7.6	7.6	0.0	-0.001
Percentage of beneficiaries with heart failure	10.6	10.7	10.8	0.1	0.018
Practice employs at least one NP/PA (SK&A, baseline year)	66.9	68.5	70.3	1.8	0.040
Hospital beds in county per 10,000 population (Area Resource File) ^k					
1st quartile (fewest beds)	25.1	27.3	25.1	-2.2	-0.051
2nd quartile	26.0	23.8	23.9	0.1	0.002
3rd quartile	24.6	22.1	22.9	0.8	0.019
4th quartile (most beds)	24.3	26.8	28.1	1.3	0.029
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^k	30.0	30.9	31.2	0.3	0.036
Ever participated in SSP ACO as of January 1 of the first intervention year	7.5	6.3	11.3	5.0	0.159

Table 6.C.15. (continued)

Variable	Comparison group mean (N = 2,176)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 918)		
Select other variables (percentage; not included in matching)					
U.S. census region ^c					
Northeast	22.7	24.6	24.2	-0.3	-0.008
Midwest	31.9	30.3	28.8	-1.5	-0.034
South	21.6	23.7	24.0	0.3	0.007
West	23.9	21.4	22.9	1.6	0.037

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource Files: 2015–2016 for 2017 Starters and 2016–2017 for 2018 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample used in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

^d 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 ARFs for both 2017 and 2018 Starters.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016 for the 2017 Starters and 2017 for the 2018 Starters.

^g For 2017 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2015. For 2018 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2016.

^h We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

Table 6.C.15. (continued)

ⁱ The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015 and is used for both the 2017 and 2018 Starters.

^j Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^k Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016 for the 2017 Starters and data from years 2016 and 2017 for the 2018 Starters. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014 for the 2017 Starters and data from 2015 for the 2018 Starters. For hospital beds in the practice's county, we used data from 2013 for the 2017 Starters and data from 2014 for the 2018 Starters and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data for both the 2017 and 2018 Starters. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014 for the 2017 Starters and years 2011–2015 for the 2018 Starters.

^l Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

^m This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

ⁿ For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices, separately for the 2017 and 2018 Starters. There were also some overlaps in the comparison market areas for the 2017 and 2018 Starters. Details on the selection of external regions are available in Section 6.C.1.

AAAHHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Table 6.C.16. Post-matching balance for the Track 2-SSP comparison group, combined 2017 and 2018 Starters: practice means weighted by number of beneficiaries

Variable	Comparison group mean (N = 1,865)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 643)		
High-priority variables (percentage, unless otherwise noted)					
Hospital ownership or health system management or ownership (SK&A, baseline year)	63.2	63.2	60.5	-2.8	-0.056
Experience in selected practice transformation activities ^c	66.1	74.9	80.0	5.1	0.127
Urbanicity of practice's county (Area Resource File) ^d					
Rural	5.4	4.9	3.8	-1.1	-0.055
Suburban	14.1	17.2	15.9	-1.4	-0.037
Urban	80.5	77.9	80.3	2.4	0.061
Practice size category (SK&A, baseline year)					
Small (1 to 2 practitioners)	14.1	11.7	12.0	0.3	0.009
Medium (3 to 24 practitioners)	75.1	76.9	75.0	-2.0	-0.045
Large (25 or more practitioners)	10.8	11.4	13.1	1.7	0.049
Number of Medicare beneficiaries assigned in the baseline year	1,464	1,475	1,557	81.8	0.054
Percentage of charges that are primary care ^e	69.0	70.3	70.4	0.1	0.004
Mean PBPM Medicare expenditures in the baseline year (Winsorized at 98th percentile) ^f	797	798	803	5.1	0.036
Mean PBPM Medicare expenditures in the baseline year (non-Winsorized) ^f	891	892	896	4.0	0.021
Acute care hospitalizations in the baseline year per 1,000 beneficiaries, annualized ^f	281.6	287.1	294.1	7.035	0.096
Outpatient ED visits in the baseline year per 1,000 beneficiaries, annualized ^f	467.7	474.4	478.6	4.242	0.029
Mean PBPM Medicare spending in the first quarter of the baseline year ^f	869	875	881	5.9	0.026
Mean PBPM Medicare spending in the second quarter of the baseline year ^f	903	908	915	7.2	0.034
Mean PBPM Medicare spending in the third quarter of the baseline year ^f	888	887	888	0.2	0.001

Table 6.C.16. (continued)

Variable	Comparison group mean (N = 1,865)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 643)		
Mean PBPM Medicare spending in the fourth quarter of the baseline year ^f	903	896	899	2.8	0.014
Mean HCC score among beneficiaries assigned in the baseline year ^g	1.099	1.109	1.116	0.007	0.045
Medium-priority variables (percentage, unless otherwise noted)					
Number of primary care practitioners (SK&A, baseline year)					
One to two	14.9	12.3	12.3	0.0	0.000
Three to four	20.4	20.8	20.6	-0.2	-0.006
Five to seven	23.1	25.2	23.1	-2.0	-0.048
Eight or more	41.6	41.7	44.0	2.3	0.046
Hospital-owned (SK&A, baseline year)	25.9	25.8	25.9	0.1	0.001
Participant in SSP ACO, Track 2 or 3	12.8	13.4	17.2	3.8	0.100
Practice is multispecialty ^h	27.2	26.5	25.9	-0.5	-0.013
HRR price index (CMS' Medicare Geographic Variation data, 2015) ⁱ	1.072	1.065	1.052	-0.013	-0.193
Meaningful EHR use ^j					
Never attested	2.9	2.7	3.1	0.4	0.023
Attested since 2011 or 2012	89.3	89.5	88.8	-0.8	-0.025
Attested since 2013 or later	7.8	7.7	8.1	0.4	0.014
Number of Medicare beneficiaries per PCP (Mathematica attribution based on SK&A roster) ^f	206	198	193	-5.5	-0.051
Percentage of Medicare beneficiaries who meet Tier 4 criteria ^f	13.7	13.8	13.9	0.1	0.060
Percentage of Medicare beneficiaries who meet Tier 5 criteria ^f	16.6	16.9	16.7	-0.1	-0.023
Median monthly Medicare expenditures of beneficiaries who meet criteria for Tier 4 or Tier 5 (\$) ^f	590	595	588	-7.2	-0.059
Percentage of Medicare beneficiaries assigned in the first quarter of the baseline year who died in the baseline year	3.8	3.8	3.9	0.0	0.028

Table 6.C.16. (continued)

Variable	Comparison group mean (N = 1,865)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 643)		
Area with a shortage of (primary care) health professionals (Area Resource File) ^k	1.5	1.3	1.1	-0.2	-0.021
County median household income (\$) (Area Resource File) ^k	59,280	58,405	57,466	-938.9	-0.067
County percentage of population in poverty (Area Resource File) ^k	13.8	13.9	13.9	-0.0	-0.008
County Medicare Advantage penetration rate (percentage) (Area Resource File) ^k	28.4	29.2	31.0	1.7	0.158
Percentage male ^f	42.1	42.0	42.0	0.0	0.000
Percentage of Medicare beneficiaries with age as original reason for Medicare entitlement ^f	80.9	80.7	80.9	0.3	0.032
Within-state quintile of dually eligible patients ^l					
1st quintile (lowest)	23.3	20.4	24.5	4.1	0.095
2nd quintile	33.6	34.1	36.0	1.9	0.040
3rd quintile	25.0	28.4	27.4	-1.0	-0.022
4th quintile	15.3	14.0	8.5	-5.5	-0.198
5th quintile (highest)	2.7	3.1	3.6	0.5	0.027
Primary care (ambulatory) visits in the baseline year per 1,000 beneficiaries, annualized	4,604.5	4,652.4	4,498.6	-153.7	-0.156
Percentage of eligible inpatient discharges among beneficiaries assigned in the baseline year that were followed by a 14-day follow-up visit ^m	70.3	70.7	70.3	-0.4	-0.061
Age ^f					
Under 50	4.3	4.3	4.2	-0.1	-0.047
50–64	10.2	10.6	10.3	-0.3	-0.065
65–74	46.2	46.6	47.3	0.7	0.111
75–84	26.6	26.1	26.0	-0.1	-0.018
85+	12.7	12.5	12.3	-0.2	-0.031
Race ^f					
Percentage black	6.1	7.1	6.9	-0.2	-0.020

Table 6.C.16. (continued)

Variable	Comparison group mean (N = 1,865)			Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights	CPC+ practice mean (N = 643)		
Percentage Hispanic	0.9	0.9	0.8	-0.1	-0.037
Percentage with ESRD	0.9	0.9	0.9	0.0	-0.013
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of hospice services in the baseline year	2.6	2.6	2.7	0.1	0.051
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of home health services in the baseline year	10.1	10.2	10.2	0.0	0.000
Percentage of beneficiaries assigned in the first quarter of the baseline year with any use of skilled nursing facility care in the baseline year	5.5	5.5	5.6	0.1	0.077
For beneficiaries assigned in the baseline year, percentage of months eligible for Medicare FFS in the two years prior to the baseline year	88.3	87.4	86.3	-1.1	-0.240
Low-priority variables (percentage, unless otherwise noted)					
Percentage of beneficiaries with race that is not black, white, or Hispanic ^f	3.9	4.2	3.9	-0.3	-0.063
Chronic conditions ^f					
Percentage of beneficiaries with diabetes	24.6	24.5	24.4	-0.1	-0.018
Percentage of beneficiaries with cancer	8.4	8.4	8.6	0.1	0.057
Percentage of beneficiaries with COPD	9.6	9.9	9.7	-0.2	-0.041
Percentage of beneficiaries with CKD	16.5	16.8	16.3	-0.5	-0.111
Percentage of beneficiaries with Alzheimer's and related dementia	7.2	7.2	7.1	-0.2	-0.044
Percentage of beneficiaries with heart failure	10.7	10.8	10.9	0.0	0.008
Practice employs at least one NP/PA (SK&A, baseline year)	68.3	69.5	70.0	0.6	0.012
Hospital beds in county per 10,000 population (Area Resource File) ^k					
1st quartile (fewest beds)	16.9	17.8	22.9	5.2	0.122
2nd quartile	26.9	24.9	22.3	-2.7	-0.064
3rd quartile	34.6	31.0	23.7	-7.3	-0.172

Table 6.C.16. (continued)

Variable	Comparison group mean (N = 1,865)			CPC+ practice mean (N = 643)	Adjusted difference ^a	Standardized difference ^b
	Pre-matching weights	Post-matching weights				
4th quartile (most beds)	21.6	26.3		31.1	4.8	0.105
Percentage of adults 25 or older with a degree from a four-year college (Area Resource File) ^k	31.2	30.8		31.3	0.6	0.054
Select other variables (percentage; not included in matching)						
U.S. census region ⁿ						
Northeast	31.0	32.9		31.0	-1.9	-0.041
Midwest	40.7	41.3		45.1	3.9	0.078
South	16.1	12.5		11.7	-0.9	-0.026
West	12.3	13.3		12.2	-1.1	-0.035

Source: Data on practice size and ownership from SK&A data; data on the number and characteristics of assigned 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 SSP ACO participation from CMS' master data management (MDM) data; data on participation in MAPCP and in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program data; data on HRR Price Index from CMS' Medicare Geographic Variation data; county data from the Area Resource Files: 2015–2016 for 2017 Starters and 2016–2017 for 2018 Starters.

Notes: Because CPC+ is a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. However, because our primary analyses of claims-based outcomes are conducted using beneficiary-level data rather than practice-level data (Appendix 6.D), we show balance statistics to approximate beneficiary-level balance. This approach best reflects the baseline balance among the analytic sample used in regression analyses. Specifically, the values in this table represent—in columns 2, 3, and 4—practice-level means, weighted by the number of beneficiaries assigned to each practice in the baseline year, and—in columns 5 and 6—the differences based on these means and their standard deviations. All variables that are not counts (i.e., number of Medicare beneficiaries assigned in the baseline year), expenditures, or rates per 1,000 beneficiaries are reported as percentages (multiplied by 100).

^a Adjusted difference is the difference between the comparison value and the CPC+ value with matching weights.

^b Standardized difference is the adjusted difference, divided by the standard deviation in the CPC+ group. Values that fall outside the desired threshold of ± 0.1 standardized differences are color-coded yellow; values that fall outside the acceptable threshold of ± 0.25 standardized differences are color-coded red.

^c We define prior transformation experience as CPC Classic or MAPCP participation, or NCQA, TJC, AAHC, URAC, or state medical-home recognition status (whether practice is a medical home).

^d 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 ARFs for both 2017 and 2018 Starters.

^e We define proportion of charges that are primary care following CMS' eligibility rules for CPC+. Specifically, this characteristic was defined as the proportion of charges that are for office visit evaluation and management, nursing home and home care, welcome to Medicare and annual wellness visits, advance care planning, CCM services, and transitional care management services among NPIs with a primary care specialty, according to SK&A.

^f The beneficiaries used in calculation of these variables are beneficiaries assigned to the practice in the baseline year, which is 2016 for the 2017 Starters and 2017 for the 2018 Starters.

Table 6.C.16. (continued)

^g For 2017 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2015. For 2018 Starters, the HCC score in the baseline year is based on beneficiaries' diagnoses in 2016.

^h We define multispecialty as having at least one practitioner, according to SK&A, with a specialty other than general practice, internal medicine, family medicine, or geriatrics.

ⁱ The most recent year of data on HRR Price Index available from CMS' Medicare Geographic Variation data is 2015 and is used for both the 2017 and 2018 Starters.

^j Practice with at least one practitioner who attested to meaningful use of EHR; year of first attestation of meaningful use of EHR.

^k Due to lags in the ARF data, the specific year of each geographic characteristic may differ depending on the most recent year of data available. For determining whether a practice was located in a health professionals shortage area, we used data from years 2015 and 2016 for the 2017 Starters and data from years 2016 and 2017 for the 2018 Starters. For median household income, percentage of population in poverty, and Medicare Advantage penetration rate in the practice's county, we used data from 2014 for the 2017 Starters and data from 2015 for the 2018 Starters. For hospital beds in the practice's county, we used data from 2013 for the 2017 Starters and data from 2014 for the 2018 Starters and determined county population (for creating the per 10,000 population measure of hospital beds) using 2014 data for both the 2017 and 2018 Starters. For percentage of adults 25 or older with a degree from a four-year college, we used data from years 2010–2014 for the 2017 Starters and years 2011–2015 for the 2018 Starters.

^l Because Medicaid eligibility requirements vary by state, we define dual quintiles according to where the practice falls in the distribution of the population dually eligible for Medicare and Medicaid within the state. For example, a practice in Michigan that has fewer dual-eligible beneficiaries than 95 percent of primary care practices in Michigan would be in the bottom quintile, or Quintile 1.

^m This measure was calculated for beneficiaries attributed in the first quarter of the baseline period. A discharge was eligible for inclusion if the beneficiary was enrolled in Medicare Part A and Part B for the month of the admission and one month after the discharge date, and was discharged alive from a non-federal short-term acute care hospital to their home or a non-acute care setting.

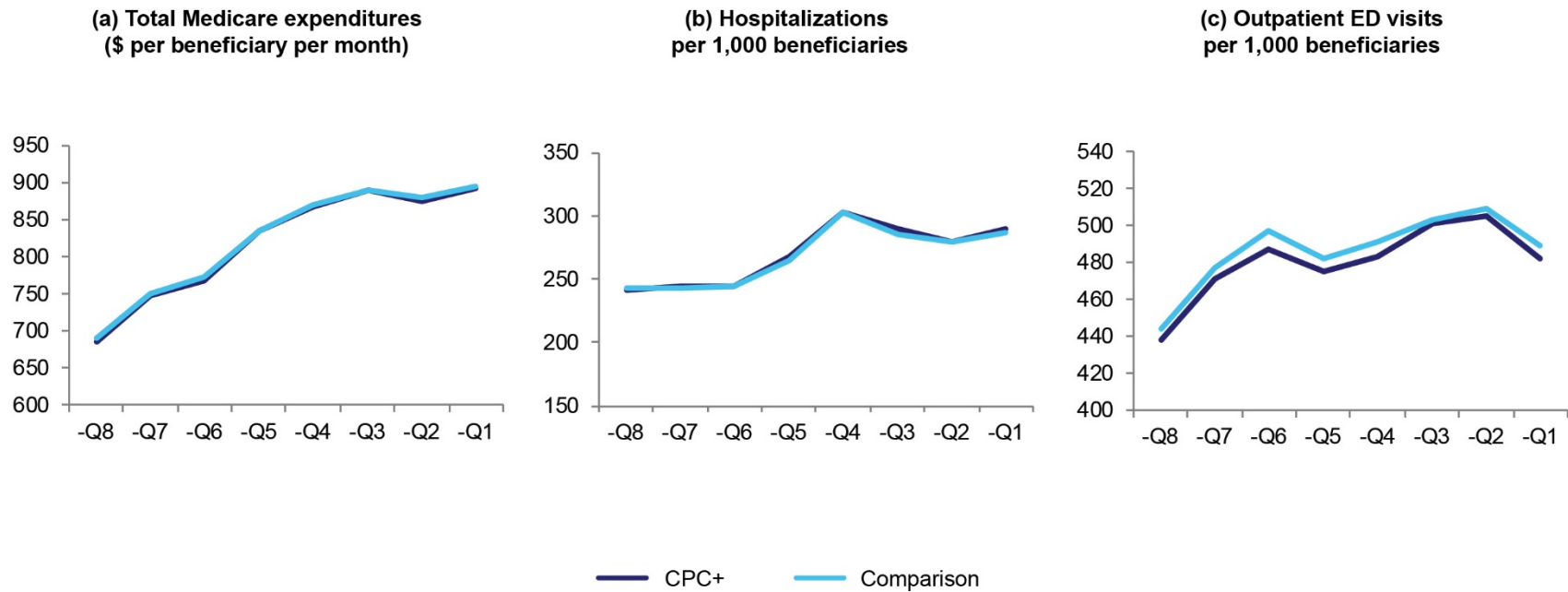
ⁿ For ease of presentation, we show balance on the four Census Bureau-designated regions (based on the state of the practice) in this table. However, for inclusion in the propensity score matching model, we identified comparison market areas for each CPC+ region (or groups of regions) based on geographic proximity, the primary care landscape, and number of available potential comparison practices, separately for the 2017 and 2018 Starters. There were also some overlaps in the comparison market areas for the 2017 and 2018 Starters. Details on the selection of external regions are available in Section 6.C.1.

AAAHHC = Accreditation Association for Ambulatory Health Care; ARF = Area Resource File; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; ED = emergency department; EHR = electronic health record; ESRD = end-stage renal disease; HCC = hierarchical condition categories; HRR = hospital referral region; MAPCP = Multi-payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPI = National Provider Identifier; PA = physician's assistant; PBPM = per beneficiary per month; PCP = primary care practitioner; SSP = Medicare Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

D.2. Pre-intervention trends of the CPC+ and comparison practices

As we describe in Appendix 6.E, the CPC+ impact analysis of claims-based outcomes uses a difference-in-differences regression approach. The central assumption of this approach is that outcomes among the matched comparison practices will follow the same trajectory during the intervention period that the CPC+ practices' outcomes would have followed in the absence of the intervention. We assessed the plausibility of this assumption by checking whether the CPC+ and Medicare comparison groups were on parallel trajectories on select outcome variables before CPC+ began. Specifically, we compared the trends in the CPC+ and the selected comparison group on three primary outcome variables: total Medicare expenditures, hospitalizations, and outpatient ED visits, in the eight calendar quarters immediately before the intervention began. As Figures 6.C.1 and 6.C.2 indicate, the final Track 1 and Track 2 comparison groups for 2017 Starters have similar pre-intervention trends to the CPC+ practices for each of these key outcome variables, especially on Medicare expenditures, where the two groups are practically indistinguishable. Figures 6.C.3 to 6.C.6 show pre-intervention trends in each track by SSP status for 2017 Starters. For the combined 2017 and 2018 Starters, the final Track 1 and 2 comparison groups also have similar pre-intervention trends to the CPC+ practices for these key outcome variables (Figures 6.C.7 and 6.C.8). Figures 6.C.9 to 6.C.12 show the pre-intervention trends in each track by SSP status for the combined 2017 and 2018 Starters.

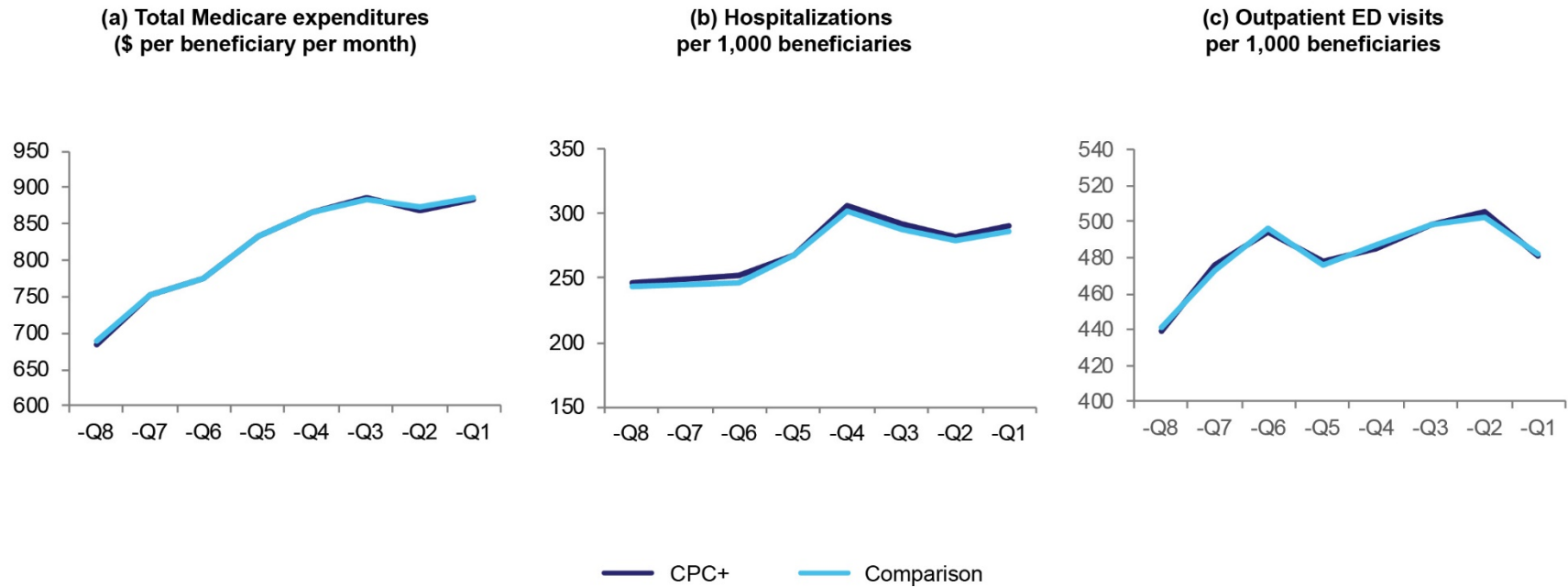
Figure 6.C.1. Pre-intervention trends on key outcome variables in Track 1, 2017 Starters only



Note: Plots represent mean values for beneficiaries assigned to all practices (SSP and non-SSP) in CPC+ Track 1 and the final Track 1 Medicare comparison group among 2017 Starters only, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 1 CPC+ or comparison practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

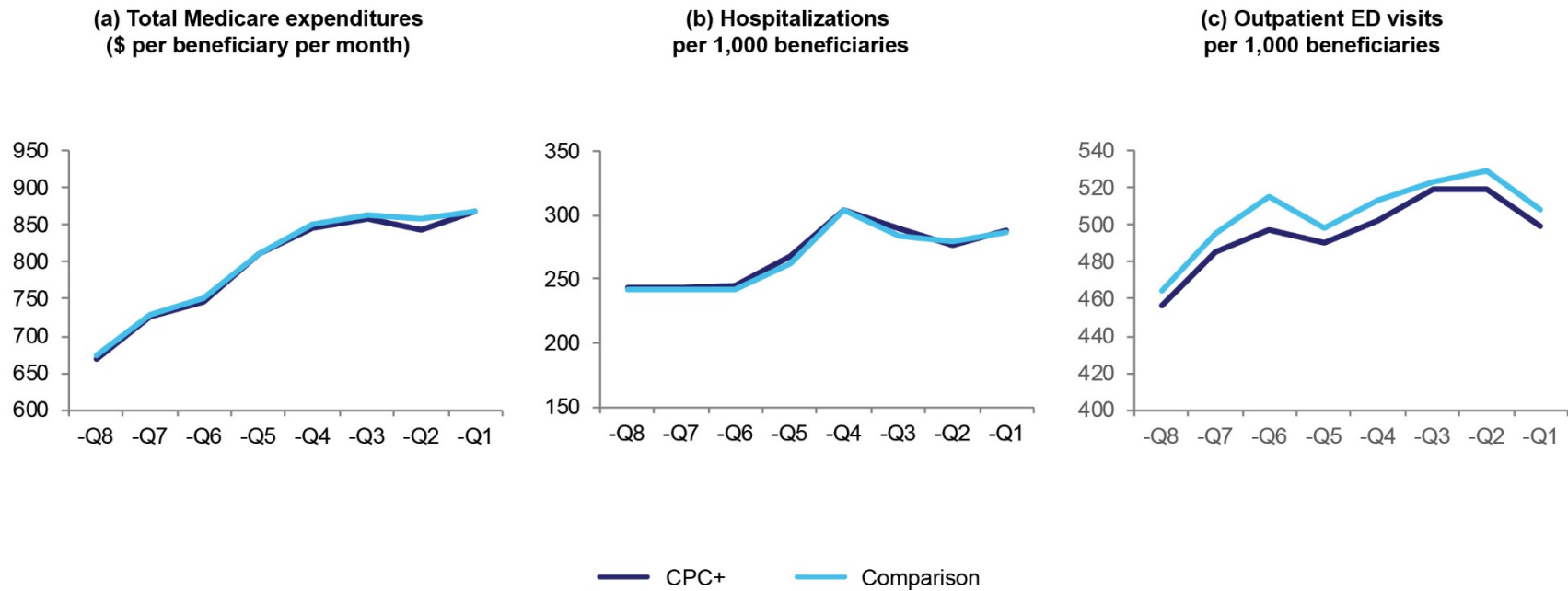
Figure 6.C.2. Pre-intervention trends on key outcome variables in Track 2, 2017 Starters only



Note: Plots represent mean values for beneficiaries assigned to all practices (SSP and non-SSP) in CPC+ Track 2 and the final Track 2 Medicare comparison group among 2017 Starters only, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as described in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 2 CPC+ or comparison practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

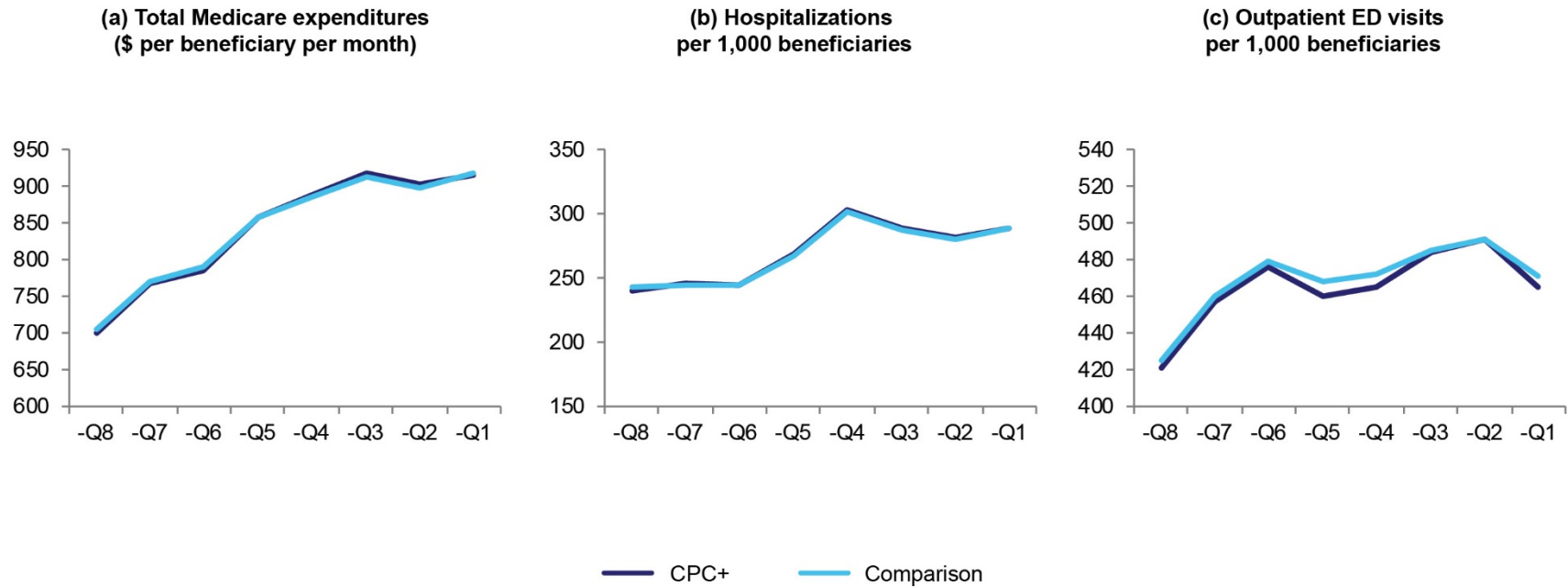
Figure 6.C.3. Pre-intervention trends on key outcome variables in Track 1-non-SSP group, 2017 Starters only



Note: Plots represent mean values for beneficiaries assigned to all non-SSP practices in CPC+ Track 1 and the final Track 1 Medicare comparison group among 2017 Starters only, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 1 CPC+ or comparison non-SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

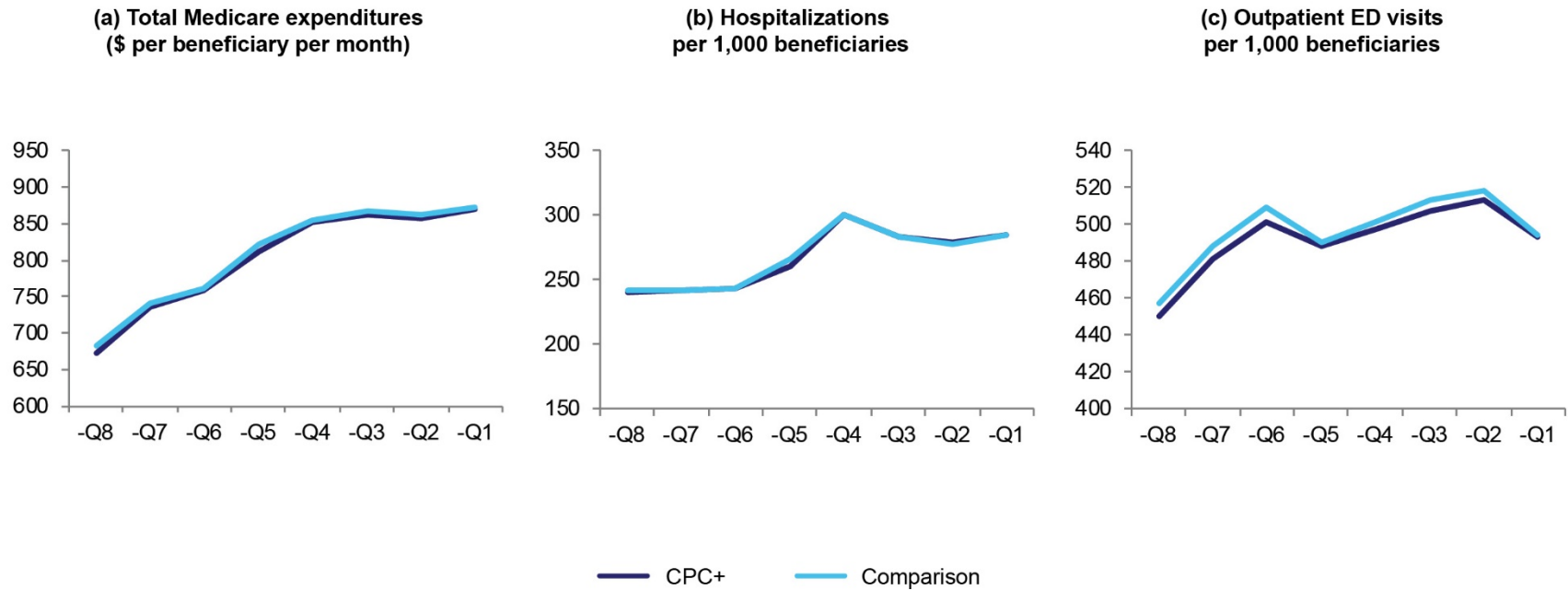
Figure 6.C.4. Pre-intervention trends on key outcome variables in Track 1-SSP group, 2017 Starters only



Note: Plots represent mean values for beneficiaries assigned to all SSP practices in CPC+ Track 1 and the final Track 1 Medicare comparison group among 2017 Starters only, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 1 CPC+ or comparison non-SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

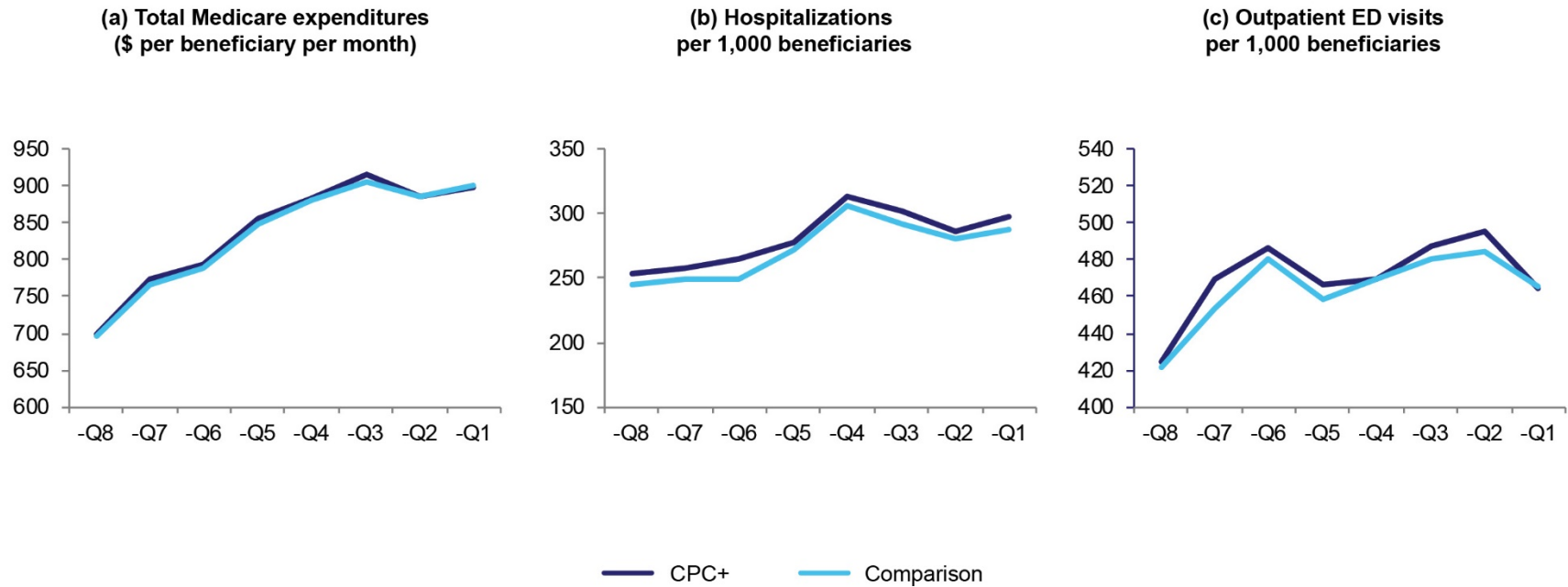
Figure 6.C.5. Pre-intervention trends on key outcome variables in Track 2-non-SSP group, 2017 Starters only



Note: Plots represent mean values for beneficiaries assigned to all non-SSP practices in CPC+ Track 2 and the final Track 2 Medicare comparison group among 2017 Starters only, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 2 CPC+ or comparison non-SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

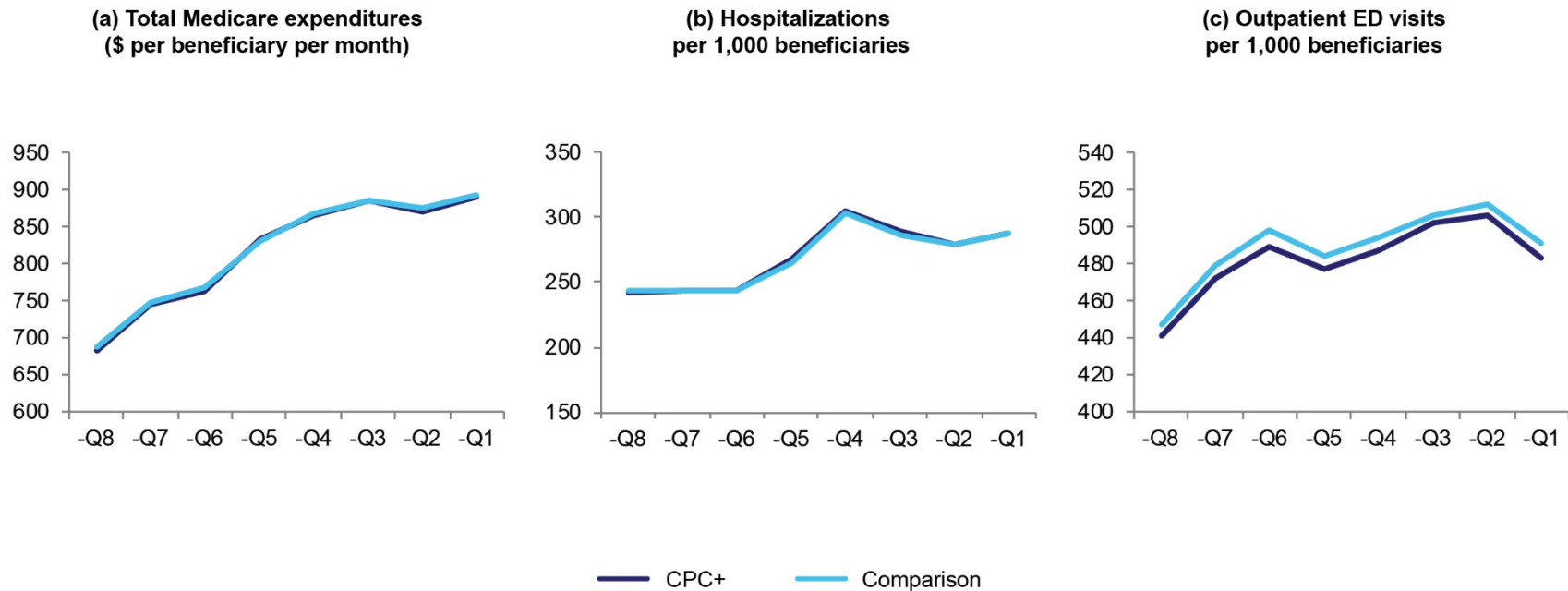
Figure 6.C.6. Pre-intervention trends on key outcome variables in Track 2-SSP group, 2017 Starters only



Note: Plots represent mean values for beneficiaries assigned to all SSP practices in CPC+ Track 2 and the final Track 2 Medicare comparison group among 2017 Starters only, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 2 CPC+ or comparison SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

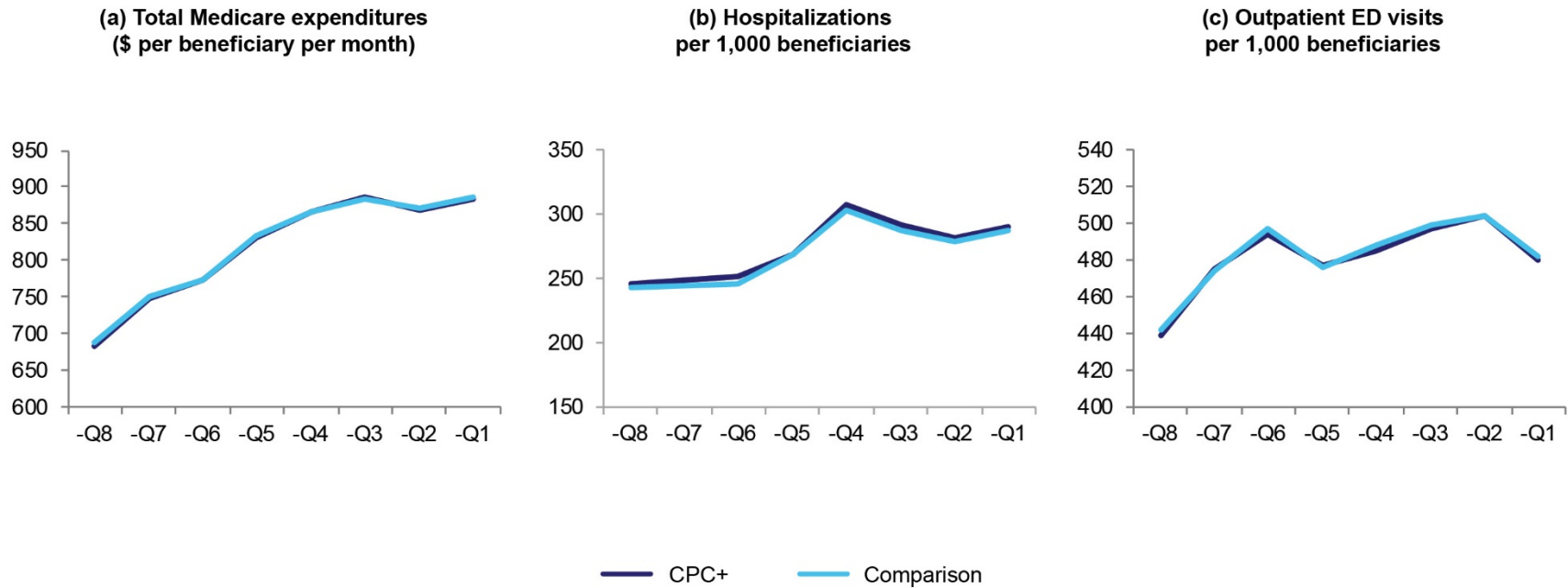
Figure 6.C.7. Pre-intervention trends on key outcome variables in Track 1, combined 2017 and 2018 Starters



Note: Plots represent mean values for beneficiaries assigned to all practices (SSP and non-SSP) in CPC+ Track 1 and the final Track 1 Medicare comparison group among 2017 and 2018 Starters combined, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 1 CPC+ or comparison practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

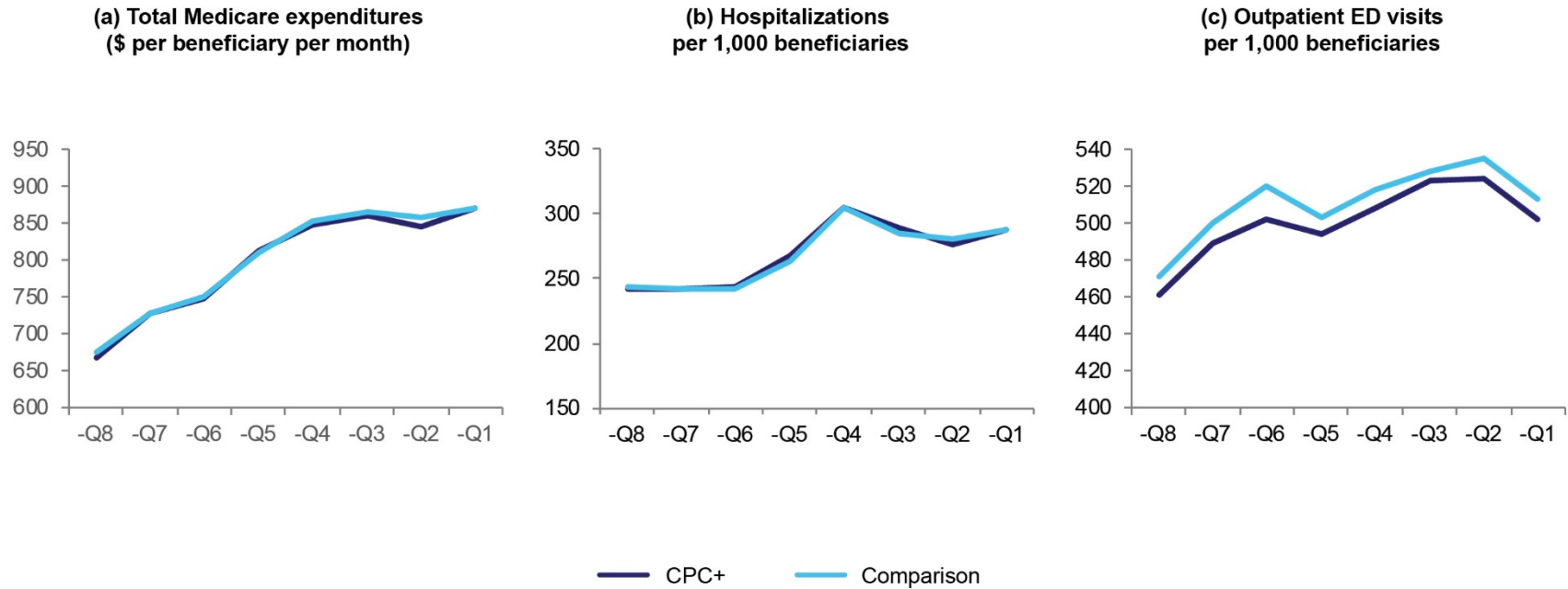
Figure 6.C.8. Pre-intervention trends on key outcome variables in Track 2, combined 2017 and 2018 Starters



Note: Plots represent mean values for beneficiaries assigned to all practices (SSP and non-SSP) in CPC+ Track 2 and the final Track 2 Medicare comparison group among 2017 and 2018 Starters combined, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 2 CPC+ or comparison practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

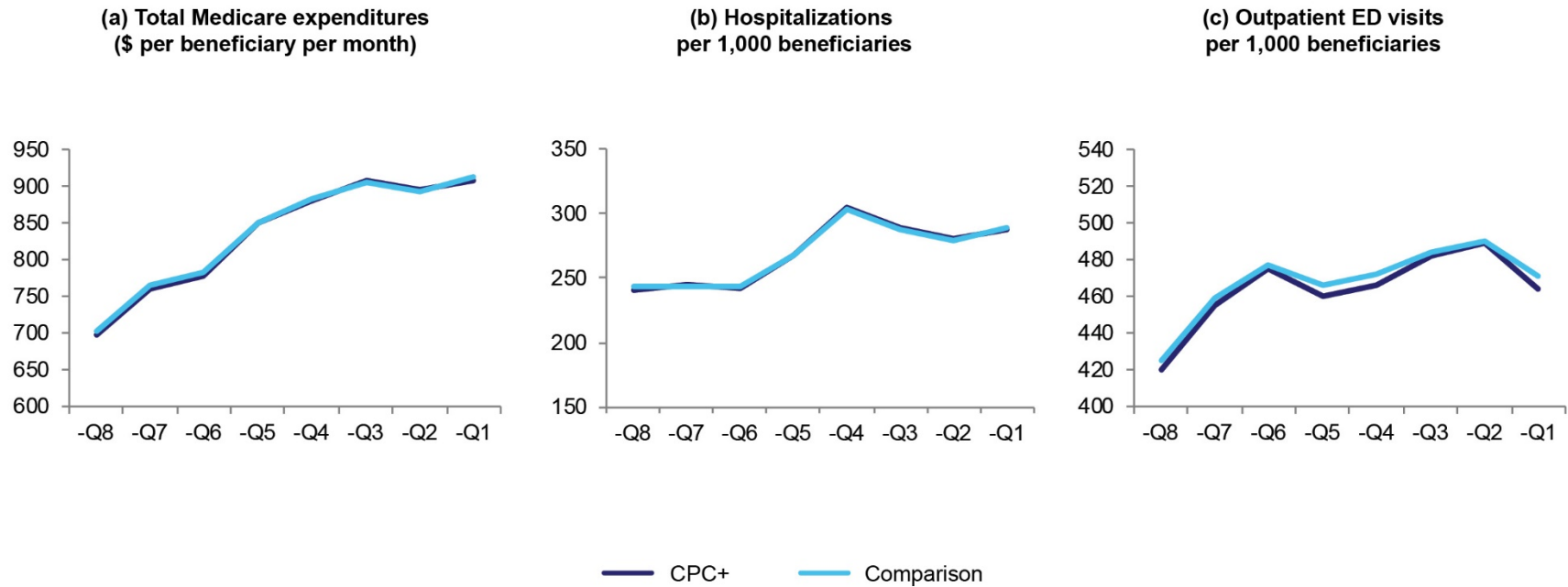
Figure 6.C.9. Pre-intervention trends on key outcome variables in Track 1-non-SSP group, combined 2017 and 2018 Starters



Note: Plots represent mean values for beneficiaries assigned to all non-SSP practices in CPC+ Track 1 and the final Track 1 Medicare comparison group among 2017 and 2018 Starters combined, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 1 CPC+ or comparison non-SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

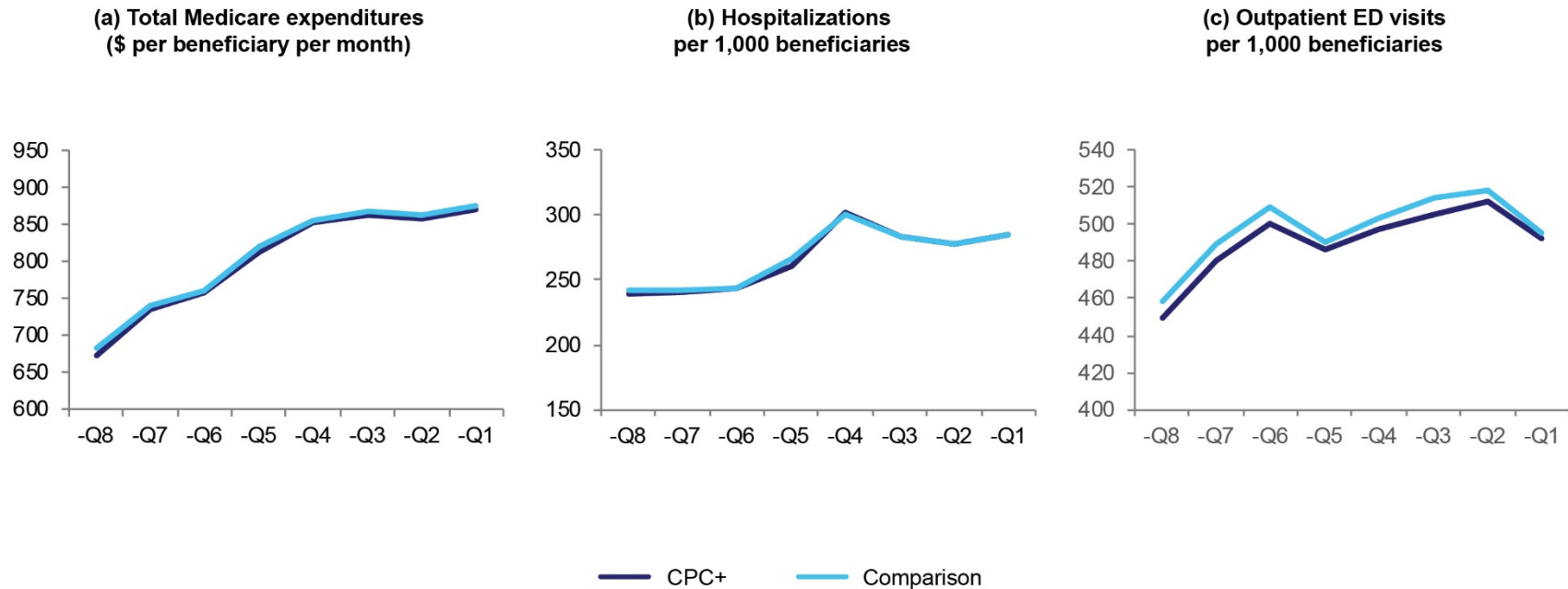
Figure 6.C.10. Pre-intervention trends on key outcome variables in Track 1-SSP group, combined 2017 and 2018 Starters



Note: Plots represent mean values for beneficiaries assigned to all SSP practices in CPC+ Track 1 and the final Track 1 Medicare comparison group among 2017 and 2018 Starters combined, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 1 CPC+ or comparison SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

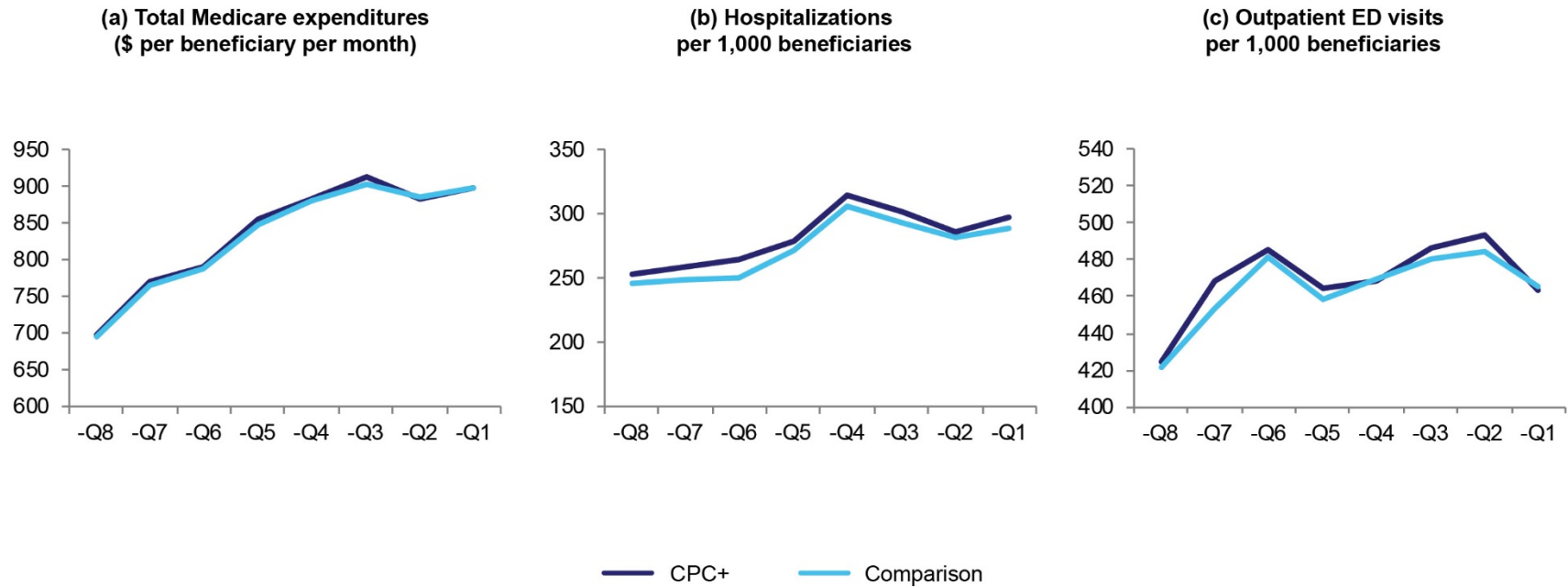
Figure 6.C.11. Pre-intervention trends on key outcome variables in Track 2-non-SSP group, combined 2017 and 2018 Starters



Note: Plots represent mean values for beneficiaries assigned to all non-SSP practices in CPC+ Track 2 and the final Track 2 Medicare comparison group among 2017 and 2018 Starters combined, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 2 CPC+ or comparison non-SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

Figure 6.C.12. Pre-intervention trends on key outcome variables in Track 2-SSP group, combined 2017 and 2018 Starters



Note: Plots represent mean values for beneficiaries assigned to all SSP practices in CPC+ Track 2 and the final Track 2 Medicare comparison group among 2017 and 2018 Starters combined, weighted by beneficiary-level eligibility and matching weights. The plot shows the eight quarters prior to the intervention (-Q8 through -Q1). The baseline period (labeled -Q4 through -Q1) is calendar year 2016 for 2017 Starters and calendar year 2017 for 2018 Starters, as we describe in detail in Appendix 6.E. In each pre-intervention quarter of the baseline period, means are calculated among beneficiaries assigned to a Track 2 CPC+ or comparison SSP practice—meaning that, in each quarter, the beneficiaries were (1) attributed to the practice in the quarter or in a previous quarter, based on primary care visits in the previous 24 months; (2) alive at the start of the quarter; and (3) enrolled in Medicare FFS with Medicare as the primary payer at the start of the quarter. In Quarters -Q8 through -Q5, in contrast, means are calculated among beneficiaries assigned during -Q4. We expect expenditures, hospitalizations, and outpatient ED visits to be lower in -Q8 through -Q5 than in -Q4 through -Q1, because all beneficiaries observed in -Q8 through -Q5 had to survive until the start of -Q4 as a condition of inclusion in the beneficiary population included in the sample.

ED = emergency department; FFS = fee-for-service; Q = quarter; SSP = Medicare Shared Savings Program.

D.3. Weight distribution

The distribution of the weights was the final consideration in assessing the comparison group. As already noted, extreme weights detract from the face validity of the comparison group, because they imply that a single comparison group beneficiary is counted in the analyses many more or many fewer times than a CPC+ beneficiary. At the same time, a diffuse distribution of weights limits statistical power relative to equal weights. To address these concerns, we designed our matching procedure to produce a compact weight distribution with a minimum of 0.1 and a maximum of 10. The matching weight distributions for the selected comparison groups are relatively smooth with very few weights greater than 5. Figures 6.C.13 and 6.C.14 show the weight distributions for the 2017 Starters by track. Figures 6.C.15 and 6.C.16 show the weight distributions for the combined 2017 and 2018 Starters by track. (As noted previously, each intervention practice receives a weight of exactly 1.)

Figure 6.C.13. Distribution of matching weights among Track 1 comparison practices, 2017 Starters only

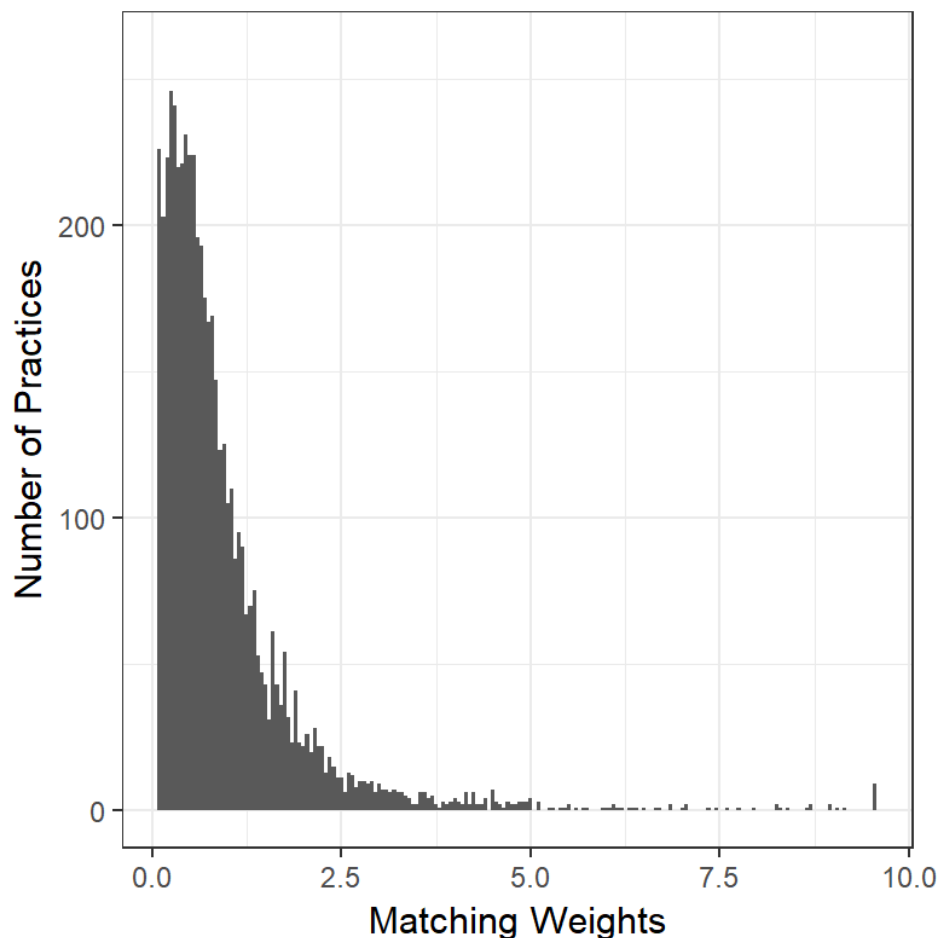


Figure 6.C.14. Distribution of matching weights among Track 2 comparison practices, 2017 Starters only

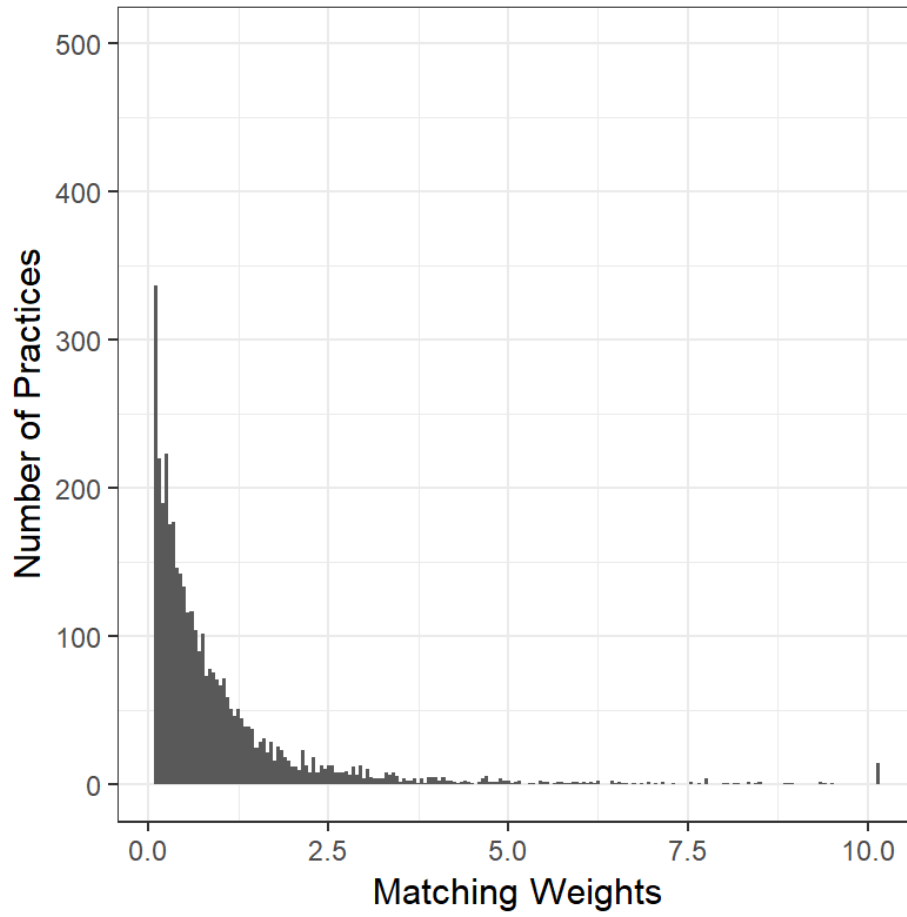


Figure 6.C.15. Distribution of matching weights among Track 1 comparison practices, combined 2017 and 2018 Starters

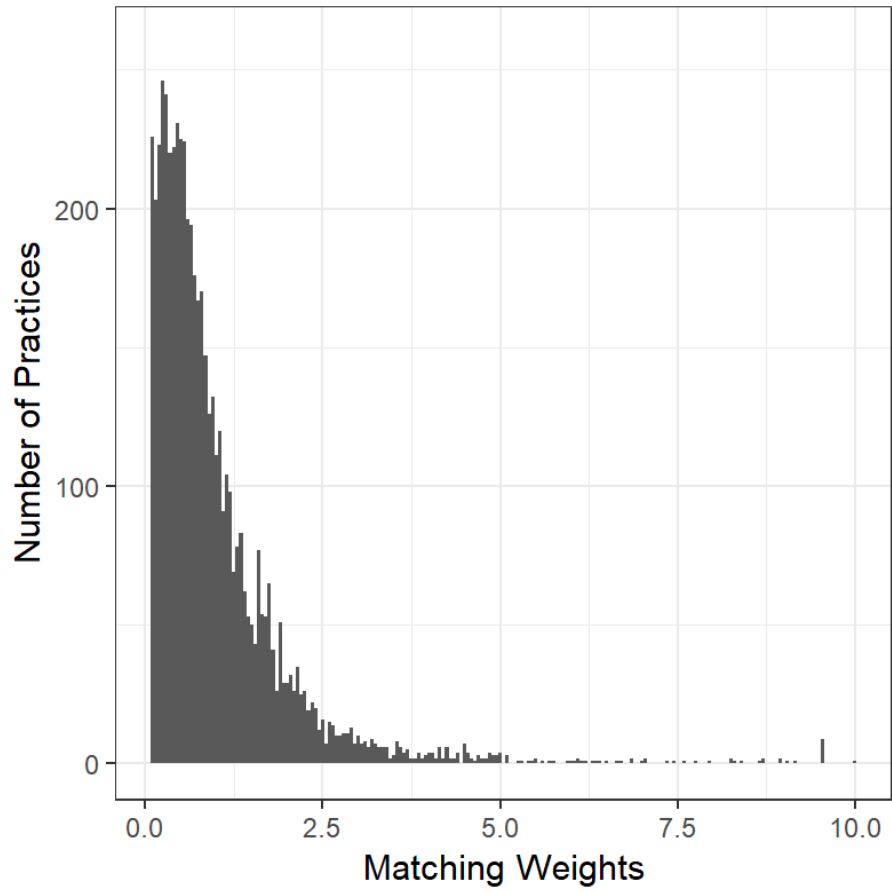
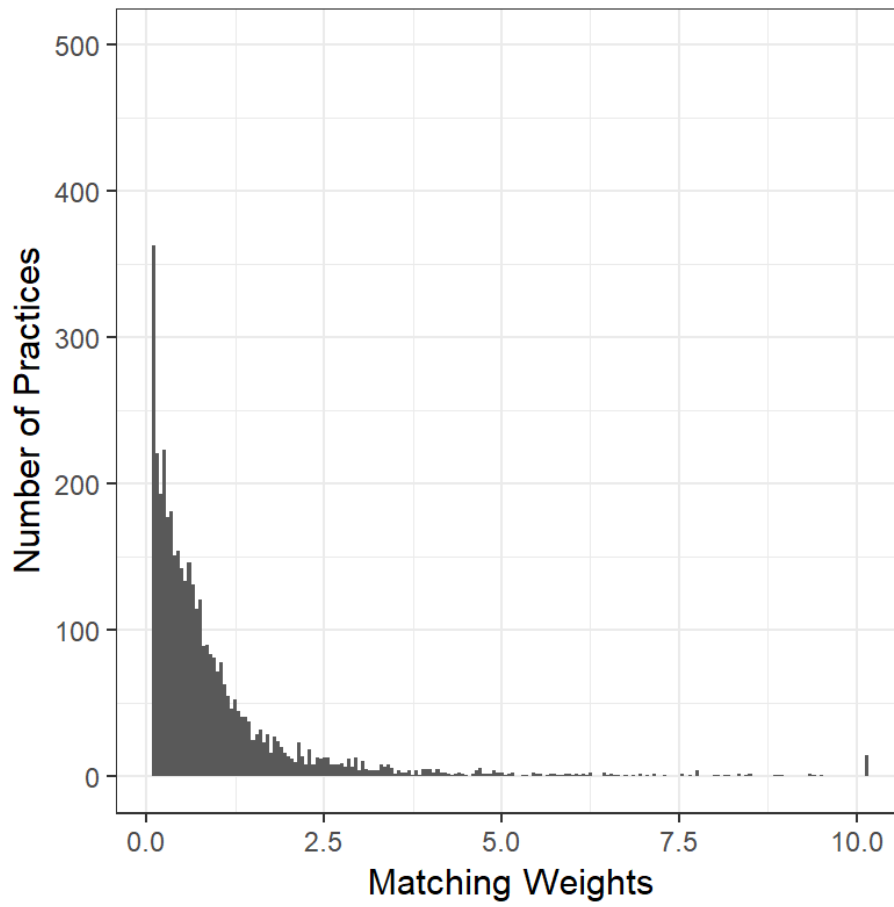


Figure 6.C.16. Distribution of matching weights among Track 2 comparison practices, combined 2017 and 2018 Starters



6.D. Specification of measures used in the Medicare impact analysis

In this Appendix, we define the key measures used in this report that are based on Medicare claims and enrollment information. First, we define and discuss the Medicare claims-based outcome measures used in the impact analysis. Next, we describe non-outcome measures based on Medicare claims and enrollment data that we used as control variables in the regression analysis or for other analyses.

6.D.1. Medicare claims-based outcome measures

Table 6.D.1 summarizes the outcome measures we used in the annual impact analysis in this report. We classified the claims-based outcome measures into groups by Medicare expenditures, service utilization, and three of the five CPC+ functions (improvements in planned care and population health, coordination of care, and patient and caregiver engagement).

Table 6.D.1. Medicare claims-based outcome measures for the second annual report to CMS

	Hypothesized direction of impact ^b
Medicare expenditures^a	
Medicare Parts A and B expenditures without CMS' enhanced payments, PBPM	↓
Medicare Parts A and B expenditures with CMS' enhanced payments, PBPM	↓ or →
Medicare Parts A and B expenditures, by service category, PBPM	
Inpatient: Expenditures for both acute inpatient care (short-stay acute and Critical Access Hospitals) and non-acute inpatient care (e.g., inpatient rehabilitation services)	↓
Outpatient: Outpatient facility expenditures including those for ED visits, observation stays, and other outpatient services (e.g., outpatient surgery, imaging, outpatient rehabilitation, and services provided by RHCs and FQHCs)	↓
Expenditures for acute inpatient care (short-stay acute and Critical Access Hospitals)	↓
Outpatient facility expenditures for outpatient ED visits including observation stays	↓
Physician and non-physician (noninstitutional) services: Expenditures including physician services and other services provided by ambulance providers, independent clinical laboratories, and free-standing ambulatory surgical centers.	↑ or ↓ ^b
Ambulatory visits with primary care practitioners: Expenditures for face-to-face visits with a primary care practitioner in non-institutional settings (e.g., office, home, hospital outpatient department, FQHC, RHC, CAH, etc.)	↑ or ↓ ^b
Ambulatory visits with specialists: Expenditures for face-to-face visits with a specialist in non-institutional settings: (e.g., office, home, hospital outpatient department, FQHC, RHC, or CAH)	↑ or ↓ ^b
SNF: Expenditures billed by skilled nursing facilities	↓
Home health: Expenditures billed by home health providers	↑ or ↓ ^b
Hospice: Expenditures billed by hospice providers in both institutional and home settings	↑
DME: Expenditures for durable medical equipment, such as wheelchairs, home oxygen, and home hospital beds	↑ or ↓ ^b

Table 6.D.1. (continued)

	Hypothesized direction of impact ^b
Service utilization	
Number of hospitalizations (short-stay acute hospitals and CAHs) per 1,000 beneficiaries per year	↓
Number of outpatient ED visits (including observation stays) per 1,000 beneficiaries per year	↓
Number of ED visits per 1,000 beneficiaries per year (includes outpatient ED visits and ED visits resulting in a hospitalization)	↓
Number of primary care ambulatory visits (including visits to FQHCs, RHCs, and CAHs) per 1,000 beneficiaries per year	↑ ^a or ↓ ^b
Number of specialist ambulatory visits (including visits to FQHCs, RHCs, and CAHs) per 1,000 beneficiaries per year	↑ ^a or ↓ ^b
Planned care and population health	
Among Medicare FFS beneficiaries ages 18–75 who had diabetes:	
Hemoglobin A1c testing	↑
Retinal eye exam	↑
Medical attention for nephropathy	↑
Composite measure for receiving all three tests (HbA1c testing, eye exam, and medical attention for nephropathy)	↑
Composite measure for receiving none of the three tests	↓
Among female Medicare FFS beneficiaries ages 52–74:	
Breast cancer screening	↑
Among all Medicare FFS beneficiaries	
Proportion who died within 12 months	→
Coordination of care	
Likelihood of an unplanned readmission within 30 days of a hospital discharge at the index stay level	↓
Likelihood of an unplanned readmission within 30 days of a hospital discharge at the beneficiary level	↓
Patient and caregiver engagement^c	
Any use of hospice services	↑

^aThe Medicare Parts A and B expenditures, by service category section shows the components included in computing Medicare expenditures

^bFor some outcome measures, the expected direction of effect is indeterminate because there are forces that could both increase and decrease the outcome measure and it is not clear which force would or should outweigh the other. For example, if CPC+ reduces care fragmentation and patient reliance on specialty care, it could increase the number of in-person visits a patient has with the primary care practice he or she is attributed to. However, if CPC+ encourages practices to have more e-visits or phone consultations with patients, it could decrease the number of in-person visits.

^cIn the first annual report, we also examined effects of CPC+ on the percentage of beneficiaries who received advance care planning. However, we decided to drop this outcome from all subsequent reports because of concerns that the billing codes for these services were not being regularly reported in Medicare claims data.

CAH = Critical Access Hospital; DME = durable medical equipment; ED = emergency department; FFS = fee for service; FQHC = Federally Qualified Health Center; PBPM = per beneficiary per month; RHC = Rural Health Clinic; SNF = skilled nursing facility.

A. Medicare expenditures

CMS theorized that changes in care delivery made by CPC+ practices would ultimately result in a reduction in overall Medicare expenditures that is great enough to offset CMS' enhanced payments. Therefore, we analyzed Medicare expenditures for FFS beneficiaries with and without CMS' enhanced payments. (As we are estimating impacts for Medicare expenditures for FFS

beneficiaries, we do not include enhanced payments from other payers in our calculations.) Enhanced payments are made *on top of traditional payments for services*. These enhanced payments include CMS' CPC+ care management fees for Medicare FFS beneficiaries as well as CMS' payments for rewarding performance: (1) prospectively paid and retrospectively reconciled Performance-based Incentive Payments (PBIPs) for practices not participating in the Medicare Shared Savings Program (SSP); and (2) shared savings payments to Accountable Care Organizations (ACOs) for practices participating in SSP; and (3) a comprehensive supplement for practices participating in Track 2, which is equal to 10 percent of their share of payments (for services) that are made prospectively.

For Track 2 practices, these alternative payments that shift a portion of practices' payments for services from FFS to prospective payments—referred to as base Comprehensive Primary Care Payments (CPCPs)—are included in both sets of Medicare expenditure analyses as they are payments *for services*.

Medicare expenditures, in dollars per beneficiary per month (PBPM), for all services (excluding Part D prescription drugs) during a reporting period, excluding CMS' enhanced payments.⁶⁴ This measure reflects Medicare expenditures for Part A and Part B covered services during the baseline or intervention period. It is the sum of expenditures on inpatient, outpatient, and physician and non-physician services, as well as skilled nursing facilities (SNFs), home health, hospice services, and durable medical equipment (DME). It includes Medicare payments only and excludes third-party and beneficiary liability payments. To obtain the PBPM amount, we summed total Part A and Part B payments for the months that a beneficiary was eligible for Medicare FFS during the year and then divided the payments by the number of months the beneficiary was eligible for Medicare FFS. For Track 2 practices, we also included the base (CPCPs) (but not the 10 percent comprehensive supplement). We calculated this PBPM by dividing the total CPCPs to a practice during the reporting period, minus any adjustments or debits (due to retrospective changes in Medicare FFS eligibility of attributed beneficiaries or duplicative billing of services) or recoupments due to early withdrawal from the model, by the total number of Medicare FFS eligible beneficiary-months in that practice during the period.⁶⁵

Medicare expenditures, in dollars PBPM for all services (excluding Part D prescription drugs) during a reporting period, including CMS' CPC+ enhanced payments. To the measure above (expenditures excluding enhanced payments), we added the following enhanced payments (in dollars PBPM):

1. The net care management fees (after accounting for debits and recoupments).
2. The 10 percent comprehensive supplement, for Track 2 practices only.

⁶⁴ We do not include Part D expenditures, because Medicare makes prospective payments to Part D prescription drug plans that are not directly related to each individual prescription filled by a beneficiary. That is, changes in prescription use do not affect Medicare expenditures.

⁶⁵ Since we use the intent-to-treat assigned sample, which keeps beneficiaries even after they are no longer attributed to a CPC+ practice (and thus no longer generating payments for the practice), our calculated PBPM payments (CPCPs, care management fees, and PBIPs) are lower than the CMS reported numbers.

3. The final, reconciled PBIP (after recoupments for not meeting quality or utilization targets) for the year received by non-SSP practices.
4. The shared savings payments earned by their SSP ACO for the SSP practices.

For each practice, we divided items 1 through 3 above by the total number of Medicare FFS eligible beneficiary-months in the practice during the reporting period to get the PBPM amounts. For practices in an SSP ACO, we divided the total shared savings payments earned by their SSP ACO during the reporting period by the total number of Medicare FFS eligible beneficiary-months in that ACO during the period to get a PBPM amount.

Medicare expenditures, in dollars PBPM during a reporting period, excluding enhanced CPC+ payments, by service category. This measure reflects Medicare expenditures PBPM (defined above) stratified by type of Part A or Part B service (inpatient, outpatient, Part B services provided by physicians or non-physicians, home health, SNF, hospice, and DME). In addition to inpatient expenditures, we also report short-stay acute inpatient/Critical Access Hospital (CAH) expenditures separately. We categorize an inpatient stay as a short-stay acute inpatient hospital stay when the third through sixth digits of the provider ID are equal to 0001 through 0899. If the third and fourth digits of the provider ID are equal to 13, then it is a CAH stay. Further, we created an outpatient facility expenditures measure for emergency department (ED) claims (for emergency room and observation stays) that is a subset of total hospital outpatient department expenditures. To identify outpatient ED visits (which include emergency room care and observation stays) for this expenditures measure, we use the approach described in the service utilization section below, with one exception—expenditures are not restricted to one emergency room/observation stay per day, to ensure that we include all expenditures associated with these services. We also separately looked at two subcategories of Part B noninstitutional service expenditures for: ambulatory visits with primary care practitioners and ambulatory visits with specialists. Note that the ambulatory visit expenditures are identified using carrier claims and FQHC, RHC, and CAH claims from the outpatient file. Visits associated with the carrier file do not include any potential facility fees.

B. Service utilization

Number of hospitalizations (at short-stay acute hospitals and CAHs) per 1,000 beneficiaries per year. This measure is the annualized hospitalization rate per 1,000 beneficiaries of all short-stay acute hospital and CAH admissions. Transfers between facilities are counted as a single admission. Multiple claims for acute admissions from traditional acute care hospitals and CAHs that represent transfers between hospitals are combined into a single record, so that they count as one admission.

Outpatient ED visits, including observation stays, per 1,000 beneficiaries per year. This measure is the annualized number of emergency room visits and observation stays (combined to create ED visits) that do not lead to a hospitalization, per 1,000 beneficiaries. Visits that do not lead to a hospitalization are identified in the outpatient department file using revenue center line items equal to 045X or 0981 (emergency room care), 0762 (treatment or observation room), or 0760 (treatment or observation room—general classification). We counted a visit as an observation stay if it was longer than eight hours and had a corresponding Health Care Common

Procedure Coding System (HCPCS) code of G0378 (hospital observation services per hour). If the procedure code on the line item of the ED claim was equal to 70000 through 79999 or 80000 through 89999, we excluded it; this exclusion was intended to exclude claims in which only radiological or pathology/laboratory services were provided. We then cap the number of any type of visit (observation stays, emergency room visits, and ED visits) to one per day.

Number of ED visits per 1,000 beneficiaries per year. This measure combines outpatient ED visits and observation stays with ED visits that lead to a hospitalization. ED visits that lead to a hospitalization are identified in the inpatient file and include hospital stays that have a claim with a revenue center line item equal to 045X or 0981 (emergency room care) or 0762 (treatment or observation room).

Number of primary care ambulatory visits, including visits to Federally Qualified Health Centers (FQHCs), Rural Health Clinics (RHCs), and CAHs per 1,000 beneficiaries per year. This measure is the number of annualized visits per 1,000 beneficiaries to primary care practitioners, including nurse practitioners (NPs), clinical nurse specialists (CNSs), and physician assistants (PAs), as defined by Healthcare Provider Taxonomy Codes reported in the National Plan and Provider Enumeration System (NPPES) (provider taxonomy codes are listed in Table 6.D.2). Multiple claims with the same provider on the same day are counted as one visit, and multiple claims with different providers on the same day are counted as separate visits. We have made the following seven refinements to the ambulatory visit measures since our first annual report:

1. To identify a practitioners' specialty, we are using only the primary taxonomy code from the NPPES, rather than both the primary and secondary taxonomy codes.
2. The specialties that are considered to be primary care practitioners now include pediatric/adolescent medicine and exclude hospice and palliative care specialties.⁶⁶
3. The list of ambulatory visits now includes specific behavioral health services (e.g., psychotherapy, health/behavior assessments and intervention, FQHC mental health visits, and FQHC/RHC care management [including behavioral health]). The complete list of visits for office-based evaluation and management, nursing home and home care, care management services (including behavioral health), health and behavior assessments, and psychotherapy—as defined by HCPCS/Current Procedural Terminology (CPT) and revenue center codes—is found in Table 6.D.4 and the codes are explained in Table 6.D.5.
4. Add-on services are counted in the expenditures, but not in utilization measures as a separate service (creating a more precise count of actual ambulatory visits).
5. Certain services qualify only if they have a non-inpatient place of service to limit to services in ambulatory settings only (these are primarily for the newly added behavioral health services). These additional criteria are also identified in Table 6.D.5.

⁶⁶ Hospice and palliative care specialties were excluded from the primary care practitioners list and moved to specialists.

6. Ambulatory visits on the outpatient file are included only if they were provided at an FQHC, RHC, or CAH, to avoid double-counting services that would appear in the physician bills on the carrier file.
7. The CPT Editorial Panel instituted several procedure code updates during our analytic time period, so we updated our specifications to reflect codes as they were added, deleted, or replaced. We included new procedure codes as they were implemented, or updated them when they were replaced. These changes are tracked in Table 6.D.6.

Number of ambulatory visits to specialists (including visits to FQHCs, RHCs, and CAHs) per 1,000 beneficiaries per year. This measure is the number of annualized ambulatory visits per 1,000 beneficiaries to specialists, including surgeons, psychiatrists, and emergency medicine, as defined by Healthcare Provider Taxonomy Codes reported in the NPPES per 1,000 beneficiaries (provider taxonomy codes are listed in Table 6.D.3). To identify the number of specialist ambulatory visits, we use the same criteria we use to identify specialist ambulatory visits for expenditures. Codes for ambulatory visits are listed in Table 6.D.4 and are explained in Table 6.D.5. In addition to the changes described for ambulatory care visits to primary care practitioners, we further refined our definition of specialists for this report. In our first annual report, we defined specialists as providers whose taxonomy code was not included in Table 6.D.2; however, for this report we excluded non-specialist taxonomies such as laboratories, ambulance, chiropractor, and physical therapy.

Table 6.D.2. Primary care taxonomy codes

Medicare provider/supplier type description	Provider taxonomy code	Provider taxonomy description	
Physician/Family Practice	207Q00000X	Physicians/Family Medicine	
	207QA0000X	Physicians/Family Medicine, Adolescent Medicine*	
	207QA0505X	Physicians/Family Medicine, Adult Medicine	
	207QG0300X	Physicians/Family Medicine, Geriatric Medicine	
Physician/Internal Medicine	207R00000X	Physicians/Internal Medicine	
	207RA0000X	Physicians/Internal Medicine, Adolescent Medicine*	
	207RG0300X	Physicians/Internal Medicine, Geriatric Medicine	
Physician/Pediatrics^a	208000000X	Physicians/Pediatrics*	
	2080A0000X	Physicians/Pediatrics, Adolescent Medicine*	
Nurse Practitioner	363L00000X	Nurse Practitioner	
	363LA2100X	Nurse Practitioner, Acute Care	
	363LA2200X	Nurse Practitioner, Adult Health	
	363LC1500X	Nurse Practitioner, Community Health	
	363LF0000X	Nurse Practitioner, Family	
	363LG0600X	Nurse Practitioner, Gerontology	
	363LP0200X	Nurse Practitioner, Pediatrics*	
	363LP2300X	Nurse Practitioner, Primary Care	
	363LW0102X	Nurse Practitioner, Women's Health	
	Certified Clinical Nurse Specialist	364S00000X	Clinical Nurse Specialist
		364SA2100X	Clinical Nurse Specialist, Acute Care
364SA2200X		Clinical Nurse Specialist, Adult Health	
364SC1501X		Clinical Nurse Specialist, Community Health/Public Health	
364SC2300X		Clinical Nurse Specialist, Chronic Care	
364SF0001X		Clinical Nurse Specialist, Family Health	
364SG0600X		Clinical Nurse Specialist, Gerontology	
364SH1100X		Clinical Nurse Specialist, Holistic	
364SP0200X		Clinical Nurse Specialist, Pediatrics*	
364SW0102X		Clinical Nurse Specialist, Women's Health	
Physician Assistant		363A00000X	Physician Assistant
	363AM0700X	Physician Assistant, Medical	
Physician/Undefined Physician Type	208D00000X	General Practice	
Federally Qualified Health Center	261QF0400X	Ambulatory Health Care Facilities/ FQHC	
Rural Health Clinic	261QR1300X	Ambulatory Health Care Facilities/Clinic Center, Rural Health	

Source: Centers for Medicare & Medicaid Services. "Crosswalk Medicare Provider/Supplier to Healthcare Provider Taxonomy." Baltimore, MD: CMS, at <https://data.cms.gov/Medicare-Enrollment/CROSSWALK-MEDICARE-PROVIDER-SUPPLIER-to-HEALTHCARE/j75i-rw8y>.

Notes: Descriptions annotated with an asterisk (*) are categories added since our first annual report. Taxonomy code 207QH0002X (Hospice and Palliative Medicine) was removed and added to specialist care.

^a This Physician/Pediatrics specialty will become more relevant for analyses of the Medicaid population, but it will also capture some beneficiaries in the Medicare population.

Table 6.D.3. Specialist care taxonomy codes

Medicare provider/supplier type description	Provider taxonomy code	Provider taxonomy description	
Surgery	208600000X	Physicians/Surgery	
	2086S0120X	Physicians/Surgery/Pediatric Surgery	
	2086S0122X	Physicians/Surgery/Plastic and Reconstructive Surgery	
	2086S0105X	Physicians/Surgery/Surgery of the Hand	
	2086S0102X	Physicians/Surgery/Surgical Critical Care	
	2086X0206X	Physicians/Surgery/Surgical Oncology	
	2086S0127X	Physicians/Surgery/Trauma Surgery	
	2086S0129X	Physicians/Surgery/Vascular Surgery	
	208G00000X	Physicians/Thoracic	
	204F00000X	Physicians/Transplant Surgery	
	208C00000X	Physicians/Colon & Rectal Surgery	
	207T00000X	Physicians/Neurological Surgery	
	204E00000X	Physicians/Oral & Maxillofacial Surgery	
	207X00000X	Physicians/Orthopedic Surgery	
	207XS0114X	Physicians/Orthopedic Surgery/Adult Reconstructive Orthopedic Surgery	
	207XX0004X	Physicians/Orthopedic Surgery/Foot and Ankle Surgery	
	207XS0106X	Physicians/Orthopedic Surgery/Hand Surgery	
	207XS0117X	Physicians/Orthopedic Surgery/Orthopedic Surgery of the Spine	
	207XX0801X	Physicians/Orthopedic Surgery/Orthopedic Trauma	
	207XP3100X	Physicians/Orthopedic Surgery/Pediatric Orthopedic Surgery	
	207XX0005X	Physicians/Orthopedic Surgery/Sports Medicine	
	208200000X	Physicians/Plastic Surgery	
	2082S0099X	Physicians/Plastic Surgery/Plastic Surgery Within the Head & Neck	
	2082S0105X	Physicians/Plastic Surgery/Surgery of the Hand	
	Allergy/Immunology/ Otolaryngology	207K00000X	Physicians/Allergy and Immunology
		207KA0200X	Physicians/Allergy and Immunology/Allergy
		207Y00000X	Physicians/ Otolaryngology
		207YS0123X	Physicians/ Otolaryngology/Facial Plastic Surgery
207YX0602X		Physicians/Otolaryngology/Otolaryngic Allergy	
207YX0905X		Physicians/Otolaryngology/Otolaryngology/Facial Plastic Surgery	
207YX0901X		Physicians/Otolaryngology/Otology &Neurotology	
207YP0228X		Physicians/Otolaryngology/Pediatric Otolaryngology	
207YX0007X		Physicians/Otolaryngology/Plastic Surgery within the Head & Neck	
Anesthesiology		207L00000X	Physicians/Anesthesiology
	207LC0200X	Physicians/Anesthesiology/Critical Care Medicine	
	207LP3000X	Physicians/Anesthesiology/Pediatric Anesthesiology	
	207RC0000X	Physicians/Internal Medicine, Cardiovascular Disease	
Dermatology	207N00000X	Physicians/Dermatology	
	207NI0002X	Physicians/Dermatology, Clinical & Laboratory Dermatological Immunology	

Table 6.D.3. (continued)

Medicare provider/supplier type description	Provider taxonomy code	Provider taxonomy description
Obstetrics & Gynecology	207ND0101X	Physicians/Dermatology, MOHS-Micrographic Surgery
	207ND0900X	Physicians/Dermatology, Dermatopathology
	207NP0225X	Physicians/Dermatology, Pediatric Dermatology
	207NS0135X	Allopathic & Osteopathic Physicians/Dermatology, Procedural Dermatology
	207V00000X	Physicians/Obstetrics & Gynecology
	207VB0002X	Physicians/Obstetrics & Gynecology, Bariatric Medicine
	207VC0200X	Physicians/Obstetrics & Gynecology, Critical Care Medicine
	207VF0040X	Physicians/Obstetrics & Gynecology, Female Pelvic Medicine and Reconstructive Surgery
	207VX0201X	Physicians/Obstetrics & Gynecology, Gynecologic Oncology
	207VG0400X	Physicians/Obstetrics & Gynecology, Gynecology
	207VM0101X	Physicians/Obstetrics & Gynecology, Maternal & Fetal Medicine
	207VX0000X	Physicians/Obstetrics & Gynecology, Obstetrics
Ophthalmology	207VE0102X	Physicians/Obstetrics & Gynecology, Reproductive Endocrinology
	207W00000X	Physicians/Ophthalmology
	207WX0009X	Physicians/Ophthalmology, Glaucoma Specialist
	207WX0107X	Physicians/Ophthalmology, Retina Specialist
	207WX0108X	Physicians/Ophthalmology, Uveitis and Ocular Inflammatory Disease
	207WX0109X	Physicians/Ophthalmology/Neuro-ophthalmology
	207WX0110X	Physicians/Ophthalmology/Pediatric Ophthalmology and Strabismus Specialist
	207WX0120X	Physicians/Ophthalmology, Cornea and External Diseases Specialist
	207WX0200X	Physicians/Ophthalmic Plastic and Reconstructive Surgery
	1223S0112X	Physicians/Ophthalmology, Dental Providers/Dentist, Oral & Maxillofacial Surgery
Pathology	207ZP0101X	Physicians/Pathology, Anatomic Pathology
	207ZP0102X	Physicians/Pathology, Anatomic Pathology & Clinical Pathology
	207ZP0104X	Physicians/Pathology, Chemical Pathology
	207ZC0006X	Physicians/Pathology, Clinical Pathology
	207ZP0105X	Physicians/Pathology, Clinical Pathology/Laboratory Medicine
	207ZC0500X	Physicians/Pathology, Cytopathology
	207ZD0900X	Physicians/Pathology, Dermatopathology
	207ZF0201X	Physicians/Pathology, Forensic Pathology
	207ZH0000X	Physicians/Pathology, Hematology
	207ZI0100X	Physicians/Pathology, Immunopathology
	207ZM0300X	Physicians/Pathology, Medical Microbiology
	207ZP0007X	Physicians/Pathology, Molecular Genetic Pathology
	207ZN0500X	Physicians/Pathology, Neuropathology
	207ZP0213X	Physicians/Pathology, Pediatric Pathology

Table 6.D.3. (continued)

Medicare provider/supplier type description	Provider taxonomy code	Provider taxonomy description	
Physical Medicine & Rehabilitation	208100000X	Physicians/Physical Medicine & Rehabilitation	
	2081H0002X	Physicians/Physical Medicine & Rehabilitation, Hospice and Palliative Medicine	
	2081N0008X	Physicians/Physical Medicine & Rehabilitation, Neuromuscular Medicine	
	2081P2900X	Physicians/Physical Medicine & Rehabilitation, Pain Medicine	
	2081P0010X	Physicians/Physical Medicine & Rehabilitation, Pediatric Rehabilitation Medicine	
	2081P0004X	Physicians/Physical Medicine & Rehabilitation, Spinal Cord Injury Medicine	
	2081S0010X	Physicians/Physical Medicine & Rehabilitation, Sports Medicine	
	2081P0301X	Physicians/Physical Medicine & Rehabilitation, Brain Injury	
	Urology	208800000X	Physicians/Urology
		2088P0231X	Physicians/Urology, Pediatric Urology
2088F0040X		Female Pelvic Medicine & Reconstructive Surgery	
Internal Medicine	207RN0300X	Physicians/Internal Medicine, Nephrology	
	207RP1001X	Physicians/Internal Medicine, Pulmonary Disease	
	207RI0200X	Physicians/Internal Medicine, Infectious Disease	
	207RE0101X	Physicians/Internal Medicine, Endocrinology, Diabetes & Metabolism	
	207RR0500X	Physicians/Internal Medicine, Rheumatology	
	207RC0200X	Physicians/Internal Medicine, Critical Care Medicine	
	207RH0000X	Physicians/Internal Medicine, Hematology	
	207RH0003X	Physicians/Internal Medicine, Hematology & Oncology	
	207RX0202X	Physicians/Internal Medicine, Medical Oncology	
	Eye & Vision	152W00000X	Eye and Vision Service Providers/Optomtrist
152WC0802X		Eye and Vision Service Providers/Optomtrist, Corneal and Contact Management	
152WL0500X		Eye and Vision Service Providers/Optomtrist, Low Vision Rehabilitation	
152WX0102X		Eye and Vision Service Providers/Optomtrist, Occupational Vision	
152WP0200X		Eye and Vision Service Providers/Optomtrist, Pediatrics	
152WS0006X		Eye and Vision Service Providers/Optomtrist, Sports Vision	
152WV0400X		Eye and Vision Service Providers/Optomtrist, Vision Therapy	
Podiatric Medicine	213E00000X	Podiatric Medicine & Surgery Service Providers/Podiatrist	
	213ES0103X	Podiatric Medicine & Surgery Service Providers/Podiatrist, Foot & Ankle Surgery	
	213ES0131X	Podiatric Medicine & Surgery Service Providers/Podiatrist, Foot Surgery	
	213EG0000X	Podiatric Medicine & Surgery Service Providers/Podiatrist, General Practice	
	213EP1101X	Podiatric Medicine & Surgery Service Providers/Podiatrist, Primary Podiatric Medicine	
	213EP0504X	Podiatric Medicine & Surgery Service Providers/Podiatrist, Public Medicine	

Table 6.D.3. (continued)

Medicare provider/supplier type description	Provider taxonomy code	Provider taxonomy description
Psychiatry & Neurology	213ER0200X	Podiatric Medicine & Surgery Service Providers/Podiatrist, Radiology
	213ES0000X	Podiatric Medicine & Surgery Service Providers/Podiatrist, Sports Medicine
	2084A0401X	Physicians/Psychiatry & Neurology
	2084A2900X	Physicians/Psychiatry & Neurology/Neurocritical Care
	2084P0802X	Physicians/Psychiatry & Neurology, Addiction Psychiatry
	2084B0002X	Physicians/Psychiatry & Neurology, Bariatric Medicine
	2084P0804X	Physicians/Psychiatry & Neurology, Child & Adolescent Psychiatry
	2084N0600X	Physicians/Psychiatry & Neurology, Clinical Neurophysiology
	2084D0003X	Physicians/Psychiatry & Neurology, Diagnostic Neuroimaging
	2084F0202X	Physicians/Psychiatry & Neurology, Forensic Psychiatry
	2084P0805X	Physicians/Psychiatry & Neurology, Geriatric Psychiatry
	2084H0002X	Physicians/Psychiatry & Neurology, Hospice & Palliative Medicine
	2084P0005X	Physicians/Psychiatry & Neurology, Neurodevelopmental Disabilities
	2084N0400X	Physicians/Psychiatry & Neurology, Neurology
	2084N0402X	Physicians/Psychiatry & Neurology, Neurology with Special Qualifications in Child Neurology
	2084N0008X	Physicians/Psychiatry & Neurology, Neuromuscular Medicine
	2084P0301X	Psychiatry & Neurology/Respiratory, Developmental, Rehabilitative and Restorative Service , Brain Injury Medicine
	2084P2900X	Physicians/Psychiatry & Neurology, Pain Medicine
	2084P0800X	Physicians/Psychiatry & Neurology, Psychiatry
	2084P0015X	Physicians/Psychiatry & Neurology, Psychosomatic Medicine
2084S0010X	Physicians/Psychiatry & Neurology, Sports Medicine	
2084V0102X	Physicians/Psychiatry & Neurology, Vascular Neurology	
Radiology	2085R0001X	Physicians/Radiology, Radiation Oncology
	2085R0202X	Physicians/Radiology, Diagnostic Radiology
Emergency Medicine	207P00000X	Physicians/Emergency Medicine
	207PE0004X	Physicians/Emergency Medicine, Emergency Medical Services
	207PH0002X	Physicians/Emergency Medicine, Hospice and Palliative Medicine
	207PP0204X	Physicians/Emergency Medicine, Pediatric Emergency Medicine
	207PS0010X	Physicians/Emergency Medicine, Sports Medicine
	207PE0005X	Physicians/Emergency Medicine, Undersea and Hyperbaric Medicine
	Other	261QM1300X	Ambulatory Health Care Facilities/Clinic/Center, Multi-Specialty
207RA0001X		Physicians/Advanced Heart Failure and Transplant Cardiology
207QH0002X		Physician/Hospice and Palliative Care

Source: Centers for Medicare & Medicaid Services. "Crosswalk Medicare Provider/Supplier to Healthcare Provider Taxonomy." Baltimore, MD: CMS, at <https://data.cms.gov/Medicare-Enrollment/CROSSWALK-MEDICARE-PROVIDER-SUPPLIER-to-HEALTHCARE/j75i-rw8y>.

Table 6.D.4. Ambulatory visit HCPCS/CPT codes and revenue center codes

Place of service	HCPCS/CPT codes	Revenue center codes
Office/outpatient, home; Federally Qualified Health Center; Critical Access Hospital; Rural Health Clinic	99201–99205, 99211–99215, 99324–99328, 99334–99337, 99339–99345, 99347–99350, 99354–99355, 99358–99359, 99415–99416, 99461, 99483–99484, 99487, 99489–99490, 99492–99498, 99091, 90785, 90791–90792, 90832, 90834, 90837, 90833, 90836, 90838–90840, 90845–90847, 90849, 90853, 96150–96155, 96160–96161, G0402, G0438, G0439, G0502–G0507, G0513–G0514	n.a.
Federally Qualified Health Center only	G0466–G0468, G0469–G0470	n.a.
Critical Access Hospital only	G0463	
Federally Qualified Health Center or Rural Health Clinic only	G0511, G0512	0521, 0522, 0524, 0525, 0527, 0528

HCPCS/CPT = Health Care Common Procedure Coding System/Current Procedural Terminology; n.a. = not applicable.

Table 6.D.5. Detailed description of the HCPCS/CPT codes and revenue center codes

HCPCS/CPT codes and description	Ambulatory visit indicator	Ambulatory expenditure indicator	Place of service indicator ^a	
99201–99205, 99211–99215	Evaluation and Management (E&M): office or outpatient	1	1	
99324–99337	Evaluation and Management (E&M): domiciliary, rest home, or custodial care	1	1	
99339–99340	Evaluation and Management (E&M): domiciliary, rest home, or home care plan oversight	1	1	
99341–99345, 99347–99350	Evaluation and Management (E&M): home services	1	1	
99354–99355	Prolonged E&M or Psychotherapy Service w/ Direct Patient Contact	0	1	Yes
99358–99359	Prolonged E&M Service w/o Direct Patient Contact	0	1	Yes
99415–99416	Prolonged E&M Service w/ Direct Patient Contact w/physician supervisor	0	1	Yes
99461	Initial care per day, for E/M of normal newborn infant seen in other than hospital or birthing center	1	1	
99483	Cognitive Assessment	1	1	
99484	General Behavioral Health Integration Care Management	1	1	
99487	Complex Chronic Care Management Services	1	1	
99489	Addtl 30 min	0	1	
99490	Chronic Care Mgt	1	1	
99492–99493	Psychiatric Collaborative Care Mgt	1	1	
99494	Addtl 30 min	0	1	
99495–99496	Transitional Care Management Services	1	1	
99497	Advanced directive counseling and discussion	1	1	
99498	Each addtl 30 min	0	1	Yes
99091	Remote Physiologic Patient Monitoring	1	1	
90785	(Psych) Interactive complexity (in addition to primary proc)	0	1	Yes
90791–90792	Psych dx eval	1	1	Yes
90832, 90834, 90837	Psychotherapy	1	1	Yes
90833, 90836, 90838	Psychotherapy in conjunction w/E&M code	0	1	Yes
90839	Psychotherapy for Crisis	1	1	Yes
90840	Each addtl 30 min	0	1	Yes
90845–90847	Other psychotherapy	1	1	Yes
90849	Multiple family	1	1	Yes
90853	Group psychotherapy	1	1	Yes
96150–96151	Health and Behavior Assessment/Intervention	1	1	Yes
96152–96155	Health & behavior intervention, each 15 minutes	1	1	Yes
96160–96161	Administration of health risk assessment	0	1	
G0402	Initial exam for Medicare enrollment	1	1	
G0438–G0439	Counseling, Wellness, and Screening Services	1	1	
G0502–G0503	Initial or subsequent psychiatric collaborative care management	1	1	

Table 6.D.5. (continued)

HCPCS/CPT codes and description		Ambulatory visit indicator	Ambulatory expenditure indicator	Place of service indicator ^a
G0504	Initial or subsequent psychiatric collaborative care management, each additional 30 minutes	0	1	
G0505	Cognition and functional assessment using standardized instruments with development of recorded care plan for the patient with cognitive impairment	1	1	
G0506	Comprehensive assessment and care planning for patients needing chronic care	1	1	
G0507	Care management services for behavioral health conditions	1	1	
G0513–G0514	Prolonged Preventive Services	0	1	
Critical Access Hospital only				
G0463	Hospital OP clinic visit	1	1	
Federally Qualified Health Center only				
G0466–G0467	FQHC visit	1	1	
G0468	FQHC visit with AWV or IPPE	1	1	
G0469–G0470	FQHC mental health visit - new patient	1	1	
Rural Health Clinic/ Federally Qualified Health Center only				
G0511	General Care Management	1	1	
G0512	Psychiatric CoCM	1	1	
Revenue Center codes and description				
Rural Health Clinic/ Federally Qualified Health Center only				
0521	Clinic visit by member to RHC/FQHC	1	1	
0522	Home visit by RHC/FQHC practitioner	1	1	
0524	Visit by RHC/FQHC practitioner to a member, in a covered Part A stay at the SNF	1	1	
0525	Visit by RHC/FQHC practitioner to a member in an SNF (not in a covered Part A stay) or NF or ICF MR or other residential facility	1	1	
0527	RHC/FQHC Visiting Nurse Service(s) to a member's home when in a home health shortage area	1	1	
0528	Visit by RHC/FQHC practitioner to other non-RHC/FQHC site (e.g., scene of accident)	1	1	

Note: Table 6.D.6 below reports CPT/HCPCS code changes instituted by the CPT Editorial Panel during the analytic time period. The CPT Editorial Panel comprises 17 members, of whom 11 are physicians who are responsible for maintaining the CPT code set for the American Medical Association.

^a Excludes services with place of service = 21 (Inpatient Hospital), 51 (Inpatient Psychiatric Facility), 55 (Residential Substance Abuse Treatment Facility), 56 (Psychiatric Residential Treatment Center), or 61 (Comprehensive Inpatient Rehabilitation Facility).

AWV = Annual Wellness Visit; CoCM = Collaborative Care Model; FQHC = Federally Qualified Health Center; HCPCS/CPT = Health Care Common Procedure Coding System/Current Procedural Terminology; ICF = Intermediate Care Facility; IPPE = Initial Preventive Physical Examination; MR = Mental Retardation; n.a. = not applicable; OP = Outpatient; RHC = Rural Health Clinic; SNF = Skilled Nursing Facility.

Table 6.D.6. Ambulatory HCPCS/CPT code changes instituted by the CPT Editorial Panel^a during the analytic time period

HCPCS/CPT codes and description		Year added	Year replaced
99497	Advance directive counseling and discussion	2016	
99498	Each addtl 30 min	2016	
96160–96161	Administration of health risk assessment	2017	
99487	Complex Chronic Care Management Services	2017	
99489	Addtl 30 min	2017	
99490	Chronic Care Mgt	2017	
G0502–G0503	Initial or subsequent psychiatric collaborative care management	2017	Deleted in 2018 and replaced with 99492–99494
G0504	Initial or subsequent psychiatric collaborative care management, each additional 30 minutes	2017	Deleted in 2018 and replaced with 99494
G0505	Cognition and functional assessment using standardized instruments with development of recorded care plan for the patient with cognitive impairment	2017	Deleted in 2018 and replaced with 99483
G0506	Comprehensive assessment and care planning for patients needing chronic care	2017	
G0507	Care management services for behavioral health conditions	2017	Deleted in 2018 and replaced with 99484
99091	Remote Physiologic Patient Monitoring	2018	
99483	Cognitive Assessment	2018	
99484	General Behavioral Health Integration Care Management	2018	
99492–99494	Psychiatric Collaborative Care Mgt	2018	
Rural Health Clinic/ Federally Qualified Health Center only			
G0511	General Care Management	2018	
G0512	Psychiatric CoCM	2018	

^a The CPT Editorial Panel comprises 17 members, of whom 11 are physicians, who are responsible for maintaining the CPT code set for the American Medical Association.

CoCM = Collaborative Care Model; HCPCS/CPT = Health Care Common Procedure Coding System/Current Procedural Terminology

C. Planned care and population health

We constructed a total of six claims-based measures under the planned care and population health domain. Five of these were for Medicare FFS beneficiaries ages 18 to 75 with diabetes, and one was for breast cancer screening among women ages 52 through 74. We restricted the five diabetes measures to beneficiaries with continuous Medicare FFS Part A and B enrollment during the 12-month performance period (that is, the year for which the measure is being defined). The breast cancer screening measure required continuous Medicare FFS Part A and Part B enrollment during the 27-month measurement period.

We constructed all six screening measures using the 2018 specifications obtained from HEDIS (available at <http://www.ncqa.org/hedis-quality-measurement/hedis-measures/hedis-2018>), with a few minor modifications as noted in Table 6.D.7. In addition, we did not use prescription drug data in constructing these measures.⁶⁷ Table 6.D.7 summarizes the measure specifications.

Table 6.D.7. Measures based on 2018 HEDIS Specifications

Measure	Measure numerator	Measure denominator
HbA1c testing	Beneficiaries had an HbA1c test performed during the measurement year.	<p>Beneficiaries ages 18–75 with diabetes (Type 1 or Type 2), defined as having one of the following during the measurement year or the prior year:</p> <ul style="list-style-type: none"> • Two face-to-face encounters in an outpatient setting or non-acute inpatient setting on different dates of service, with a diagnosis of diabetes. • One face-to-face encounter in an acute inpatient setting, with a diagnosis of diabetes. <p>Beneficiaries with gestational or steroid-induced diabetes during the measurement year or the prior year were excluded.</p> <p>Notes: We modified the HEDIS denominator by:</p> <ul style="list-style-type: none"> • Using a broad range of E codes for identification of diabetes diagnoses (E10-E13). • Removing 99420 from the Outpatient VDS (new codes 96160 and 96161 are not included). • Not including code 99483 from the Outpatient VDS.

⁶⁷ For our first annual report, we conducted a sensitivity analysis to test whether the HEDIS measures included here are sensitive to the removal of CPT-II codes that are included in the HEDIS specifications and are not separately payable under the Medicare physician fee schedule. Overall, removing these codes had only a minor impact on the HEDIS Comprehensive Diabetes Care measure—the performance rate decreased by only 0.04 percent for the composite measure and by 0.01 or 0.02 percent for the components measures.

Table 6.D.7. (continued)

Measure	Measure numerator	Measure denominator
Eye exam (retinal) performed	<p>Beneficiaries had an eye exam during the measurement year, defined as having one of the following:</p> <ul style="list-style-type: none"> • A retinal or dilated eye exam by an eye care professional (optometrist or ophthalmologist) in the measurement year. • A negative retinal or dilated eye exam (negative for retinopathy) by an eye care professional in the year prior to the measurement year. <p>Notes: We modified the HEDIS measure by:</p> <ul style="list-style-type: none"> • Not including eye enucleation in the numerator. • Adding ICD9 codes for diabetes without complications for prior year identification of retinal exams, because analogous ICD10 codes were added to the HEDIS measure in 2017. 	Same as above
Medical attention for nephropathy	<p>Beneficiaries had a nephropathy screening or monitoring test OR evidence of nephropathy during the measurement year, defined as having one of the following during the measurement year:</p> <ul style="list-style-type: none"> • A nephropathy screening or monitoring test. • Evidence of treatment for nephropathy or ACE/ARB therapy. • Evidence of stage 4 chronic kidney disease. • Evidence of end-stage renal disease. • Evidence of kidney transplant. • A visit with a nephrologist. 	Same as above
Composite diabetes care measure for receiving all three tests	Beneficiaries received all three tests during the measurement year—HbA1c test, eye exam, and medical attention for nephropathy.	Same as above
Composite diabetes care measure for not receiving any of the three tests	Beneficiaries did not receive any of the three tests during the measurement year—HbA1c test, eye exam, and medical attention for nephropathy.	Same as above
Breast cancer screening	Beneficiaries with one or more mammograms any time on or between October 1 two years prior to the start of the measurement year and December 31 of the measurement year.	Women ages 52–74 as of December 31 of the measurement year. Beneficiaries who had a bilateral mastectomy or a right and a left unilateral mastectomy were excluded. We used claims back to 2013 to identify these exclusions.

D. Coordination of care

Unplanned readmissions within 30 days of a hospital discharge. For calculating the 30-day readmission rate, we used a slightly different time period definition than for the other measures. We looked at all eligible inpatient discharges during the last month of the previous year and the first 11 months of the current year,⁶⁸ and calculated the proportion of these index discharges that were followed by an unplanned hospitalization within 30 days of the discharge. An unplanned readmission is defined as any hospitalization that does not continue care (examples of planned admissions include recurring admissions for chemotherapy and planned admission for transplant surgery). For an inpatient discharge to qualify as an index admission, the beneficiary must (1) be enrolled in Medicare FFS Part A and not in a health maintenance organization (HMO), (2) be enrolled in Medicare FFS Part A during the month following discharge, (3) be alive at discharge, and (4) not be discharged against medical advice. In addition, certain admissions were excluded from the universe of index admissions, including discharges with lengths of stay longer than one year; stays at cancer hospitals exempt from the Prospective Payment System; and stays for psychiatric conditions, rehabilitation, or cancer. Our definition of this measure is based on the Yale readmission measure developed by the Yale New Haven Health Services Corporation/Center for Outcomes Research & Evaluation (YNHHSC/CORE 2018) that is used in the Hospital Readmission Reduction Program under Section 3025 of the Affordable Care Act.⁶⁹ After we identify the index admission and qualifying readmissions, we apply these beneficiary eligibility criteria to the readmission: (1) enrolled in Medicare Part B with Medicare as the primary payer in the month of the admission and the month following the admission and (2) enrolled in Medicare Part A and B, not in an HMO, with Medicare as the primary payer in the month of the discharge.

Although we analyze our main readmission outcome at the discharge level, we also conduct a sensitivity test using a measure of unplanned readmission at the beneficiary level (for details, see Appendix 6.E). This is a binary measure that takes the value 1 if the beneficiary had a qualifying readmission in the observation period (after applying the eligibility criteria, as explained above), and is 0 otherwise. The reason for conducting this sensitivity test is as follows. If CPC+ practices are more effective at keeping beneficiaries out of the hospital, the pool of index stays could include more severe cases for the CPC+ group than for the comparison group over time, and

⁶⁸ We examine all index discharges during the last month of the previous year and the first 11 months of the current year to ensure that the relevant outcome “readmission within 30 days” is observed within the analysis period with adequate claims runout. One minor disadvantage is that, for the first intervention year, some readmissions are measured in the last month of the baseline (December 2016), before the CPC+ intervention began, which would dilute any observed effect on readmissions in Year 1. However, this affects only 1 out of 13 months of observed readmissions in Year 1, and should not discernibly change the Year 1 effect, especially since we do not expect the intervention to have sizeable effects in Year 1. We considered the alternative of including index discharges over all 12 months of a calendar year. If we did this, we would not be able to observe all possible 30-day readmissions without expanding the analysis period into the first month of the following year, which for the fifth year of CPC+ would include a month after the intervention ended. Also, it would lead to limited claims runout of only two months for that last month of readmissions in each measurement period.

⁶⁹ Additional information about the Yale readmission measure is available at QualityNet, “Measure Methodology Reports: Readmissions Measures,” at: <https://www.qualitynet.org/dcs/ContentServer?cid=1219069855841&pagename=OnetPublic%2FPage%2FOnetTier4&c=Page>.

therefore, it might include stays that are more likely to result in a readmission. This change in the relative severity of index stays could result in higher readmission rates in the CPC+ group, leading to artificially unfavorable estimates of program effects on a discharge-level readmission outcome.

E. Patient and caregiver engagement

Any use of hospice services. This measure is the percentage of beneficiaries who received any hospice services in the year.

F. Mortality

We constructed the following measures for Medicare FFS beneficiaries attributed in the first quarter of the intervention:

- 12-month mortality: Percentage who died within 12 months (by the end of PY 1).
- 24-month mortality: Percentage who died within 24 months (by the end of PY 2).

6.D.2. Non-outcome claims-based measures

Receipt of chronic care management, transitional care management, or other care management services. We used these three measures to examine the extent of receipt of care management services during the year by beneficiaries assigned to CPC+ and comparison practices. We identified beneficiaries with a claim in the Carrier or Outpatient file with one of the procedure codes in Table 6.D.8 as having received one of these management services. Comparable to the ambulatory visit specifications, we did not include add-on services in our algorithm. We also added CPT 99484 (general behavioral health integration care management), which replaced HCPCS code G0507 in 2017. The CPT Editorial Panel instituted several procedure code updates during our analytic time period, so our specifications were updated to reflect codes as they were added, deleted, or replaced. We included new procedure codes as they were implemented or updated them when they were replaced. The last column of Table 6.D.8 shows the time period during which each procedure code was used. Although CPC+ practices cannot bill chronic care management services for attributed Medicare beneficiaries, we expect to observe a small proportion of CPC+ beneficiaries with such claims in our analysis sample based on intent-to-treat assignment rules, under which we retain beneficiaries even if they are no longer attributed to a CPC+ practice.

Table 6.D.8. Procedure codes for chronic care management, transitional care management, and other care management services

	CPT/HCPCS code	Description	Time period during which procedure code is included in measures
Chronic care management	99490	Chronic care management (20 minutes of clinical staff time)	2016–2018i
	99487	Complex chronic care management (60 minutes of clinical staff time)	2016–2018
	99484	General behavioral health integration care management	2018
	G0506	Chronic care management care planning	2016–2018
	G0507	Care management services for behavioral health conditions	2017 (deleted in 2018 and replaced with 99484)
	99358	Prolonged (<75 minutes) of non-face-to-face E&M service before and/or after direct patient care	2016–2018
Transitional care management	99495	Transitional care management for patients discharged to community from an inpatient setting; moderate complexity of medical decision making	2016–2018
	99496	Transitional care management for patients discharged to community from an inpatient setting; high complexity of medical decision making	2016–2018
Other care management	G0181	Home health supervision of at least 30 minutes	2016–2018
	G0182	Hospice health supervision of at least 30 minutes	2016–2018
	G0502	Initial psychiatric collaborative care management, first 70 minutes	2016–2018
	G0503	Subsequent psychiatric collaborative care management, first 60 minutes	2016–2018
	G0504	Initial or subsequent psychiatric collaborative care management, additional 30 minutes	2016–2018
	G0505	Cognition and functional assessment	2016–2018
	G0511	General care management at an FQHC or RHC	2018
	G0512	Psychiatric collaborative care model	2018
	99483	Cognitive assessment	2018
	99492	Initial psychiatric collaborative care management	2018
	99493, 99494	Subsequent psychiatric collaborative care management	2018
	99497	Advance care planning	2016–2018

Note: CPT codes 99489 (Additional 30 minutes of clinical staff time for chronic care management) and 99359 (Additional 30 minutes of prolonged non-face-to-face E&M service before and/or after direct patient care) were used to identify CCM services for our first annual report but were not used to identify CCM services in our second annual report.

CCM = chronic care management; CPT = Current Procedural Terminology; E&M = Evaluation and Management; FQHC = Federally Qualified Health Center; HCPCS = Health Care Common Procedure Coding System; OCM = other care management; RHC = Rural Health Center; TCM = transitional care management;

6.D.3. Claims-based control variables

Hierarchical condition category (HCC) score. We controlled for HCC score in our regressions to account for variation in beneficiaries' health status, or their level of risk for Medicare spending (Pope et al. 2004, 2011). We controlled for the baseline HCC score (calculated using 2015 claims for beneficiaries attributed to practices that started in 2017, and using 2016 claims for beneficiaries attributed to practices that started in 2018) for observations in the baseline period. To avoid endogeneity issues, we controlled for the score at the start of the intervention (calculated using 2016 claims for beneficiaries attributed to practices that started in 2017, and using 2017 claims for beneficiaries attributed to practices that started in 2018) for observations during the entire intervention period (i.e., we did not update the HCC score during the intervention period with claims data drawn from the intervention period).

We calculated both the baseline and intervention period HCC scores using CMS' HCC score software and algorithm, based on information from Medicare claims and enrollment data. We deviated from the exact approach CMS uses in a few ways to adapt the CMS algorithm for the purpose of the impact analysis. For instance, to avoid endogeneity concerns, we used information on dual status, long-term institutionalization (LTI), and end-stage renal disease (ESRD) status from the prior year instead of the year for which the HCC score was being calculated. Also, we adopted a more nuanced approach to assigning the new enrollee versus the community score to beneficiaries with less than 12 months of FFS enrollment during the base year, as described in Step 5 below.

Specifically, we used the following approach:

1. To calculate HCC scores, we continued to use version 22 2017 HCC model software,⁷⁰ which has greater predictive accuracy than earlier versions. We also used the version 21 2017 ESRD model software for beneficiaries with ESRD.
2. To calculate HCC scores, we used a 12-month lookback for Medicare claims to obtain diagnosis information. For instance, to calculate the 2017 HCC score, we used Medicare claims during 2016.
3. The HCC algorithm also uses information on demographics, reason for Medicare eligibility, new enrollee status, dual eligibility status (with the latest version of the model distinguishing between beneficiaries who have full versus partial dual eligibility status), long-term nursing home care, kidney transplant, and dialysis status. To estimate and assign HCC scores for any year, we used information on these attributes from the prior year, with the exception of demographics and reason for Medicare eligibility, which were from the current year. For example, to calculate the 2017 HCC score, we used the following beneficiary information:
 - Demographics from 2017;
 - Medicare eligibility (eligible due to age or disability) from 2017;

⁷⁰ For the CPC+ second annual report, we continued to use v22 2017 software since the v22 2018 software did not have any meaningful changes. We have already incorporated the 2018 ICD-10 codes in the v22 2017 software.

- New enrollee status from 2016 (a beneficiary with less than six months of Medicare FFS enrollment during the year was flagged as a new enrollee);
 - Dual eligibility status (full, partial, or nondual) during the last three months of 2016;
 - ESRD status during the last three months of 2016;
 - LTI status during a 120-day period ending on December 31, 2016;
 - The number of months since a kidney transplant, looking back from January 1, 2017; and
 - Whether the transplant was successful or the beneficiary was on dialysis.
4. The HCC algorithm estimates the following separate models: (1) ESRD (further differentiating by dialysis status and time since kidney transplant), (2) LTI, (3) community (further differentiating by dual status and aged versus disabled status), and (4) new enrollee. These models include different covariates and interaction terms, and therefore lead to multiple values of the HCC scores for each beneficiary. For instance, the new enrollee model is estimated with covariates only for demographics and Medicare eligibility information, without any covariates for claims-based diagnoses. Thus, for the 2017 HCC score a beneficiary would have multiple values with one score from each model.
5. After estimating the four HCC models, we selected one HCC score for each beneficiary, following CMS' approach to determine which model's score was appropriate for the beneficiary. For example, we assigned a specific value of the 2017 HCC score to a beneficiary, by progressively checking the criteria in the following order:
- We assigned the value of the ESRD score to a beneficiary for the 2017 HCC score if the beneficiary had ESRD anytime during the last three months of 2016 (the ESRD score could further vary or could come from a different ESRD submodel, depending on length of time since a successful kidney transplant, dialysis status, new enrollee status, and age).
 - If a beneficiary did not have ESRD and met the criteria for LTI during the 120-day period ending on December 31, 2016, we assigned the value of the institutional or LTI score for 2017.
 - If a beneficiary did not meet the criteria for either the ESRD or LTI score, and:
 - o Had less than six months of Medicare FFS enrollment during 2016, we assigned the new enrollee score for 2017.
 - o Had 10 or more months of Medicare FFS enrollment during 2016, we assigned the community score for 2017. The community score varied or was obtained from a different submodel, depending on dual status (full, partial, or nondual) during the last three months of 2016, and aged versus disabled status.
 - o Had six to nine months of Medicare FFS enrollment during 2016, we again assigned the community score for 2017 (varying as above by dual and aged or disabled status), but adjusted that score upward or inflated it by 25 percent. We did this to account for missing information on Medicare claims for three to six months in 2016, and therefore, the limited information on diagnoses available for such beneficiaries.

6. Finally we used CMS' official normalization factors for 2016 and 2017 HCC scores to calculate a normalized risk score for each beneficiary. Specifically, the normalized risk score for 2016 (or 2017) is equal to the raw 2016 (or 2017) risk score, calculated using the approach laid out above, divided by the normalization factor for that year. The normalization factors account for changes in coding practice as well as in population demographics between the year an HCC model was calibrated and the year for which we calculated the HCC score.

Chronic condition indicators based on individual or combined HCCs. In addition to HCC scores, our regressions also controlled for HCCs. The HCC models produce the HCCs as part of generating the HCC score by using diagnosis information in Medicare claims (Pope et al. 2004, 2011). The models produce a total of 87 HCCs (79 from the V22 HCC model and an additional 8 from the ESRD model). Based on the sample of 2017 Starters in our first annual report, we had identified 21 HCCs (Table 6.D.9) to include as control variables to adjust for chronic conditions in our regressions, in three steps outlined below. We continued to use the same HCCs in this report, creating baseline and intervention period versions. The baseline measures are based on diagnoses in the prior year or the pre-baseline year (2015 for the 2017 Starters and 2016 for the 2018 Starters). The measures used during the intervention period (Years 1 and 2) are based on diagnoses in the baseline year (2016 for the 2017 Starters and 2017 for the 2018 Starters).

Step 1: We narrowed the pool to 38 HCCs that met at least one of the following criteria:

- Had a relatively high prevalence among beneficiaries in our sample (4 percent and above).
- Had higher-than-average relative factors (greater than or equal to 1) from the HCC models, implying that they were important predictors of Medicare expenditures.
- Showed a noticeable change in prevalence rates between the baseline year (2016) and the follow-up year (2017), among beneficiaries in the yearly samples (greater than or equal to 0.4 percentage points in the CPC+ group or the comparison group).
- Showed a noticeable difference in prevalence rates between CPC+ and comparison beneficiaries in the sample (greater than or equal to 0.2 percentage points).

Step 2: We ran difference-in-differences regressions for Medicare expenditures without fees, using one year of baseline period data and one year of follow-up period data on 2017 Starters, and including all 38 HCCs, separately for Track 1 and Track 2 practices.

Step 3: Based on the magnitude and significance of the coefficient estimate for each HCC in these regressions, and their overall prevalence in our sample, we selected 21 categories as regression controls (Table 6.D.9). Ten of these were individual HCCs denoting a specific condition, and the 11 others were combinations of one or more HCCs. We combined certain HCCs with high or statistically significant coefficient estimates if their individual rates of prevalence were low and they belonged to the same broad family of conditions.

Table 6.D.9. List of hierarchical condition categories used as chronic condition controls

Hierarchical condition category		Description
1	HCC 8	Metastatic Cancer and Acute Leukemia
2	HCC 18	Diabetes with Chronic Complications
3	HCC 21	Protein-Calorie Malnutrition
4	HCC 22	Morbid Obesity
5	HCC 23	Other Significant Endocrine and Metabolic Disorders
6	HCC 85	Congestive Heart Failure
7	HCC 96	Specified Heart Arrhythmias
8	HCC 106	Atherosclerosis of the Extremities with Ulceration or Gangrene
9	HCC 111	Chronic Obstructive Pulmonary Disease
10	HCC 173	Traumatic Amputations and Complications
11	HCC 186	Major Organ Transplant or Replacement Status
12	HCC 40 or 47	Rheumatoid Arthritis and Inflammatory Connective Tissue Disease or Disorders of Immunity
13	HCC 46 or 48	Severe Hematological Disorders, or Coagulation Defects and Other Specified Hematological Disorders
14	HCC 54 or 55	Drug/Alcohol Psychosis or Dependence
15	HCC 57 or 58	Schizophrenia or Major Depressive, Bipolar, and Paranoid Disorders
16	HCC 70 or 71	Quadriplegia or Paraplegia
17	HCC 80 or 82	Coma, Brain Compression/Anoxic Damage or Respirator Dependence/Tracheostomy Status
18	HCC 86, 87, or 88	Acute Myocardial Infarction, Unstable Angina and Other Acute Ischemic Heart Disease, or Angina Pectoris
19	HCC 99 or 100	Cerebral Hemorrhage, or Ischemic or Unspecified Stroke
20	HCC 107 or 108	Vascular Disease, with Complications
21	HCC 157 or 158	Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone; or of Skin with Full Thickness Skin Loss

Indicator for whether a beneficiary was assigned a new enrollee score. Our regressions also controlled for whether a beneficiary was assigned a new enrollee score in the baseline or intervention period. The other types of scores (community, LTI, ESRD, etc.) are based on the beneficiary's actual claims history, but the new enrollee score (which is assigned to beneficiaries with less than 6 months of FFS eligibility) is only a proxy for the beneficiary's actual risk because it is based only on the beneficiary's demographic characteristics and reason for Medicare entitlement.

Indicator for presence of Alzheimer's disease or dementia based on the Chronic Conditions Warehouse (CCW) algorithm. Similar to the HCCs described above, we constructed a CCW indicator for Alzheimer's disease or dementia to adjust for this condition in our regressions (this indicator is also used to identify high-risk beneficiaries in Tier 5, as described in Chapter 6). We used this CCW indicator instead of HCCs for Alzheimer's disease and dementia from the HCC model to ensure consistency with CMS' approach for identifying high-risk, Tier 5 beneficiaries in Track 2 of CPC+. We created annual indicators based on the CCW algorithm, which uses a three-year lookback period to identify these diagnoses. For example, for the 2017 Starters, our baseline indicator used claims from January 1, 2013, through December 31, 2015, and our

indicator for Alzheimer’s and dementia at the start of the intervention period used claims from January 1, 2014, through December 31, 2016.

The CCW algorithm for defining this indicator requires a diagnosis code from Table 6.D.10 in any position on at least one inpatient, skilled nursing facility, home health, outpatient, or carrier claim during the three-year lookback period.

Table 6.D.10. Diagnosis codes used to identify Alzheimer’s disease or dementia

ICD-9 diagnosis codes	ICD-10 diagnosis codes
331.0, 331.11, 331.19, 331.2, 331.7, 290.0, 290.10, 290.11, 290.12, 290.13, 290.20, 290.21, 290.3, 290.40, 290.41, 290.42, 290.43, 294.0, 294.10, 294.11, 294.20, 294.21, 294.8, 797	F01.50, F01.51, F02.80, F02.81, F03.90, F03.91, F04, G13.8, F05, F06.1, F06.8, G30.0, G30.1, G30.8, G30.9, G31.1, G31.2, G31.01, G31.09, G94, R41.81, R54

6.D.4. Non-claims-based control variables

We controlled for beneficiaries’ demographics (age, race, and gender) and original reason for Medicare eligibility (age, disability, or ESRD) in our regression models, based on information in the Medicare enrollment database. We calculated age as of January 1 of the baseline year for the baseline observations (2016 for the 2017 Starters and 2017 for the 2018 Starters), and as of January 1 of the first intervention year (2017 for 2017 Starters and 2018 for the 2018 Starters) for observations in the intervention period. The exact age and race categories used in our regressions are described in Appendix 6.E.

We also controlled for dual eligibility status, based on information obtained from the Master Beneficiary Summary File (MBSF). Specifically, we used the DUAL_STATUS_CD variable in the MBSF during the last three months of pre-baseline and the baseline year to define dual status for the baseline and intervention periods, respectively. We flagged a beneficiary as dually eligible, if this variable indicated either full or partial dually eligible status during any of those three months.⁷¹

⁷¹ We used dual eligibility status in the three months *prior to the measurement period* (baseline or intervention) as a control variable to avoid endogeneity concerns with using concurrent values of time-varying beneficiary characteristics. Using the *last three months* before the start of the measurement period for outcomes gives us the closest approximation to dual status during the measurement period. This approach differs from CMS’ dual status specification for payment purposes, in which concurrent month-by-month dual status is used to determine the appropriate risk score in the month.

6.E. Regression approach

This Appendix describes the regression approach we used to estimate impacts on Medicare claims-based outcomes in this report. For the main impact analysis, we used a difference-in-differences regression model to estimate impacts during the first two years of CPC+ for practices that joined CPC+ in 2017 and their matched comparison practices. We also used a difference-in-differences regression model to estimate impacts during the first year of CPC+ for a combined sample of practices that joined CPC+ in 2017 and 2018 and their matched comparison practices. This is a secondary analysis for this annual report, because we are only able to examine one year of intervention data for the combined sample. Because a relatively small number of practices began in 2018, we do not assess impacts separately for these practices alone.

In this Appendix, we focus on the regression approach used to estimate impacts for practices that joined CPC+ in 2017, but we note key details (such as the definition of time periods) that will be different for the analysis of the 2017 and 2018 cohorts combined. First, we describe the study population and unit of observation in the regressions and discuss the regression model itself. Next, we describe the difference-in-differences estimation approach overall. Finally, we describe the subgroup analyses and sensitivity tests that we implemented to check for (1) differential effects of CPC+ on subgroups, and (2) the robustness of the impact estimates on Medicare spending and readmission rates.

6.E.1. Study population and unit of observation in the regression analysis

Study population. We used a cross-sectional approach to define the study population, with two highly overlapping cross-sections for: (1) the baseline year and (2) each year of CPC+. The study population was based on beneficiary attribution (described in Appendix 6.B), and the annual cross-sections of beneficiaries for the baseline year and the intervention period were based on quarterly attribution. (See Table 6.E.1 below.)

Table 6.E.1. Baseline and intervention year cross-section definitions for study population

Cross-section	Study population definition
Baseline	Beneficiaries attributed to CPC+ or comparison practices at any time during the baseline year (January 1, 2016, to December 31, 2016, for practices that joined CPC+ in 2017) ^a
First intervention year	Beneficiaries attributed to CPC+ or comparison practices at any time during the first intervention year (January 1, 2017, to December 31, 2017, for practices that joined CPC+ in 2017) ^b
Second intervention year	Beneficiaries attributed to the intervention or comparison practices at any time during the second intervention year (January 1, 2018, to December 31, 2018, for practices that joined CPC+ in 2017)

^a In our secondary analysis, the baseline period for practices that joined CPC+ in 2018 is instead January 1, 2017, to December 31, 2017. The baseline period definition is the same for any comparison practices matched to the CPC+ practices in a given cohort.

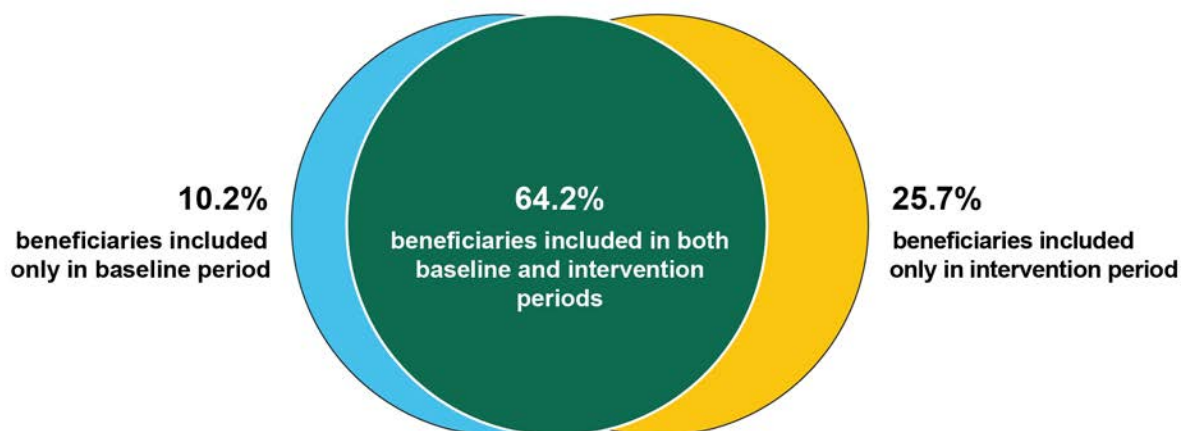
^b In our secondary analysis, the first intervention year for practices that joined CPC+ in 2018 is instead January 1, 2018, to December 31, 2018. The intervention period definition is the same for any comparison practices matched to the CPC+ practices in a given cohort.

Assignment to the CPC+ or comparison groups, based on attribution. We assigned beneficiaries to the CPC+ or comparison groups at two points:

1. For the **baseline period**, we assigned beneficiaries to the CPC+ or comparison group based on the first practice they were attributed to during the baseline period.
2. During the **intervention period**, we assigned beneficiaries to the CPC+ or comparison group based on the first practice they were attributed to during the intervention period; following an intent-to-treat rule, we continue to assign the beneficiary to the same practice for the entire intervention period, regardless of whether the beneficiary continued to receive care at that practice.

Following these definitions, it is possible for a beneficiary to be in the study population (1) only during the baseline period—for example, if the beneficiary died during the baseline period or was no longer attributed to a CPC+ or comparison practice during the intervention period; or (2) only during the intervention period—for example, if the beneficiary was first attributed to a CPC+ or comparison practice during an intervention year (including people who were new to Medicare). For the 2017 starters, just under two-thirds of beneficiaries (64.2 percent) were included in both the baseline and intervention periods in our main impact analysis, whereas 10.1 and 25.7 percent, respectively, were included for only the baseline year or only the intervention year (Figure 6.E.1). Between baseline and Year 1 of the intervention, approximately 10 percent of our sample changed due to the addition of newly attributed and eligible beneficiaries, exclusion of ineligible beneficiaries (for example, due to death), and attribution switches into and out of CPC+ and comparison practices. Similar changes occurred between Year 1 and Year 2 of the intervention, but in addition the number of beneficiaries attributed to CPC+ or comparison practices increased from Year 1 to Year 2 (Table 6.B.6), leading to more new beneficiaries in our sample in Year 2. Also, given the intent-to-treat approach, once beneficiaries are assigned to a CPC+ or comparison practice during either the baseline or the intervention period, they remain in the sample for the rest of that period, as long as they are alive and enrolled in Medicare FFS. Because we are retaining beneficiaries in the sample over time, as well as adding new beneficiaries to the sample, the sample size during the intervention period will continue to grow as we add more intervention years to the analysis and will include more new beneficiaries compared to the baseline period.

Figure 6.E.1. Overlap of beneficiaries in the baseline and intervention periods for 2017 Starters



Unit of observation. The unit of observation in the regressions for almost all claims-based outcomes is the beneficiary-year. Each beneficiary has observations for as many years as he or she remains in the sample (as defined above) and can still be observed in claims. Specifically, to be observed, a beneficiary assigned to a practice for the baseline or the intervention period had to be alive, have both Part A and B Medicare fee-for-service (FFS) coverage with Medicare as the primary payer, and not be covered under a Medicare Advantage or other Medicare health plan.⁷² Medicare beneficiaries who were dually eligible for Medicaid can be attributed as long as they meet the other eligibility requirements.

Study population and unit of observation for readmissions analyses. For one outcome—30-day readmissions per discharge—the study population and unit of observation differ from those used for the other outcomes. We estimated impacts of CPC+ on the probability that an index hospital admission was followed by a readmission within 30 days. In this case, the study population in each year includes only the subset of the full study population who had at least one index admission during that year. The unit of analysis is the index stay, rather than the beneficiary. Therefore, a beneficiary who had two index stays in the first intervention year has two observations in the first intervention year, one for each stay. Also, a readmission could qualify as an index stay if it meets the eligibility criteria for an index admission.

If CPC+ practices are more effective in keeping beneficiaries out of the hospital, the relative severity of index stays could rise for the CPC+ group compared to the comparison group over time and might include stays that are more likely to result in a readmission. This change in the relative severity of index stays could lead to higher readmission rates in the CPC+ group. To address this issue, we conducted a sensitivity test using a readmission measure calculated at the beneficiary level.

⁷² As we describe in Appendix 6.B, we apply an additional criterion for a beneficiary not being incarcerated when we identify attributed patients, following CMS' approach to patient attribution. Once we attribute a patient to a CPC+ or comparison practice based on all criteria in the attribution algorithm, the final analysis sample ignores the "not incarcerated" requirement in identifying the number of FFS eligible months for patients.

6.E.2. Model specification

Let i index the beneficiary, j index the practice, and t index time, where t ranges from 0 to 2, with 0 denoting the baseline year. Given the study population and unit of observation defined above, for the main regression analyses we estimated difference-in-differences regression models of the following form, with one regression for each outcome:

$$(1) \quad y_{ijt} = \alpha + \beta X_{it} + \gamma_t p_t + \theta_t z_j p_t + b_j + \varepsilon_{ijt},$$

where

y_{ijt} represents a claims-based outcome variable for beneficiary i , in practice j , in year t . Outcome variables include total Medicare expenditures and measures of utilization such as hospitalizations. Table 6.D.1 in Appendix 6.D lists the outcomes.

X_{it} is a vector of characteristics of beneficiary i measured at the start of the baseline period for baseline observations, and at the start of the intervention period for intervention period observations. For example, beneficiary characteristics include demographics (age, race, and gender), variables capturing Medicare and Medicaid eligibility (that is, original reason for Medicare eligibility, and dual Medicare-Medicaid status), and hierarchical condition category (HCC) score. We also include beneficiary characteristics like HCC score interacted with the year indicators (from Year 2 onward) to account for possible changes in the relationship between the characteristic measured at the start of the intervention and outcomes. We describe covariates in more detail in Section 6.E.5 below.

p_t (for “post”) is an intervention-period indicator that takes the value of 1 during a specific intervention year, for instance Year 1, and 0 otherwise.

z_j is a binary indicator of intervention status or of being in a CPC+ practice; the indicator takes the value of 1 if practice j is a CPC+ practice, and is otherwise 0. The main effect of this indicator is not identified in this equation since it is collinear with the practice fixed effects.

b_j is a practice-level fixed effect for practice j , which controls for all time-invariant practice characteristics.

ε_{ijt} is the idiosyncratic error term. It represents unexplained variability in the outcome variable for beneficiary i , in practice j , during period t .

For the secondary regression analysis that combines practices that joined CPC+ in 2017 and 2018, we estimated similar difference-in-differences regression models of the following form:

$$(2) \quad y_{ijt} = \alpha + \beta X_{it} + \gamma_t p_t + \pi_t R_j p_t + \theta_t z_j p_t + b_j + \varepsilon_{ijt},$$

where

R_j is an indicator for practice j joining CPC+ in 2018 versus in 2017.

6.E.3. Model output and interpretation of key coefficients

In Equation (1), the intervention period-specific coefficients (γ_t) capture changes experienced by the comparison group in each intervention-period interval. Note that, instead of assuming a linear time trend, we allowed the coefficients to vary for each interval. The set of interaction terms ($\theta_t z_j p_t$) captures the difference in outcomes between the CPC+ and comparison groups for each intervention-period interval relative to that difference in the baseline period, adjusting for differences in (observed) beneficiary and (observed and unobserved) practice characteristics that remain after matching. Thus, the θ_t coefficients are the interval-specific impact estimates that capture whether the CPC+ intervention made a difference to an outcome of interest.

By estimating Equation (1) for the impact analysis in this report, we obtained an estimate of θ_t for each year of CPC+, as well as regression-adjusted means for baseline and intervention years, by intervention status. In addition to the model specified by Equation (1), we estimated an alternative model that assumed a constant impact θ across the entire intervention period, providing an average impact estimate across the two intervention years. In subsequent annual reports, we will continue to use this overall or “cumulative” impact estimate to summarize the program’s impact over an extended period, for example, overall impact through the end of the intervention.

Table 6.E.2 illustrates how the parameter estimates from Equation (1) can be used to obtain the regression-adjusted CPC+ and comparison group means for the baseline year and each intervention year, along with the difference-in-differences impact estimates for Years 1 and 2. Because we use practice fixed effects, the main effect of intervention status, or the coefficient on the indicator for being in a CPC+ practice (the parameter φ in Table 6.E.2) cannot be estimated by Equation (1). Therefore, in our report, we use the following approach to show CPC+ and comparison group means in tables reporting difference-in-differences estimates. We show the actual, unadjusted CPC+ means at baseline and each intervention year. For the comparison group, we show the actual, unadjusted mean at baseline and the adjusted mean in each intervention year. We obtained this adjusted mean by subtracting the regression-adjusted difference between the CPC+ and matched comparison groups in each year (obtained from the difference-in-differences model) from the unadjusted CPC+ mean in that same year. We also calculated percentage impacts relative to what the CPC+ mean would have been in an intervention year in the absence of the intervention—that is, the unadjusted CPC+ mean minus the impact estimate.

Table 6.E.2. Impact estimates and CPC+ and comparison group means based on a linear regression from Equation (1): a stylized representation

Year	CPC+ group mean	Comparison group mean	Difference between CPC+ and comparison means	Difference-in-differences impact estimate
Baseline year ($t = 0$) [reference period]	$\alpha + (\varphi)$	α	(φ)	N/A
First intervention year ($t = 1$)	$\alpha + (\varphi) + \gamma_1 + \pi_1 + \theta_1$	$\alpha + \gamma_1 + \pi_1$	$(\varphi) + \theta_1$	θ_1
Second intervention year ^a ($t = 2$)	$\alpha + (\varphi) + \gamma_2 + \pi_2 + \theta_2$	$\alpha + \gamma_2 + \pi_2$	$(\varphi) + \theta_2$	θ_2

Notes: To highlight the key coefficients in Equation (1), we exclude the coefficients on beneficiary characteristics and practice characteristics in the expressions for the CPC+ and comparison group means in this table. The parameter φ in the table denotes the main effect of intervention status, or a coefficient on the indicator for being in a CPC+ practice. This term is not included in Equation (1); it cannot be directly estimated because the model includes practice fixed effects. We include this term in this table to illustrate the difference-in-differences approach, but we show it in parentheses since we do not obtain an estimate of . This parameter is differenced out in obtaining the impact estimate.

^a In our secondary analysis, we use the same equations, but we estimate impacts in the second intervention year only for practices that joined CPC+ in 2017.

6.E.4. Model estimation

Separate regressions by track and by Medicare Shared Savings Program (SSP) status. For each Medicare claims-based outcome of interest, we estimated six separate regressions for our main analysis. We estimated impacts separately for Track 1 and Track 2, given that participating practices face track-specific requirements, payments, and incentives, which may yield very different impacts. Within each track, in addition to an overall estimate of CPC+, we also estimated impacts separately by SSP participation status at the start of CPC+ (January 1, 2017, for practices that started CPC+ in 2017).^{73,74} For selected outcomes, we also estimated impacts separately for other key subgroups, by including additional interaction terms in the regression, as we describe below in Section 6.E.7.

Linear regression. For Medicare expenditures with and without care management fees, and for any other continuous expenditure outcomes, we estimated Equation (1) as a linear regression. We also used linear regressions for (1) all service utilization outcomes (for example,

⁷³ Practices may change their SSP status over the course of CPC+, but we do not control for this change, because participation in CPC+ may cause a practice to participate in (or drop out of) SSP.

⁷⁴ An alternative to estimating separate models by SSP participation status is to use a triple differences estimation approach, where the coefficient on the triple interaction term for SSP participation, participation in CPC+, and the intervention period dummy would provide the impact estimate for SSP practices. Ideally, we would also allow the effect of beneficiary demographics and other practice characteristics (fixed effects) to vary by SSP participation status. However, allowing for the effect of each of the model covariates to vary by SSP participation status would make a triple differences estimation extremely unwieldy. Therefore, we estimated impacts using separate regressions for SSP practices and non-SSP practices.

hospitalizations, emergency department visits, and physician visits), which were measured as utilization counts per 1,000 beneficiaries per year; and (2) all binary outcomes (unplanned readmission within 30 days following a discharge, any hospice use, any advance care planning, mortality, and receipt of recommended services for beneficiaries with diabetes and for breast cancer screening). An alternative approach would have been to use generalized linear models to account for the distinctive distributional features of service use outcomes and use logistic regression for binary outcomes. However, from the perspective of computational feasibility, nonlinear models were expected to be much more resource- and time-intensive given the large sample sizes. Also, we were more likely to experience problems with model convergence with a nonlinear model, especially when using a specification with practice fixed effects, due to features in the data (for example, a binary outcome being equal to zero or one for all beneficiaries in a practice or for all beneficiaries with a certain combination of characteristics). Therefore, our preferred approach was to estimate linear regressions for all outcomes. We tested how much the choice of functional form might influence the results of our impact evaluation, and we found we obtained nearly identical point estimates of the difference-in-differences impacts using either linear or nonlinear models.⁷⁵

Non-independence. All regressions accounted for non-independence across observations within the same practice using standard error estimates clustered at the practice level. Although this approach yields consistent standard error estimates, we considered alternatives for two reasons. First, because there is much stronger correlation across repeated observations from the same beneficiary than among beneficiaries receiving care from the same practice, we tested whether explicitly accounting for beneficiary-level clustering would improve standard error estimates. Second, we tested whether including fixed or random effects at the beneficiary or practice level could help guard against omitted-variable bias by controlling for any time-stable unmeasured beneficiary- or practice-level confounders. The detailed testing methods and results are in Appendix 3.J of the evaluation design report (Peikes et al. 2019). We found that a model with practice-level fixed effects and standard error estimates clustered at the practice level provided the best performance in terms of the mean squared error of the difference-in-differences point estimate and the coverage of the confidence interval around this estimate.⁷⁶ Therefore, we adopted this approach to account for non-independence.

⁷⁵ In a sensitivity analysis comparing inference from two models that were identical except that one was a linear regression and the other was a zero-inflated negative binomial model, we found that across the four years of CPC Classic, the two approaches gave nearly identical point estimates of the difference-in-differences impact for a count variable of number of hospitalizations. The linear model's standard errors around those point estimates were about 10 percent larger than those from the zero-inflated negative binomial model. Therefore, using a linear model should provide us with point estimates similar to those from a more complex, maximum likelihood model, but slightly more conservative standard errors, potentially lowering the likelihood that a small to moderate-size effect is considered statistically significant.

⁷⁶ Although practice fixed effects account for part of the within-practice correlation in outcomes, they do not account for such correlation completely. Specifically, practice fixed effects assume a fixed degree of correlation between any two observations from the same practice. In reality, however, there could be differences in the degree of correlation arising due to beneficiaries being in the same practice versus correlation in outcomes over time for the same beneficiary in that practice (autocorrelation). Also, practice fixed effects do not account for heteroscedasticity. Therefore, using standard error estimates clustered at the practice level on top of practice fixed effects is likely to provide a more accurate estimate of the standard error for the impact estimates.

Interpretation. We used regression output to calculate p -values for statistical inference. To minimize the probability of mistaking noise for signal when examining impacts, we combined evidence from p -values with evidence from subgroup analyses, related outcomes, sensitivity tests, and the implementation analysis to reinforce or discount the interpretation of observed results.

6.E.5. Control variables

Each regression controlled for beneficiary characteristics and practice fixed effects. For observations in the intervention period, beneficiary-level control variables were measured directly before the start of CPC+ (that is, based on data from calendar year 2016 for practices that joined CPC+ in 2017). For observations in the baseline period, beneficiary-level control variables were measured directly before the start of the yearlong baseline period (based on data from calendar year 2015 for practices that joined CPC+ in 2017). The practice fixed effects are indicators or dummy variables—one for each practice in the CPC+ and comparison groups. Including these effects controls for any inherent, time-invariant differences between the CPC+ and comparison practices—whether such differences are observed or unobserved. Including practice fixed effects ensured that we accounted for any remaining imbalance in the practice-level variables used in matching, and in any other unmeasured practice characteristics at baseline, when obtaining the difference-in-differences impact estimates. We did not incorporate changes over time in observed practice characteristics as control variables, because the intervention could affect practice characteristics.

Beneficiary-level control variables for Medicare analysis. Table 6.E.3 shows the beneficiary-level control variables used in the regressions. These control variables included demographics (age categories, race categories, and gender), original reason for Medicare entitlement, dual eligibility status, and HCC score. For comprehensive risk adjustment, the regression additionally includes indicators for specific chronic conditions (21 individual HCCs and the Chronic Conditions Warehouse [CCW] indicator for Alzheimer’s or dementia) that are prevalent in the CPC+ sample (collapsing categories, where appropriate) defined by applying the HCC or CCW algorithm on Medicare claims (see Appendix 6.D for more information on the selected HCC conditions). We also included interactions between the HCC score and each intervention year from the second year onward, as well as interactions between the specific chronic conditions and the intervention year. Given that we used a difference-in-differences approach, we did not include as control variables Medicare service use or expenditures during the baseline period, as is often done in a cross-sectional analysis. These baseline outcomes are the dependent variable for the baseline observations in our model and, therefore, cannot be viewed as independent of the error term.

Additional control variables for discharge-level outcomes. As we noted previously, our analysis for readmissions is at the discharge (rather than beneficiary) level. Therefore, the regression for this outcome included additional control variables. Specifically, we included indicators for conditions identified in inpatient episodes of care during the 12 months before the index admission as well as those present at admission (there are 31 such condition categories for this analysis). Given their similarity to HCCs, to avoid collinearity, we excluded the chronic condition controls for specific HCCs from the readmission regression, while retaining the controls for HCC score. We also controlled for whether the principal diagnosis or procedure associated with the index discharge is best classified as (1) medicine, (2) surgery, (3) cardiorespiratory, (4) cardiovascular, or (5) neurology.⁷⁷

Table 6.E.3. Medicare beneficiary-level control variables for the difference-in-differences regressions

Baseline characteristic category	Variables
Demographics	Age categories < 65 65–74 (reference category) 75–84 ≥ 85 Race categories White (reference category) Black All other/unknown Gender (binary indicator for male)
Original reason for Medicare eligibility	Original Medicare eligibility categories Age (reference category) Disability only ESRD only or ESRD with disability
Dual eligibility	Indicator for dual status (where dual is defined as those with full or partial Medicaid benefits according to Master Beneficiary Summary File)

⁷⁷ The 31 condition categories for the Medicare analysis include a range of diagnoses or risk factors, such as severe infection, metastatic cancer/acute leukemia, diabetes mellitus, end-stage liver disease, drug and alcohol disorders, congestive heart failure, chronic obstructive pulmonary disease, ulcers, cardiorespiratory failure or cardiorespiratory shock, acute renal failure, transplants, hip fracture/dislocation, and more. Our approach was based on reviewing standard models in the literature for risk-adjusting the likelihood of readmission, although it differed from other models in that we did not estimate a separate readmission equation for each of the specialty cohorts (medicine, surgery, cardiorespiratory or cardiovascular, or neurology), given our goal of estimating the impact of the intervention on the risk of all unplanned readmissions. The lookback period for these conditions is one to three years, depending on the condition, as specified in the Yale algorithm (YNHSC/CORE 2018).

Table 6.E.3. (continued)

Baseline characteristic category	Variables
Chronic conditions	HCCs ^a HCC 8 – Metastatic Cancer and Acute Leukemia HCC 18 – Diabetes with Chronic Complications HCC 21 – Protein-Calorie Malnutrition HCC 22 – Morbid Obesity HCC 23 – Other Significant Endocrine and Metabolic Disorders HCC 85 – Congestive Heart Failure HCC 96 – Specified Heart Arrhythmias HCC 106 – Atherosclerosis of the Extremities with Ulceration or Gangrene HCC 111 – Chronic Obstructive Pulmonary Disease HCC 173 – Traumatic Amputations and Complications HCC 186 – Major Organ Transplant or Replacement Status HCC 40 or 47 – Rheumatoid Arthritis and Inflammatory Connective Tissue Disease or Disorders of Immunity HCC 46 or 48 – Severe Hematological Disorders, or Coagulation Defects and Other Specified Hematological Disorders HCC 54 or 55 – Drug/Alcohol Psychosis or Dependence HCC 57 or 58 – Schizophrenia or Major Depressive, Bipolar, and Paranoid Disorders HCC 70 or 71 – Quadriplegia or Paraplegia HCC 80 or 82 – Coma, Brain Compression/Anoxic Damage or Respirator Dependence/Tracheostomy Status HCC 86, 87, or 88 – Acute Myocardial Infarction, Unstable Angina and Other Acute Ischemic Heart Disease, or Angina Pectoris HCC 99 or 100 – Cerebral Hemorrhage, or Ischemic or Unspecified Stroke HCC 107 or 108 – Vascular Disease, with Complications HCC 157 or 158 – Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone; or of Skin with Full Thickness Skin Loss Chronic Conditions Warehouse indicator Alzheimer’s disease or dementia Chronic condition indicators interacted with follow-up year from second follow-up year onward
Risk score	HCC score Indicator for whether HCC score was assigned a new enrollee HCC score i.e., HCC score was calculated on the basis of demographic characteristics only HCC score interacted with follow-up year from second follow-up year onward Indicator for being assigned a new enrollee HCC score interacted with follow-up year from second follow-up year onward

Notes: Beneficiary-level control variables were measured either directly before the start of CPC+ (for the intervention-period observations) or directly before the start of the yearlong baseline period (for the baseline-period observations). The yearlong baseline period is 2016 for the practices that started CPC+ in 2017. Our secondary analysis includes a separate baseline period, calendar year 2017, for practices that started CPC+ in 2018.

^a We selected a small subset—21 of the 79 HCCs—created by the HCC model for inclusion as control variables, based on the relative weight of specific HCCs in HCC score calculation as well as their prevalence in our analysis sample. We also included an indicator for Alzheimer’s disease or dementia from the Chronic Conditions Warehouse (since there is not an HCC for Alzheimer’s disease or dementia).

ESRD = end-stage renal disease; HCC = hierarchical condition category.

6.E.6. Weighting

We applied weights to the observations in the regressions to ensure that (1) beneficiaries who were observed for longer periods receive relatively more weight than those observed for shorter periods (using a Medicare enrollment weight) and (2) the CPC+ and comparison groups are comparable (using a matching weight). To achieve the first goal, for each beneficiary in each year, we calculated fractional enrollment weights that capture the share of months observed during that year. For this analysis, a beneficiary is observed during each month that he or she is alive and enrolled in Medicare FFS (enrolled in both Part A and Part B, and not in a Medicare health maintenance organization [HMO]), and has Medicare as the primary payer.

As we describe in Appendix 6.C, we used an external comparison group as the main comparison group for the impact analysis of Medicare claims-based outcomes. For all analyses using this comparison group, the matching weight was the same as the covariate-balancing propensity score-based weights used to balance the CPC+ and comparison practices on their baseline characteristics.

The final composite weight for beneficiaries in the comparison group was the product of (1) the enrollment weight, and (2) the matching weight. For beneficiaries in the CPC+ group, we needed only the enrollment weight because, by construction, the matching weight for each CPC+ beneficiary is one.

Regressions for most outcomes incorporated these final composite weights—that is, the product of the enrollment weight and the matching weight—for CPC+ and comparison beneficiaries in each baseline and intervention period interval. Regressions for discharge-level measures, such as readmissions, incorporated only the matching weight; the enrollment weight was unnecessary, because these regressions included beneficiaries only if they were enrolled in Medicare FFS during the full month following the discharge.⁷⁸ For certain binary outcome measures defined at the beneficiary level—for example, whether a beneficiary received hospice services or whether a beneficiary had a face-to-face visit in which advance care plans were discussed with a physician or other qualified health professional—we used the composite weight, but after recoding the enrollment weight to account for truncation due to beneficiaries dying during the follow-up period. Specifically, the enrollment weight was recoded to a value of one if the outcome was observed, to prevent those who received these services from receiving smaller weights due to death, and was equal to the enrollment weight (using the usual methods to take into length of time observed) if the outcome was not observed. For the diabetes process-of-care quality measures, we restricted the analysis to beneficiaries with diabetes who were enrolled in Medicare FFS the whole year; the enrollment weight, therefore, was equal to one.

⁷⁸ The only exception is that the regression retains beneficiaries who die during the month following the discharge.

6.E.7. Variation in effects among subgroups of beneficiaries and practices

As we discuss above, within each track, we estimated impacts separately by baseline SSP status of practices to investigate whether participating in both CPC+ and an SSP Accountable Care Organization had a different impact than participating in CPC+ alone. Given that SSP participation is a critical dimension on which participating CPC+ practices differ, we estimated these separate regressions, by SSP status, for all outcomes.

In addition, the impacts of CPC+ could differ for different types of beneficiaries and practices, based on other baseline characteristics. Therefore, for selected outcomes, we estimated the effects of the program on *subsets of beneficiaries* for whom CPC+ is likely to have especially large effects, such as the chronically ill and other patients with complex health conditions (Brown et al. 2012; Rich et al. 2012). We also examined effects for different *types of practices*, such as those that had a larger number of primary care practitioners, had participated in prior primary care transformation initiatives at baseline, or were owned by a hospital or health system. For these subgroup analyses, we included in the regressions interactions of variables denoting subgroup membership with the indicator for CPC+ versus comparison status, the intervention year indicator, and the CPC+ indicator interacted with the intervention year indicator. Because there is likely to be significant correlation among practice characteristics, for example, between practice size and ownership, testing for differential effects for each practice characteristic separately may not unmask the real drivers of significant differences. Therefore, for the practice subgroup analysis, we included interactions with subgroup indicators for *all* practice characteristics in a single regression to disentangle which characteristics actually influence program impacts.⁷⁹

Practice-level subgroups. We estimated differential effects for subgroups defined at baseline by various characteristics, as shown in Table 6.E.4.

Table 6.E.4. Practice-level subgroups

Subgroup definitions	Why potentially important to CPC+
Whether the practice had participated in prior primary care transformation initiatives—defined as participation in CPC Classic or the Multi-Payer Advanced Primary Care Practice demonstration, or NCQA, TJC, AAAHC, URAC, or state medical-home recognition status	Practices with participation in prior primary care transformation initiatives may be more advanced and, as a result, may require less time and resources to make changes at the start of CPC+. On the other hand, these practices may have less room for improvement after their prior practice transformation experience.
Practice size, as defined by the number of primary care practitioners (1–2, 3–5, 6 or more)	Larger practices will likely have access to greater resources and better medical infrastructure. Smaller practices may, on the other hand, have greater flexibility to implement changes more rapidly.
Whether the practice was multi-specialty versus primary care only	Multi-specialty practices face different financial incentives and economies of scale.

⁷⁹ Given the high degree of overlap between certain beneficiary subgroups—for example, between those above the 75th percentile of the HCC score distribution and those above the 90th percentile—we did not include interactions with all beneficiary subgroup definitions in a single regression. Tables 6.E.6 and 6.E.7 indicate the extent of overlap between the beneficiary subgroups in Tracks 1 and 2, respectively.

Subgroup definitions	Why potentially important to CPC+
Practice ownership by a hospital or a health system	Practices owned by a hospital or health system will likely have access to greater resources and better medical infrastructure. These practices may also face different financial incentives and economies of scale.
Whether the practice was in a rural, suburban, or urban area	Practices in more urban areas will likely have access to greater resources and better medical infrastructure than those in rural areas.

AAHC = Accreditation Association for Ambulatory Health Care; NCQA = National Committee for Quality Assurance; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Beneficiary-level subgroups. When analyzing differential impacts by subsets of beneficiaries, we considered subgroups that tend to have higher utilization and cost, for example, beneficiaries with higher HCC scores or those with behavioral health conditions. As with the beneficiary-level control variables, we identified beneficiary subgroups directly before the start of the baseline period for baseline observations and directly before the start of the intervention period for intervention observations.

Table 6.E.5. Beneficiary subgroups

Subgroup definitions	Why potentially important to CPC+
Beneficiaries in the highest quartile of the distribution of HCC score (both Track 1 and Track 2), or patients who either were in the highest decile of the distribution of HCC score or had dementia (both Track 1 and Track 2)	Beneficiaries with high HCC scores and/or those with dementia are at greater risk of incurring high health care expenditures. Also, these high-risk definitions are based on CMS' criteria for identifying beneficiaries in risk Tier 4 and risk Tier 5. ^a
Beneficiaries with behavioral health conditions (HCCs for schizophrenia or major depressive, bipolar, and paranoid disorders, or drug/alcohol psychosis or drug/alcohol dependence)	Behavioral health conditions are among the costliest health conditions and key drivers of health care utilization.
Beneficiaries with multiple chronic conditions, specifically at least 2 of 12 frequently occurring chronic conditions, ^b who also had at least one hospitalization in the year before the start of CPC+ (for observations in the intervention period) or the year before baseline (for observations in the baseline period)	Beneficiaries with multiple chronic conditions who have also experienced relatively recent hospitalizations are among the highest-risk beneficiaries.
Beneficiaries who were also eligible for Medicaid (dually eligible)	Dually eligible beneficiaries typically have higher health care utilization and higher costs than those who are not dually eligible.

^a CMS' approach for identifying Tier 4 and Tier 5 high-risk beneficiaries differs from the approach we used in the impact analysis. Specifically, CMS includes the entire Medicare population in each CPC+ region, and uses the region-specific distribution of HCC scores to identify the 75th and 90th percentiles of the distribution. For the impact analysis, we identified the high-risk HCC cutoffs by looking at the distribution of 2016 HCC scores among Medicare beneficiaries in our final analytic sample, and across all regions. Also, CMS identifies Tier 5 patients for Track 2 only, whereas we also ran subgroup analyses for Tier 5 beneficiaries in Track 1 practices.

^b The 12 frequently occurring chronic conditions we used in this definition are: congestive heart failure, chronic obstructive pulmonary disease, acute myocardial infarction, ischemic heart disease, diabetes, metastatic cancer and acute leukemia, stroke, depression, dementia, atrial fibrillation, rheumatoid arthritis or osteoarthritis, and chronic kidney disease.

CMS = Centers for Medicare & Medicaid Services; HCC = hierarchical condition category.

Tables 6.E.6 and 6.E.7 show the extent of overlap in the high-risk beneficiary subgroups. Several high-risk group overlap somewhat, although there are no two subgroups where over half the beneficiaries overlap. The greatest overlap exists in the two beneficiary subgroups based on HCC scores and dementia: almost half (49 percent) of beneficiaries in the highest quartile of the distribution of HCC scores were also in the subgroup defined as those that were in the highest decile of the distribution of HCC scores or had dementia. The percentage of beneficiaries in each subgroup was very similar in each track, in the CPC+ and comparison groups, and in each time period.

Table 6.E.6. Overlap in high-risk beneficiary subgroups for CPC+ practices, Track 1 2017 Starters

	Patients in the highest quartile of the distribution of HCC scores	Patients who were in the highest decile of the distribution of HCC scores or had dementia	Patients with multiple chronic conditions, specifically at least 2 of 12 frequently occurring chronic conditions, who also had at least one hospitalization in the year before the start of CPC+	Patients with behavioral health conditions	Patients who were also eligible for Medicaid	Total number of beneficiaries in the analysis sample ^a
Patients in the highest quartile of the distribution of HCC scores		125,372 (49%)	78,525 (31%)	52,469 (20%)	55,724 (22%)	256,510
Patients who were in the highest decile of the distribution of HCC scores or had dementia			63,622 (41%)	33,757 (22%)	34,555 (22%)	156,239
Patients with multiple chronic conditions, specifically at least 2 of 12 frequently occurring chronic conditions, who also had at least one hospitalization in the previous year				22,384 (26%)	18,824 (22%)	86,811
Patients with behavioral health conditions					35,869 (36%)	99,217
Patients who were also eligible for Medicaid						129,705

Notes: The percentages in parentheses represent the fraction of the total number of beneficiaries in the row subgroup that overlap with the beneficiaries in the column subgroup. For example, the first row shows that there were 125,372 beneficiaries in the highest quartile of the distribution of HCC scores who were also in the highest decile of the distribution of HCC scores or had dementia. These overlapping 125,372 beneficiaries represent 49 percent of all beneficiaries in the highest quartile of the distribution of HCC scores (row subgroup). This table shows subgroups as defined directly before the start of the intervention (based on data from calendar year 2016) for beneficiaries assigned to track 1 CPC+ practices during the first two intervention years. Overlap results were similar for comparison practices.

^a In the last column, we show the total number of beneficiaries in the row subgroup, among all beneficiaries in the analysis sample during the intervention period.

HCC = hierarchical condition category.

Table 6.E.7. Overlap in high-risk beneficiary subgroups for CPC+ practices, Track 2 2017 starters

	Patients in the highest quartile of the distribution of HCC scores	Patients who were in the highest decile of the distribution of HCC scores or had dementia	Patients with multiple chronic conditions, specifically at least 2 of 12 frequently occurring chronic conditions, who also had at least one hospitalization in the year before the start of CPC+	Patients with behavioral health conditions	Patients who were also eligible for Medicaid	Total number of beneficiaries in the analysis sample ^a
Patients in the highest quartile of the distribution of HCC scores		152,614 (49%)	95,392 (31%)	67,457 (22%)	66,532 (21%)	311,732
Patients who were in the highest decile of the distribution of HCC scores or had dementia			76,953 (40%)	42,632 (22%)	41,419 (22%)	190,472
Patients with multiple chronic conditions, specifically at least 2 of 12 frequently occurring chronic conditions, who also had at least one hospitalization in the previous year				27,949 (26%)	22,553 (21%)	105,708
Patients with behavioral health conditions					44,398 (35%)	128,417
Patients who were also eligible for Medicaid						155,867

Notes: The percentages in parentheses represent the fraction of the total number of beneficiaries in the row subgroup that overlap with the beneficiaries in the column subgroup. For example, the first row shows that there were 152,614 beneficiaries in the highest quartile of the distribution of HCC scores who were also in the highest decile of the distribution of HCC scores or had dementia. These overlapping 152,614 beneficiaries represent 49 percent of all beneficiaries in the highest quartile of the distribution of HCC scores (row subgroup). This table shows subgroups as defined directly before the start of the intervention (based on data from calendar year 2016) for beneficiaries assigned to track 2 CPC+ practices during the first two intervention years. Overlap results were similar for comparison practices.

^a In the last column, we show the total number of beneficiaries in the row subgroup, among all beneficiaries in the analysis sample during the intervention period.

HCC = hierarchical condition category.

6.E.8. Sensitivity tests

We calculated alternative estimates as robustness checks of the main impact estimates on Medicare expenditures. Specifically, we assessed the sensitivity of our results to changes in the following key elements of our estimation approach: (1) definition of the beneficiary sample, (2) modeling assumptions, (3) length of the baseline period, and (4) definition of outcome variables. We describe the motivation for each sensitivity test in Table 6.E.8.

When results from the sensitivity tests were inconsistent with results from our main analysis, we incorporated that information into our discussion and interpretation of findings. We assessed the conditions under which the alternative estimates would be preferred, and the likelihood that those conditions were met.

Table 6.E.8. Sensitivity tests

Sensitivity test	Motivation
Altering the composition of the beneficiary sample	
Use sample of beneficiaries attributed during the intervention period (who are also attributed during the baseline period) as the baseline sample.	Helps to adjust for changes in sample composition between baseline and follow-up that may differ for the intervention and matched comparison groups.
Examine impacts for the subset of Medicare beneficiaries attributed in the first quarter of the period (that is, the first quarter of the baseline period and the first quarter of the intervention).	Removes effects that may be due to differences over time in sample addition between the intervention and comparison groups, because different types of beneficiaries may be attracted to receive care at CPC+ practices. Also removes effects from possible changes in sample composition for intervention versus comparison groups, if the intervention group has a higher proportion of beneficiaries attributed via Annual Wellness Visits over time (with CPC+ practices potentially seeking to earn higher payments by delivering more wellness visits).
Instead of following an intent-to-treat (ITT) approach to defining the beneficiary sample (once attributed, beneficiaries stay in the sample for the rest of the baseline or intervention period), allow beneficiaries to drop out of the sample, if they no longer meet attribution requirements.	Assesses whether the ITT approach tends to attenuate true effects by retaining beneficiaries in the intervention group who are no longer seen by CPC+ practices.
Altering the modeling assumptions	
For analysis of expenditures, use a generalized linear model with log link.	Accounts for skewed expenditure distribution.
Log-transform the expenditures variable (generating impact estimates in percentage terms).	Reduces influence of high-cost cases; accounts for skewed expenditure distribution.
Trim expenditures at 98th percentile.	Reduces influence of high-cost cases.
Altering length of baseline period	
Use two instead of one pre-intervention years in the baseline period.	Tests whether impact estimates are sensitive to using a longer baseline period and whether there are differences in trends prior to CPC+ for CPC+ and comparison practices.

Sensitivity test	Motivation
Definition of outcome measures	
Examine impacts on a beneficiary-level readmission outcome, defined as the probability of being admitted and readmitted during a year.	Removes concerns about possible endogeneity in analysis of readmissions, which can arise if CPC+ alters the probability of an index admission. In that case, the analysis of the discharge-level readmission measure would be biased, because CPC+ may have prevented hospitalizations that would have been at lower relative risk of a readmission.

6.E.9. Exploratory analyses

As an exploratory analysis, we also estimated the impact of the offer to participate in CPC+ for CPC Classic intervention and comparison practices. For this analysis, we used the CPC Classic baseline year (October 2011–September 2012). Since most CPC Classic practices are participating in CPC+, this analysis approximates the combined effect of participation in CPC Classic and CPC+.

6.F. Bayesian Analysis

This Appendix describes the Bayesian analysis we used to estimate the probability of true CPC+ impacts on Medicare expenditures.

Analogous to the main analysis, we used a difference-in-differences regression model to estimate impacts during the first two years of CPC+, using data on 2017 Starters. In this Appendix, we first explain the benefits of using this Bayesian approach and then describe the regression equation. We next describe the Bayesian prior distributions. Finally, we describe our computational approach.

6.F.1. Benefits of the Bayesian paradigm

In this setting, the Bayesian paradigm offers two primary advantages. First, it offers the ability to draw probabilistic conclusions through statements such as, “*There is a 60 percent chance that CPC+ reduced Medicare expenditures by 5 percent or more in Track 2.*” In this report, we present the results of the Bayesian analysis using the probabilities of achieving enough saving to offset the care management fees in each track. Second, when estimating CPC+ impacts in subgroups of practices, it “borrows strength,” or shares information across related subgroups, which increases statistical power and provides a built-in correction for multiple comparisons.

6.F.2. Regression equation

The Bayesian impact analysis used the same data and largely the same regression equation as the main analysis of subgroup impacts on total Medicare expenditures. We estimated overall impact estimates as a weighted average of subgroup-specific impacts, with weights equal to the relative sizes of the subgroups. For each track, we estimated the following regression equation:

$$(3) \quad y_{jt} = \beta X_{jt} + \gamma_{g[j]t} + \phi_{g[j]} z_j + \theta_{g[j]t} z_j p_t + \alpha_j + b_j p_t + c_{g[j]} + \varepsilon_{jt}.$$

In this equation, as in the main analysis, y_{jt} represents the outcome of interest, total Medicare expenditures without CPC+ payments (but with Comprehensive Primary Care Payments for Track 2 practices), for beneficiaries attributed to practice j in year t . The subscript $g[j]$ refers to the subgroup g to which practice j belongs—for example, whether the practice had participated in prior primary care transformation initiatives. The full list of practice subgroups is in Appendix 6.E.

The vector X_{jt} includes average characteristics of beneficiaries attributed to practice j and also characteristics of practice j itself, z_j is a binary indicator of being in a CPC+ practice, and p_t (for “post”) is an intervention-period indicator. To account for clustering, the hierarchical model also includes practice random intercepts α_j and practice random slopes on the effect of being in the post-intervention period b_j , as well as subgroup random intercepts c_g . Finally, the model includes an error term ε_{jt} .

As in the frequentist regression with practice subgroup interactions, the γ_{gt} parameters capture subgroup-specific secular time trends and the ϕ_g terms are subgroup-specific baseline differences between CPC+ practices and comparison practices. The difference-in-differences coefficient θ_{gt} gives the impact of CPC+ in subgroup g in *post-intervention year* t .

As in the main analysis, we applied weights to the observations in the regressions to ensure that (1) beneficiaries who were observed for longer periods receive relatively more weight than those observed for shorter periods (using a Medicare enrollment weight) and (2) the CPC+ and comparison groups are comparable (using a matching weight).

6.F.3. Prior distributions

In the Bayesian paradigm, we put a prior distribution on each parameter in the model, specifying our assumptions about these parameters. These assumptions describe the plausible range of values for each parameter and for assumed relationships in the data—for example, the correlation of outcomes between observations of the same practice in different time periods. We used three types of prior distributions in this analysis.

Evidence-based prior distribution for the overall impact of CPC+. Until recently, the guidance in the statistical literature has been to default to uniform, or “flat,” prior distributions, which assign equal probability to every value in a given range (see, for example, Gelman 2006). Many analysts might prefer these distributions because they appear to exert less influence on the results. However, flat prior distributions for program impacts make the implausible assumption that huge savings, huge cost increases, and no effect at all are equally likely impacts; for impact estimates in particular, this assumption can lead to improbably extreme conclusions (Gelman et al. 2008). Therefore, placing equal weight on these extreme values regarding the impact of CPC+ would fail to adjust for implausible impact estimates and probability statements.

Based on current guidance in the statistical literature, we moderated this assumption and instead chose a normal prior distribution for the overall impact of CPC+ ($\theta^{\text{CPC+}}$). We set the mean of this normal prior distribution to zero, to remain agnostic about whether the intervention will prove successful. We set the standard deviation to 5 percent of the comparison group baseline mean to rule out extreme values of the impact, based on the general result that we have not found any intervention designed to reduce total Medicare fee-for-service (FFS) expenditures that has obtained very large estimated effects in a rigorous evaluation. For example, the evaluation of CPC Classic found a not statistically significant 1 percent reduction in Medicare expenditures without fees and a not statistically significant 1 percent increase with fees (Peikes et al. 2018a; 2018b). A systematic review of primary care transformation initiatives funded by the Center for Medicare & Medicaid Innovation did not find that any of the initiatives were statistically significantly different from CPC Classic in savings, and the average impact for 22 specific programs within the systematic review was a 1 percent reduction in expenditures (Cohen et al. 2018). Only 4 of the 22 programs significantly reduced expenditures with a maximum of 12 percent for one program, and 4 programs significantly increased expenditures with a maximum of 25 percent for one program.

The normal prior distribution that we chose implies that impacts are unlikely (31.7 percent chance) to exceed 5 percent of the mean in absolute value, very unlikely (4.5 percent chance) to exceed 10 percent of the mean in absolute value, and exceedingly unlikely (0.3 percent chance) to exceed 15 percent of the mean in absolute value. To gauge how much this choice of prior distribution influences our results, we conducted one sensitivity analysis with narrower priors and one with wider priors, as shown in Table 6.F.1. We also tested a flat prior for comparison, but we caution the reader against taking the resulting probability statements at face value, since this prior can lead to overly optimistic (anticonservative) probability statements (Gelman 2015).

Table 6.F.1. Probability of impacts of different magnitudes under tested prior distributions

Prior	Prior distribution implies		
	31.7% chance of impacts greater than:	4.5% chance of impacts greater than:	0.3% chance of impacts greater than:
Narrow	1% of the mean	2% of the mean	3% of the mean
Neutral (main analysis)	5% of the mean	10% of the mean	15% of the mean
Wide	10% of the mean	20% of the mean	30% of the mean

- **Shrinkage prior distributions.** Given the large number of parameters being estimated in this model, some based on relatively sparse data, shrinkage prior distributions were crucial for reining in implausible values and correcting for multiple comparisons. For example, we used a shrinkage prior distribution to induce borrowing of strength across the subgroup-specific impacts θ_g . This implied that the estimated impact in each subgroup g leveraged information from the overall impact $\theta^{\text{CPC+}}$ to increase statistical power. We also used a shrinkage prior distribution for each batch of random effects.
- **Default weakly informative prior distributions.** For the rest of the model parameters, we used default weakly informative prior distributions that allow for a wide, but realistic, range of possible values.⁸⁰

6.F.4. Computational approach

Given the size of the CPC+ and comparison beneficiary samples, we are unable to estimate impacts directly from the beneficiary-level data. Instead, as the regression equation implies, we fit the Bayesian model described above to data aggregated from the beneficiary-year level to the practice-year level, performing this aggregation by taking the weighted mean of the beneficiary-level values in each practice and year. The weights for this calculation combined each beneficiary's enrollment weight, which accounts for the fraction of the year that the beneficiary was observed, with the matching weight from comparison group selection.

⁸⁰ This type of prior distribution is considered a best practice (for example, by the Stan development team; see Gelman, Andrew, ed. "Prior Choice Recommendations," May 2, 2019, at <https://github.com/stan-dev/stan/wiki/Prior-Choice-Recommendations>).

6.G. Participation in other initiatives

In this Appendix, we quantify how participation in other initiatives differs between CPC+ and comparison practices and how this participation shifted from the baseline period to the first two program years of CPC+ for both research groups.

CPC+ is taking place at the same time as many other initiatives that aim to improve the quality and value of medical care. CPC+ practices are allowed to participate in some, but not all, of these initiatives; therefore, we expect comparison practices to participate in some initiatives—such as billing for chronic care management (CCM) services—at higher rates than the CPC+ practices. Higher participation rates among comparison practices than among CPC+ practices will not bias our main impact estimates, because we assume that the comparison practices represent the accurate counterfactual for CPC+ practices had CPC+ not existed (that is, CPC+ practices might have participated in other initiatives at higher rates had CPC+ not existed). At the same time, differences in participation could potentially lead to smaller overall effects of CPC+ than we would observe if some or all of the other initiatives did not exist. This weakening of effects would occur if the other initiatives duplicate some of the incentives and supports provided through CPC+ and these incentives and supports lead to better outcomes. Since the primary concern is whether participation in other initiatives changed differentially for CPC+ and comparison practices between the baseline and intervention periods, we used a difference-in-differences strategy, when possible, to examine changes in participation over time between the two groups.

We analyzed participation in four broad types of CMS initiatives:⁸¹ (1) care management services, (2) behavioral integration services, (3) value-based purchasing models, (4) primary care transformation initiatives, and (5) bundled payment initiatives.⁸² In Table 6.G.1, we list the specific initiatives for which we examined participation under each of these four broad types, the data source, the definition of a beneficiary being exposed to the initiative, and whether CPC+ practices (or their CMS-attributed Medicare fee-for-service [FFS] beneficiaries) could participate in these initiatives during the periods we study.

Consistent with the main impacts analysis that examines Medicare expenditures and other claims-based outcomes (Chapter 6), we primarily focus on participation in other initiatives for the 2017 Starters during the first two program years. We also present participation results for the combined 2017 and 2018 Starters during the first Program Year (PY), but we do not discuss

⁸¹ We first selected initiatives that we were able to measure participation in, and then we categorized them into broad types based on their key features.

⁸² In the first annual report, we used the Wave 1 practice survey to analyze participation in PY 1 in several additional initiatives: State Innovation Models, Health Care Innovation Awards, Medicaid Health Home, state or community quality improvement initiatives, and insurer-sponsored initiatives. The Wave 2 practice survey covers part of PY 2, but it was not fielded to comparison practices. For the next annual report, we will have survey responses to Wave 3 of the practice survey (which was fielded to both CPC+ and comparison practices) and we will report on participation in these initiatives.

those in detail because they are similar to the PY 1 findings for the 2017 Starters presented in the first annual report. We will analyze the combined sample more extensively in future reports.

Table 6.G.1. Potential participation by active CPC+ practices in other CMS initiatives

Type of initiative	Name of initiatives	Could active CPC+ practices or their CMS-attributed Medicare beneficiaries participate...		Data source	Definition of a beneficiary being exposed to the initiative
		During baseline period?	During intervention period?		
Medicare FFS Care Management Charges	Chronic Care Management	Yes	Yes	Medicare FFS physician and outpatient claims	Beneficiary's physician billed at least one of these care management services in the year
	Transitional Care Management	Yes	Yes	Medicare FFS physician and outpatient claims	Beneficiary's physician billed at least one of these care management services in the year
	Other care management ^a	Yes	Yes	Medicare FFS physician and outpatient claims	Beneficiary's physician billed at least one of these care management services in the year
Behavioral Integration	Psychiatric Collaborative Care Management ^b	No ^c	Yes	Medicare FFS physician and outpatient claims	Beneficiary's physician billed at least one of these care management services in the year
	General Behavioral Health Integration	No ^c	Yes	Medicare FFS physician and outpatient claims	Beneficiary's physician billed at least one of these care management services in the year
Other Medicare FFS value-based purchasing models	Medicare Shared Savings Program	Yes	Yes	CMS Master Data Management System	Beneficiary's assigned practice was in the initiative in the year ^e , or beneficiary was attributed to the initiative in the year
	Next Generation (Next Gen) ACO	No ^d	No ^d	CMS Master Data Management System	Beneficiary's assigned practice was in the initiative in the year ^e , or beneficiary was attributed to the initiative in the year
Other primary care transformation initiatives	Accountable Health Communities Model	No	No	CMS rosters	Beneficiary's assigned practice was in the initiative during the year ^e
	Transforming Clinical Practice Initiative	Yes	Yes	CMS rosters	Beneficiary's assigned practice was in the initiative during the year ^e
Bundled Payment Initiatives	Bundled Payment for Care Improvement	Yes	Yes	Non-Claims-Based Payment File ^f	Beneficiary had at least one payment for a covered service in the year

Notes: In addition to programs listed above, we explored participation in the following programs: Community Based Care Transition, Comprehensive Joint Replacement, Oncology Care Model, Independence at Home, Financial Alignment Initiative Demonstration for Medicare-Medicaid Enrollees, and Comprehensive ESRD Care. We did not include results for these programs because participation rates were less than 1 percent in all cases, so there was little potential for either interaction effects with CPC+ or for potentially confounding the impacts of CPC+.

^a This includes physician supervision of a Home Health Agency patient — patient not present, physician supervision of hospice patient — patient not present, Psychiatric Collaborative Care Management, cognitive and function assessment for patient with cognitive impairment, General Care Management Services for use by RHCs and FQHCs, Psychiatric Collaborative Care Management for use by RHCs and FQHCs, and advance care planning.

Table 6.G.1. (continued)

^b Given that CMS introduced the billing codes for Psychiatric Collaborative Care Management and General Behavioral Health Integration in 2017, we examine these codes separately from other care management codes to understand their early uptake and the potential value of using them to measure the delivery of integrated care.

^c In 2017, CMS introduced Medicare FFS Part B billing codes to reimburse providers for Psychiatric Collaborative Care Management Services and General Behavioral Health Integration services.

^d To be consistent with baseline matching, where SSP and Next Gen participation were defined as participating as of 1/1/17, we define baseline participation for SSP and Next Gen as participating as of January 1, 2017, CPC+ PY 1 participation as participating as of January 1, 2018, and CPC+ PY 2 participation as participating as of January 1, 2019. Active CPC+ practices could not participate in Next Gen as of January 1, 2017.

^e A practice is defined as being in the initiative if any of its practitioners were in the initiative

^f The non-claims-based payment file has a complete set of payments for episodes through the first program year of CPC+.

CMS = Centers for Medicare & Medicaid Services; ESRD = end-stage renal disease; FFS = fee-for-service; SSP = Medicare Shared Savings Program.

In the rest of this Appendix, we present the key takeaways of the results (Section 6.G.1), describe the methods used (Section 6.G.2), discuss the results in greater detail for the 2017 Starters and their matched comparison practices, and then for the 2017 and 2018 Starters combined and their matched comparisons (Sections 6.G.3 and 6.G.4, respectively), discuss the implications of the results for the impact analyses (Section 6.G.5), and preview upcoming initiatives that we plan to track in future reports (Section 6.G.6).

6.G.1. Key takeaways

- CPC+ and comparison practices had high participation in the Medicare Shared Savings Program (SSP), with roughly half of practices participating, and low participation in each of the other initiatives we studied in every period (each less than 15 percent).
- CPC+ practices had changes in participation in other initiatives similar to those of comparison practices, which suggests that differential contamination of initiatives between the CPC+ and comparison groups is unlikely to influence the impact estimates.
- The program in which participation changes of CPC+ practices differed the most from those of comparison practices was SSP. CPC+ practices decreased their participation in SSP from the baseline period to the intervention period, while comparison practices' participation stayed relatively constant.
 - In a world without CPC+, SSP would likely be present as it is an established CMS program, so we could expect that absent CPC+, CPC+ practices would participate more in SSP.
 - The findings from the impact analysis for the SSP subgroup should be interpreted with caution, because some practices started or stopped participating in SSP after the start of the intervention. Instead of interpreting it as the impact of CPC+ combined with SSP throughout the intervention period, it should be interpreted as the impact of starting CPC+ in SSP.

Below we describe key findings for the 2017 Starters and their matched comparisons over the first two program years.

Medicare FFS care management charges

- Both CPC+ and comparison practices did not bill Medicare FFS care management codes for many patients and had small and similar changes from baseline to the first two program years of CPC+.
 - Among high-risk beneficiaries, both CPC+ practices and comparison practices billed a slightly higher proportion of these patients for care management services, but they both still had small and similar changes.

Behavioral Integration

- Almost no CPC+ or comparison group beneficiaries with behavioral health conditions received services billed through the Psychiatric Collaborative Care Management or General Behavioral Health Integration codes that CMS introduced in 2017.

Other Medicare FFS value-based purchasing models

- Comparison practices increased their participation in Medicare FFS value-based purchasing models during the intervention period, while CPC+ practices either decreased their participation, or increased their participation by less than the comparison group.

Other primary care initiatives

- CPC+ practices had low participation in Accountable Health Communities (AHC), but it was higher than that of comparison practices and grew slightly from PY 1 to PY 2.
- Reflecting CPC+ eligibility rules, CPC+ practices substantially decreased participation in Transforming Clinical Practice Initiative (TCPI) relative to the comparison group starting in PY 2.

Bundled payment initiatives

- CPC+ practices had low participation in Bundled Payment for Care Improvement (BPCI) at baseline, which decreased slightly in PY 1. The comparison group had similarly rates and changes in participation.

We found similar patterns for 2017–2018 Starters combined in PY 1, as we reported in the first annual report for the 2017 Starters, and across CPC+ tracks.

6.G.2. Methods

Although CMS provides initiatives at the practice, practitioner, and beneficiary levels, we report participation in all initiatives at the beneficiary level. We measure this as the percentage of beneficiaries in each group—CPC+ and comparison—that are exposed to that initiative, separately for Track 1 and Track 2 of 2017 Starters, and for 2017 and 2018 Starters combined. We chose to measure participation at the beneficiary level primarily because our impact estimates are at the beneficiary level. To the extent that participation in other initiatives affected the impact findings, this would likely depend on the number of beneficiaries affected by such

participation. Also, reporting participation at the beneficiary level for all initiatives allows us to keep the measurements consistent across initiatives in this participation analysis.⁸³

We measured provision of Medicare FFS care management services as the percentage of beneficiaries whose practitioner billed for at least one of those services in that year. Since Medicare FFS value-based purchasing models, AHC, and TCPI report practitioners' participation in the initiatives, as opposed to practice sites participating, we first used the SK&A practice roster to roll practitioner participation up to the practice site level by counting a practice as participating if any practitioners in the practice were reported as participating.⁸⁴ We then weighted practice participation by the number of Medicare beneficiaries assigned to that practice in the baseline so that the results can be interpreted as the number of beneficiaries who were participating in the initiative.⁸⁵ As a robustness check, we also used the beneficiary-level master data management (MDM) system to directly measure beneficiary participation (rather than inferring beneficiary participation from practitioner-level participation) in Medicare FFS value-based purchasing models.

To estimate difference-in-differences changes in participation in each initiative, comparing the CPC+ and comparison practices from the baseline year to PY 1 and PY 2 of CPC+, we followed a regression model similar to the one used for all claims-based beneficiary-level outcomes described in this report (see Chapter 6), but we did not include any additional regression covariates other than the difference-in-differences estimators. For the initiatives that had observations at the beneficiary level (that is, Medicare FFS care management and the robustness check for the Medicare FFS value-based purchasing models), we used beneficiary-level matching weights. For all initiatives for which we rolled up participation to the practice level (that is, TCPI, AHC, and the Medicare FFS value-based purchasing models based on the practitioner MDM), we used practice-level matching weights that weight practices by the number of beneficiaries in that practice during the baseline period, so that the results can be interpreted as the number of beneficiaries who were participating in the initiative.

6.G.3. 2017 Starter results

Tables 6.G.2 and 6.G.3 report participation of beneficiaries in various initiatives by time period (baseline year, PY 1, PY 2, and PY 1 and 2 combined) for practices that began CPC+ in 2017 and their comparison practices for Tracks 1 and 2, respectively. Figure 6.G.1 highlights these

⁸³ For some initiatives, like CCM, participation is inherently at the beneficiary level, since billing for CCM services occurs on a per-beneficiary basis. However, for other initiatives, like TCPI and Next Gen and SSP, practices decide whether or not to participate, and we assume that all beneficiaries assigned to participating practices were affected. Also, we selected comparison practices based on baseline initiative participation in SSP weighted at the beneficiary level. Therefore, we would like to assess CPC+ and comparison balance in SSP participation at that level.

⁸⁴ The SSP reports 90 percent of participation at the Tax Identification Number (TIN) level, and 10 percent at the NPI/TIN level. Since TINs are not unique at the practice level, we merged measures of participation of all practitioners to whom we assigned that TIN, and then rolled up participation to the practice level using the SK&A roster.

⁸⁵ This is the same method that we used for comparison selection. That is, we first looked at practitioner-level participation in SSP or other initiatives and then rolled these measures up to the practice level. Then we weighted by the number of beneficiaries in the practice in the baseline year.

findings by plotting CPC+ and comparison group baseline period participation in initiatives for Track 1 and Track 2 practices, as well as the difference-in-differences estimates and 90 percent confidence intervals for PY 1 and PY 2.

Table 6.G.2. Participation in other initiatives by beneficiaries in CPC+ practices and comparison practices in the baseline and first two program years: Track 1 2017 Starters

Name of initiative	Time period	Percentage of Medicare FFS beneficiaries exposed to the initiative		Percentage point difference	Percentage point difference-in-differences estimate (90% CI)
		CPC+ group	Comparison group		
Type of initiative: Medicare FFS Care Management Charges					
Name of initiative					
Chronic Care Management (all beneficiaries)	Base	1.1	1.6	-0.5	N/A
	PY 1	0.7	2.7	-2.0	-1.5 (-1.8, -1.2)
	PY 2	1.1	2.9	-1.8	-1.3 (-1.6, -1.1)
Chronic Care Management (high-risk beneficiaries ^a)	Base	2.0	2.6	-0.6	N/A
	PY 1	1.4	4.4	-3.0	-2.4 (-2.9, -2.0)
	PY 2	2.1	5.0	-3.0	-2.3 (-2.8, -1.9)
Transitional Care Management (all beneficiaries)	Base	3.7	3.4	0.3	N/A
	PY 1	4.6	3.8	0.8	0.5 (0.4, 0.7)
	PY 2	5.3	4.2	1.1	0.8 (0.6, 1.1)
Transitional Care Management (high-risk beneficiaries ^a)	Base	7.7	7.1	0.6	N/A
	PY 1	9.6	8.1	1.5	0.9 (0.5, 1.2)
	PY 2	10.6	8.6	2.0	1.4 (0.9, 1.9)
Other care management ^b (all beneficiaries)	Base	2.9	2.0	0.9	N/A
	PY 1	3.7	3.2	0.4	-0.5 (-0.9, 0.0)
	PY 2	4.1	4.0	0.0	-0.8 (-1.4, -0.3)
Other care management ^b (high-risk beneficiaries ^a)	Base	3.8	3.1	0.6	N/A
	PY 1	5.2	5.0	0.2	-0.4 (-1.0, 0.1)
	PY 2	6.0	6.2	-0.2	-0.9 (-1.4, -0.3)
Combined measure of care management services					
Any care management ^c	Base	7.2	6.4	0.8	N/A
	PY 1	8.5	8.7	-0.2	-1.0 (-1.5,-0.5)
	PY 2	9.7	9.8	-0.1	-0.9 (-1.5,-0.3)
Type of initiative: Behavioral integration services					
Name of initiative					
Psychiatric Collaborative Care Management ^d (beneficiaries with behavioral health conditions) ^e	Base	--	--	--	N/A
	PY 1	0.1	0.0	0.0	N/A
	PY 2	0.1	0.0	0.0	N/A
General Behavioral Health Integration ^f (beneficiaries with behavioral health conditions) ^e	Base	--	--	--	N/A
	PY 1	0.0	0.0	0.0	N/A
	PY 2	0.1	0.0	0.0	N/A
Type of initiative: Other Medicare FFS value-based purchasing models					
Name of initiative					
Medicare Shared Savings Program Practitioner-level MDM ^h	Base ^g	51.4	52.3	-0.9	N/A
	PY 1 ⁱ	53.2	58.7	-5.5	-4.6 (-7.5, -1.7)
	PY 2 ^j	48.7	55.8	-7.1	-6.2 (-9.7, -2.6)
Medicare Shared Savings Program Beneficiary-level MDM ^{k,l}	Base ^g	48.8	44.2	4.7	N/A
	PY 1 ⁱ	51.5	50.1	1.5	-3.2 (-5.6, -0.8)
	PY 2 ^j	46.1	46.5	-0.4	-5.1 (-7.9, -2.2)
Next Generation or Pioneer ACO Practitioner-level MDM ^m	Base ^g	0.0	0.0	0.0	N/A
	PY 1 ⁱ	0.2	3.2	-3.0	-3.0 (-3.7, -2.2)
	PY 2 ^j	0.5	4.4	-3.9	-3.9 (-5.1, -2.6)

Table 6.G.2. (continued)

	Time period	Percentage of Medicare FFS beneficiaries exposed to the initiative		Percentage point difference	Percentage point difference-in-differences estimate (90% CI)
		CPC+ group	Comparison group		
Next Generation or Pioneer ACO Beneficiary-level MDM ^{k,l}	Base ^g	0.0	0.0	0.0	N/A
	PY 1 ⁱ	0.3	3.0	-2.8	-2.8 (-3.4, -2.2)
	PY 2 ^j	0.4	3.9	-3.6	-3.5 (-4.4, -2.7)
Type of initiative: Other primary care transformation initiatives					
Name of initiative					
Accountable Health Communities Model ^o	Base	-	-	-	N/A
	PY 1	2.7	0.0	2.7	N/A
	PY 2	4.4	1.9	2.5	N/A
Transforming Clinical Practice Initiative	Base	10.9	10.8	0.1	N/A
	PY 1	10.3 ^o	12.2	-1.8	-2.0 (-3.6, -0.3)
	PY 2	2.6 ^o	10.5	-7.9	-8.0 (-10.4, -5.5)
Combined measure of other Medicare FFS value-based purchasing models and primary care transformation initiatives					
Participation in any Medicare FFS value-based purchasing model or primary care transformation initiative ^p	Base	59.3	61.1	-1.8	N/A
	PY 1	61.1	69.5	-8.4	-6.6 (-9.5, -3.7)
	PY 2	54.7	68.1	-13.4	-11.6 (-15.6, -7.6)
Type of initiative: Bundled payment initiatives					
Name of initiative					
Bundled Payment for Care Improvement ^q	Base	1.7	1.8	-0.1	N/A
	PY 1	1.3	1.4	-0.1	0.0 (-0.1, 0.0)
	PY 2	-	-	-	-

Source: Analysis of Medicare FFS claims for 2016, 2017, 2018; MDM extracts from January 27, 2017, February 23, 2018, February 26, 2019; CMS January 2017, 2018, and 2019 TCPI roster; and the non-claims-based payment extract from May 24, 2019.

Notes: We report participation in initiatives as the percentage of beneficiaries who were exposed to the initiative in each period in each group (Track 1 CPC+ or comparison practices), with comparison practices weighted using matching weights. We calculated the difference in participation in a given year between Track 1 CPC+ and comparison practices as the percentage point difference. We calculated the difference-in-differences estimate as the difference in percentage participation between CPC+ and comparison practices in the relevant program period (PY 1, PY 2), minus the difference in the baseline period. The difference-in-differences estimate is in percentage point units. We estimated 90 percent confidence intervals calculating standard errors using linear regression and clustering at the practice level. Dashes (-) indicate that participation or difference values are not available, due to limitations of the data source. N/A indicates that the difference-in-differences estimate is not applicable, because we do not have data for the baseline period. 0.0 indicates that <0.05 percent of beneficiaries participated in the initiative. Note that the percentage point difference and the percentage point difference-in-difference estimate shown may differ from the corresponding calculations based on the percentages in the cells due to rounding.

^a We defined high-risk beneficiaries as those with an HCC score greater than the 75th percentile of the distribution of HCC scores among assigned beneficiaries within their track. We looked at participation by high-risk beneficiaries in just Medicare FFS Care Management Charges, because care management services are specifically targeted to high-risk beneficiaries.

^b This includes CPT codes G0181 (physician supervision of a Home Health Agency patient, patient not present), G0182 (physician supervision of hospice patient, patient not present), G0502-G0504 and 99492-99494 (Collaborative Care Model), G0505 and 99483 (cognitive and function assessment for patient with cognitive impairment), G0511 (General Care Management Services for use by RHCs and FQHCs), G0512 (psychiatric collaborative care model for use by RHCs and FQHCs), and 99497 (advance care planning). These codes capture some type of care management but are not chronic care management or transitional care management codes.

^c This includes beneficiaries whose physicians billed at least one chronic care management, transitional care management, or other care management service.

^d Includes HCPCS codes G0502-G0504 in 2017 and CPT codes 99492-99494 in 2018. In 2017, 14 Track 1 CPC+ beneficiaries with behavioral health conditions had at least one claim for Psychiatric Collaborative Care Management and 179 had at least one such claim in 2018. In 2017, 106 Track 1 comparison beneficiaries with behavioral health conditions had at least one claim for Psychiatric Collaborative Care Management and 336 had at least one such claim in 2018. The number of beneficiaries are unweighted, but the percentages reported in the table use eligibility and matching weights.

^e We defined beneficiaries with behavioral health conditions as those who had at least one claim with a primary mental health or substance use disorder diagnosis in each analytic year or at least one inpatient or two outpatient claims with any mental health or

Table 6.G.2. (continued)

substance use disorder diagnoses in each analytic year. In each analytic year, the population we identified using this approach represented roughly 22 percent of all CPC+ and comparison group beneficiaries. There were 200,821 Track 1 CPC+ beneficiaries with behavioral health conditions in 2017 and 225,466 in 2018. There were 662,450 Track 1 comparison beneficiaries with behavioral health conditions in 2017 and 751,535 in 2018. The number of beneficiaries are unweighted, but the percentages reported in the table use eligibility and matching weights.

^f Includes HCPCS code G0507 in 2017 and CPT code 99484 in 2018. In 2017, 52 Track 1 CPC+ beneficiaries with behavioral health conditions had at least one claim for General Behavioral Health Integration and 184 had at least one such claim in 2018. 71 Track 1 comparison group beneficiaries with behavioral health conditions had at least one General Behavioral Health Integration claim in 2017 and 334 had one such claim in 2018. The number of beneficiaries are unweighted, but the percentages reported in the table use eligibility and matching weights.

^g To be consistent with baseline matching, where SSP and Next Gen participation were defined as participating as of 1/1/17, we define baseline participation for SSP and Next Gen as participating as of January 1, 2017.

^h In the practitioner MDM, 91 percent of participation in SSP is counted at the TIN-level, while the remaining 9 percent is at the NPI-TIN level. If an NPI was listed in the practitioner MDM, we counted all practices with an NPI-TIN listed in that year as participating in SSP. If the NPI was missing in the practitioner MDM, we counted all practices with the TIN listed in that year as participating in SSP. We then weighted practices by the number of beneficiaries.

ⁱ We defined PY 1 participation value as participation as of January 1, 2018.

^j We defined PY 2 participation value as participation as of January 1, 2019.

^k In the beneficiary MDM, participation is at the beneficiary level and we measured participation as the fraction of beneficiaries in each sample (i.e., CPC+ and comparison group practices) who participated in the initiative.

^l We measured participation based on the beneficiary MDM, as a robustness check for the measure of participation based on the practitioner MDM.

^m In the practitioner MDM, participation in Next Gen is at the NPI-TIN-level. We counted all practices with an NPI-TIN listed in that year as participating in Next Gen, and then weighted by number of beneficiaries in the practice in that year.

ⁿ We did not have data for the baseline year (i.e., 2016) because the model began on May 1, 2017.

^o CPC+ practices were technically unable to participate in TCPI during the CPC+ intervention period; however, we found that 10.3 percent of CPC+ practices did not withdraw from TCPI before the beginning of 2017. This is likely because the practices did not immediately initiate withdrawal. For PY 2, we also found a lower but non-zero participation rate among CPC+ practices (2.6 percent), which may be explained by additional belated withdrawals, differences between the SK&A and CMS practitioner rosters, or the intent-to-treat approach of following even withdrawn practices.

^p This includes beneficiaries whose practice participated in SSP based on the practitioner MDM, Next Gen based on the practitioner MDM, Accountable Health Communities, or the Transforming Clinical Practice Initiative.

^q We measured participation based on the non-claims-based payment extract. Data for 2018 (i.e., PY 2) were incomplete for the Bundled Payment for Care Improvement initiative. We expect final data to be available in early 2020.

ACO = Accountable Care Organization; CI = confidence interval; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; FFS = fee-for-service; FQHC = Federally Qualified Health Center; HCC = hierarchical condition category; MDM = CMS Master Data Management System; NPI = National Provider Identifier; PY = Program Year; QI = quality improvement; RHC = Rural Health Clinic; SSP = Medicare Shared Savings Program; TCPI = Transforming Clinical Practice Initiative; TIN = Taxpayer Identification Number.

Table 6.G.3. Participation in other initiatives by beneficiaries in CPC+ practices and comparison practices in the baseline and first two program years: Track 2 2017 Starters

	Time period	Percentage of Medicare FFS beneficiaries exposed to the initiative		Percentage point difference	Percentage point difference-in-differences estimate (90% CI)
		CPC+ group	Comparison group		
Type of initiative: Medicare FFS Care Management Charges					
Name of initiative					
Chronic Care Management (all beneficiaries)	Base	1.5	1.9	-0.5	N/A
	PY 1	0.7	2.5	-1.8	-1.3 (-1.7, -1.0)
	PY 2	1.2	3.0	-1.8	-1.3 (-1.7, -0.9)
Chronic Care Management (high-risk beneficiaries ^a)	Base	2.7	3.4	-0.7	N/A
	PY 1	1.4	4.3	-2.9	-2.2 (-2.8, -1.6)
	PY 2	2.3	5.2	-2.9	-2.2 (-2.9, -1.6)
Transitional Care Management (all beneficiaries)	Base	4.8	3.5	1.4	N/A
	PY 1	5.4	3.9	1.5	0.1 (0.0, 0.3)
	PY 2	5.9	4.3	1.6	0.2 (0.1, 0.4)
Transitional Care Management (high-risk beneficiaries ^a)	Base	10.0	7.3	2.7	N/A
	PY 1	11.1	8.1	3.0	0.3 (0.0,0.6)
	PY 2	11.6	8.6	3.0	0.3 (-0.1,0.7)
Other care management ^b (all beneficiaries)	Base	2.7	2.2	0.5	N/A
	PY 1	3.8	3.3	0.5	0.1 (-0.3, 0.4)
	PY 2	4.5	4.2	0.4	-0.1 (-0.7, 0.5)
Other care management ^b (high-risk beneficiaries ^a)	Base	3.7	3.5	0.1	N/A
	PY 1	5.2	4.9	0.3	0.2 (-0.3, 0.6)
	PY 2	6.4	6.1	0.3	0.1 (-0.5, 0.8)
Combined measure of care management services					
Any care management ^c	Base	8.4	6.9	1.5	N/A
	PY 1	9.3	8.7	0.6	-0.9 (-1.4,-0.4)
	PY 2	10.7	10.1	0.6	-0.9 (-1.5,-0.2)
Type of initiative: Behavioral integration services					
Name of initiative					
Psychiatric Collaborative Care Management ^d (beneficiaries with behavioral health conditions) ^e	Base	--	--	--	N/A
	PY 1	0.0	0.0	0.0	N/A
	PY 2	0.1	0.0	0.1	N/A
General Behavioral Health Integration ^f (beneficiaries with behavioral health conditions) ^e	Base	--	--	--	N/A
	PY 1	0.0	0.0	0.0	N/A
	PY 2	0.1	0.1	0.0	N/A
Type of initiative: Other Medicare FFS value-based purchasing models					
Name of initiative					
Medicare Shared Savings Program Practitioner-level MDM ^h	Base ^g	44.2	44.2	0.0	N/A
	PY 1 ⁱ	44.8	53.6	-8.7	-8.7 (-11.8, -5.7)
	PY 2 ^j	41.6	51.7	-10.1	-10.1 (-13.6, -6.3)
Medicare Shared Savings Program Beneficiary-level MDM ^{k,l}	Base ^g	41.2	38.1	3.1	N/A
	PY 1 ⁱ	42.9	46.5	-3.6	-6.7 (-9.4, -4.1)
	PY 2 ^j	39.7	43.4	-3.8	-6.9 (-10.0, -3.7)
Next Generation or Pioneer ACO Practitioner-level MDM ^m	Base ^g	0.2	0.0	0.2	N/A
	PY 1 ⁱ	1.1	3.0	-2.0	-2.1 (-3.2, -1.0)
	PY 2 ^j	1.4	3.7	-2.3	-2.5 (-3.8, -1.3)

Table 6.G.3. (continued)

	Time period	Percentage of Medicare FFS beneficiaries exposed to the initiative		Percentage point difference	Percentage point difference-in-differences estimate (90% CI)
		CPC+ group	Comparison group		
Next Generation or Pioneer ACO Beneficiary-level MDM ^{k,l}	Base ^g	0.0	0.0	0.0	N/A
	PY 1 ⁱ	1.1	3.0	-1.9	-1.9 (-2.8, -0.9)
	PY 2 ^j	1.2	3.5	-2.3	-2.3 (-3.3, -1.4)
Type of initiative: Other primary care transformation initiatives					
Name of initiative					
Accountable Health Communities Model ⁿ	Base	-	-	-	N/A
	PY 1	1.4	0.1	1.3	N/A
	PY 2	3.6	1.3	2.3	N/A
Transforming Clinical Practice Initiative	Base	9.9	12.8	-2.9	N/A
	PY 1	9.9 ^o	14.5	-4.6	-1.7 (-3.0, -0.4)
	PY 2	2.0 ^o	12.1	-10.1	-7.3 (-9.3, -5.2)
Combined measure of other Medicare FFS value-based purchasing models and primary care transformation initiatives					
Participation in any Medicare FFS value-based purchasing model or primary care transformation initiative ^p	Base	52.9	55.8	-2.9	N/A
	PY 1	54.1	66.8	-12.7	-9.8 (-12.8, -6.8)
	PY 2	48.3	65.3	-17.0	-14.1 (-17.9, -10.3)
Type of initiative: Bundled payment initiatives					
Name of initiative					
Bundled Payment for Care Improvement ^q	Base	1.7	1.8	-0.1	N/A
	PY 1	1.5	1.5	0.0	0.1 (0.0, 0.1)
	PY 2	-	-	-	-

Source: Analysis of Medicare FFS claims for 2016, 2017, 2018; MDM extracts from January 27, 2017, February 23, 2018, February 26, 2019; CMS January 2017, 2018, and 2019 TCPI roster; and the non-claims-based payment extract from May 24, 2019.

Notes: We report participation in initiatives as the percentage of beneficiaries who were exposed to the initiative in each period in each group (Track 2 CPC+ or comparison practices), with comparison practices weighted using matching weights. We calculated the difference in participation in a given year between Track 2 CPC+ and comparison practices as the percentage point difference. We calculated the difference-in-differences estimate as the difference in percentage participation between CPC+ and comparison practices in the relevant program period (PY 1, PY 2), minus the difference in the baseline period. The difference-in-differences estimate is in percentage point units. We estimated 90 percent confidence intervals calculating standard errors using linear regression and clustering at the practice level. Dashes (-) indicate that participation or difference values are not available, due to limitations of the data source. N/A indicates that the difference-in-differences estimate is not applicable, because we do not have data for the baseline period. 0.0 indicates that <0.05 percent of beneficiaries participated in the initiative. Note that the percentage point difference and the percentage point difference-in-difference estimate shown may differ from the corresponding calculations based on the percentages in the cells due to rounding.

^a We defined high-risk beneficiaries as those with an HCC score of greater than the 75th percentile of the distribution of HCC scores among assigned beneficiaries within their track. We looked at participation by high-risk beneficiaries in just Medicare FFS Care Management Charges, because care management services are specifically targeted to high-risk beneficiaries.

^b This includes CPT codes G0181 (physician supervision of a Home Health Agency patient, patient not present), G0182 (physician supervision of hospice patient, patient not present), G0502-G0504 and 99492-99494 (Collaborative Care Model), G0505 and 99483 (cognitive and function assessment for patient with cognitive impairment), G0511 (General Care Management Services for use by RHCs and FQHCs), G0512 (psychiatric collaborative care model for use by RHCs and FQHCs), and 99497 (advance care planning). These codes capture some type of care management but are not chronic care management or transitional care management codes.

^c This includes beneficiaries whose physicians billed at least one chronic care management, transitional care management, or other care management service.

^d Includes HCPCS codes G0502-G0504 in 2017 and CPT codes 99492-99494 in 2018. In 2017, 25 Track 2 CPC+ beneficiaries with behavioral health conditions had at least one claim for Psychiatric Collaborative Care Management and 286 had at least one such claim in 2018. In 2017, 77 Track 2 comparison beneficiaries with behavioral health conditions had at least one claim for Psychiatric Collaborative Care Management and 298 had at least one such claim in 2018. The number of beneficiaries are unweighted, but the percentages reported in the table use eligibility and matching weights.

Table 6.G.3. (continued)

^e We defined beneficiaries with behavioral health conditions as those who had at least one claim with a primary mental health or substance use disorder diagnosis in each analytic year or at least one inpatient or two outpatient claims with any mental health or substance use disorder diagnoses in each analytic year. In each analytic year, the population we identified using this approach represented roughly 22 percent of all CPC+ and comparison group beneficiaries. There were 245,898 Track 2 CPC+ beneficiaries with behavioral health conditions in 2017 and 278,497 in 2018. There were 558,793 Track 2 comparison group beneficiaries with behavioral health conditions in 2017 and 633,499 in 2018. The number of beneficiaries are unweighted, but the percentages reported in the table use eligibility and matching weights.

^f Includes HCPCS code G0507 in 2017 and CPT code 99484 in 2018. In 2017, 30 Track 2 CPC+ beneficiaries with behavioral health conditions had at least one claim for General Behavioral Health Integration and 231 had at least one such claim in 2018. In 2017, 165 Track 2 comparison beneficiaries with behavioral health conditions had at least one General Behavioral Health Integration claim in 2017 and 637 had one such claim in 2018. The number of beneficiaries are unweighted, but the percentages reported in the table use eligibility and matching weights.

^g To be consistent with baseline matching, where SSP and Next Gen participation were defined as participating as of 1/1/17, we define baseline participation for SSP and Next Gen as participating as of January 1, 2017.

^h In the practitioner MDM, 91 percent of participation in SSP is counted at TIN-level, while the remaining 9 percent is at the NPI-TIN level. If an NPI was listed in the practitioner MDM, we counted all practices with an NPI-TIN listed in that year as participating in SSP. If the NPI was missing in the practitioner MDM, we counted all practices with the TIN listed in that year as participating in SSP. We then weighted practices by the number of beneficiaries.

ⁱ We defined PY 1 participation value as participation as of January 1, 2018.

^j We defined PY 2 participation value as participation as of January 1, 2019.

^k In the beneficiary MDM, participation is at the beneficiary level and we measured participation as the fraction of beneficiaries in each sample (i.e., CPC+ and comparison group practices) who participated in the initiative.

^l We measured participation based on the beneficiary MDM as a robustness check for the measure of participation based on the practitioner MDM.

^m In the practitioner MDM, participation in Next Gen is at the NPI-TIN-level. We counted all practices with an NPI-TIN listed in that year as participating in Next Gen, and then weighted by number of beneficiaries in the practice in that year.

ⁿ We did not have data for the baseline year (i.e., 2016) because the model began on May 1, 2017.

^o CPC+ practices were technically unable to participate in TCPI during the first year of CPC+; however, we found that 9.9 percent of CPC+ practices did not withdraw from TCPI before the beginning of 2017. This is likely because the practices did not immediately initiate withdrawal. For PY 2, we also found a non-zero participation rate among CPC+ practices (2.6 percent), which may be explained by additional belated withdrawals, differences between the SK&A and CMS practitioner rosters, or the intent-to-treat approach of following even withdrawn practices.

^p This includes beneficiaries whose practice participated in SSP based on the practitioner MDM, Next Gen based on the practitioner MDM, Accountable Health Communities, or the Transforming Clinical Practice Initiative.

^q We measured participation based on the non-claims-based payment extract. Data for 2018 (i.e., PY 2) were incomplete for the Bundled Payment for Care Improvement initiative. We expect final data to be available in early 2020.

ACO = Accountable Care Organization; CI = confidence interval; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; FFS = fee-for-service; FQHC = Federally Qualified Health Center; HCC = hierarchical condition category; MDM = CMS Master Data Management System; NPI = National Provider Identifier; PY = Program Year; QI = quality improvement; RHC = Rural Health Clinic; SSP = Medicare Shared Savings Program; TCPI = Transforming Clinical Practice Initiative; TIN = Taxpayer Identification Number.

Figure 6.G.1. Participation in other initiatives by beneficiaries in CPC+ practices and comparison practices in the baseline year and difference-in-differences estimates for the first two program years: Track 1 and Track 2 2017 Starters

Participation in CMS initiatives was low for all initiatives except SSP and TCPI. Comparison practices had participation similar to that of CPC+ practices over time except for SSP, Next Gen, and TCPI, for which participation grew more among comparison practices than among CPC+ practices.

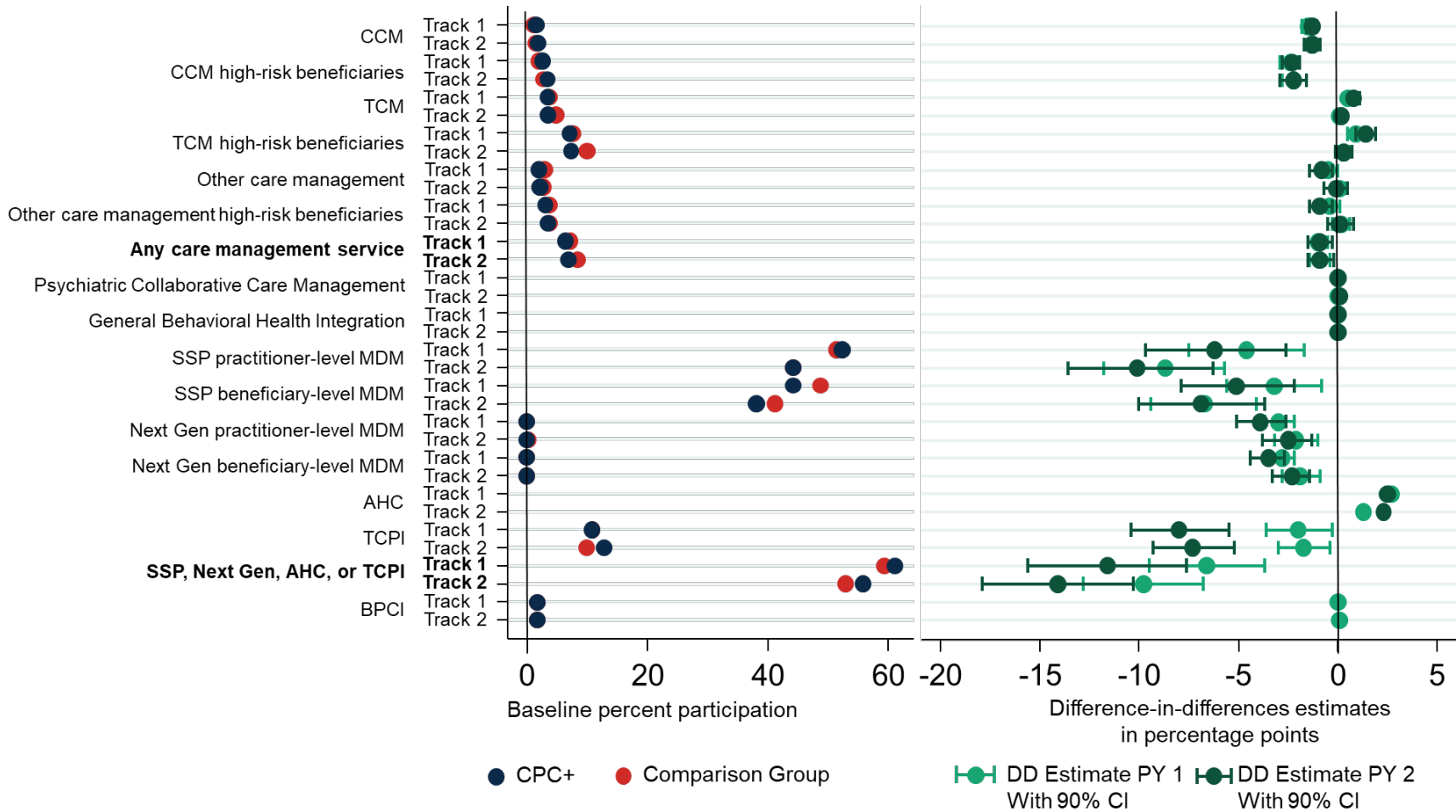


Figure 6.G.1. (continued)

Source: Analysis of Medicare FFS claims for 2016, 2017, 2018; MDM extracts from January 27, 2017, February 23, 2018, February 26, 2019; CMS January 2017, 2018, and 2019 TCPI roster; and the non-claims-based payment extract from May 24, 2019.

Notes: We report participation in initiatives as the percentage of beneficiaries who were exposed to the initiative in each period in each group (CPC+ or comparison practices in each track), with comparison practices weighted using matching weights. We calculated the difference-in-differences estimate as the difference in percentage participation between CPC+ and comparison practices in the relevant program period (PY 1, PY 2) minus the difference in the baseline period. The difference-in-differences estimate is in percentage point units. We estimated 90 percent confidence intervals calculating standard errors using linear regression and clustering at the practice level. For initiatives that were unavailable at baseline (Psychiatric Collaborative Care Management, General Behavioral Health Integration, and AHC), we do not report baseline participation, and for the difference-in-difference estimate, we report the difference between CPC+ and comparison participation in that year, without confidence intervals.

AHC = Accountable Health Communities Model; BPCI = Bundled Payments for Care Improvement Initiative; CI = confidence interval; CMS = Centers for Medicare & Medicaid Services; CCM = chronic care management; DD = difference-in-differences; FFS = fee-for-service; MDM = CMS Master Data Management System; PY = Program Year; SSP = Medicare Shared Savings Program; TCM = transitional care management; TCPI = Transforming Clinical Practice Initiative.

A. Billing for Medicare FFS care management services

Generally, we found low billing—and small differences in the relative change in the billing—for Medicare FFS care management services from the baseline period to the first two years of CPC+. Between 6.9 and 11.0 percent of all assigned Medicare FFS beneficiaries had claims for at least one of the care management service types (transitional care management [TCM], CCM, or other care management). Between 0.7 and 5.9 percent of all assigned Medicare FFS beneficiaries, and between 1.4 and 11.7 percent of high-risk beneficiaries in each research group had claims for a particular type of these services. Also, each group experienced small changes over time. From the baseline to first two years of CPC+, CPC+ practices slightly decreased their billing of CCM services while comparison practices slightly increased their billing of CCM services; CPC+ practices also slightly increased their billing of TCM services more than comparison practices and, in the case of Track 1 practices, CPC+ practices slightly decreased their billing of other care management services⁸⁶ more than comparison practices. The proportion of beneficiaries who had any claims for care management services grew slightly for both CPC+ and comparison practices, but slightly more among comparison practices. The relative change between CPC+ and comparison practices with respect to baseline stayed fairly constant between PY 1 and PY 2.

The difference-in-differences estimates are quantitatively small (less than 2 percentage points) due to low overall use of these types of claims throughout the observation period, but only a limited population of beneficiaries were eligible. However, even among high-risk beneficiaries, a relatively small proportion of such beneficiaries received these services and the difference in difference estimates remained less than 3 percentage points. This suggests that these small differences will be unlikely to translate into substantial differences in Medicare expenditures.

B. Billing for Medicare FFS behavioral integration services

We examined the delivery of Psychiatric Collaborative Care Management services and General Behavioral Health Integration among the 22 percent of beneficiaries with behavioral health conditions because they are eligible for these services.^{87,88} Overall, we found that at most 0.11 percent of CPC+ or comparison group beneficiaries with behavioral health conditions received services billed under these new codes in 2017 and 2018. The small number of claims for these services and the even smaller number of unique beneficiaries represented by those claims were insufficient to conduct a robust comparison between the CPC+ and comparison group.

These claims likely undercount the true delivery of integrated care, as some research has suggested that providers have experienced barriers to using these codes (Carlo et al. 2019). In

⁸⁶ This includes the following services: advance care planning, collaborative care model, cognition and functional assessment for patient with cognitive impairment, and physician supervision of hospice or home health patient where patient is not present. Note that the cognitive and functional assessment and collaborative care model billing codes were only active starting January 1, 2017.

⁸⁷ Beneficiaries with behavioral health conditions included beneficiaries who had at least one claim with a primary mental health or substance use disorder diagnosis or one inpatient or two outpatient claims with these same diagnoses in each analytic year.

⁸⁸ This describes the official eligibility criteria for these codes: <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/BehavioralHealthIntegration.pdf>

addition, CPC+ practices reported to CMS that they took steps to integrate behavioral health into their practice, and in PY 2, more than one-half of all practices reported to CMS that they had hired behavioral health staff and developed behavioral health workflows.

C. Participation in other Medicare FFS value-based purchasing models

In the first two program years, participation in other Medicare FFS value-based purchasing models grew among comparison practices relative to CPC+ practices, with the gap in participation between the two groups widening each year.⁸⁹

SSP. Participation in SSP among both CPC+ and comparison practices was by far the largest, with roughly half of the practices participating each year. Participation in SSP started off similar at baseline for CPC+ and comparison practices, for both Track 1 and Track 2 practices; however, participation in SSP among CPC+ practices declined while it increased for comparison practices. For Track 1 CPC+ practices, participation in SSP among CPC+ practices declined by 2.7 percentage points, while participation among comparison practices overall rose by 3.5 percentage points by PY 2. We observed similar patterns for Track 2 practices: the CPC+ group participation decreased participation by 3.6 percentage points while the comparison group increased participation by 7.5 percentage points.

As discussed in the first annual report, SSP participation for both CPC+ and comparison practices increased from the baseline year to PY 1. Between PY1 and PY2, participation in SSP decreased for both CPC+ and comparison practices by 2 to 5 percentage points with larger decreases among CPC+ practices. For possible explanations for the decrease in SSP participation among CPC+ practices during the intervention period, see the box in Chapter 3.3.2 on SSP participation.

Next Gen. For Next Gen, participation grew among CPC+ and comparison practices in the first two years of CPC+, but the size of the growth was larger among comparison practices. The CPC+ and comparison groups started out at close to 0 percent participation in the baseline period. This is because practices participating in CPC+ were not permitted to join Next Gen, and in the comparison selection process, we restricted potential comparison practices to those that were also not participating in Next Gen during the baseline period.⁹⁰ Participation among Track 1 CPC+ practices grew very little, to only 0.5 percent by PY 2 (that is, CPC+ practices that stopped participating in CPC+ and joined Next Gen); in contrast, participation among their comparison counterparts grew to 4.4 percent by PY 2. Track 2 experienced a very similar pattern: participation among CPC+ practices grew to 1.4 percent by PY 2, and participation among comparison group practices grew to 3.5 percent by PY 2. For Track 1 and Track 2, the

⁸⁹ For comparison selection, we measured baseline participation status for SSP and Next Gen as of January 1, 2017. Therefore, we measured participation in the first year of CPC+ as participation as of January 1, 2018, which was the end of PY 1, and participation in the second year of CPC+ as participation as of January 1, 2019, which was the end of PY 2.

⁹⁰ Participation was not exactly zero, because the SK&A rosters we use are not the same as the CMS rosters. Therefore, a couple of CPC+ practices are marked as participating in Next Gen based on the fact that at least one practitioner affiliated with the practice, according to SK&A, had participated in Next Gen.

difference-in-differences estimates of -3.2 and -2.1 percentage points, respectively, are statistically significant at the 1 percent level.

In general, the trend in Next Gen participation is consistent with our understanding of this program. The small amount of growth in Next Gen participation for the CPC+ group is expected because only practices that withdrew from CPC+ could join Next Gen. (These practices remain in our intent-to-treat study population despite not participating any longer in CPC+.) Growth for the comparison group is consistent with the fact that the number of Accountable Care Organizations (ACOs) participating in Next Gen has increased since it started in 2016.

Robustness check using beneficiary-level MDM. Despite baseline differences, we observed the same trend for the beneficiary-level participation rates across program years for CPC+ and comparison groups for both Track 1 and Track 2 practices. We also again found a greater increase in participation in SSP and Next Gen in the comparison group, compared to CPC+ beneficiaries. For both SSP and Next Gen, we calculated lower participation rates when we used the beneficiary-level MDM rather than the practitioner-level MDM, rolling it up to the practice level and then weighting by the number of beneficiaries to get beneficiary-level estimates. The beneficiary-level MDM SSP participation rates for all analysis groups in the baseline year were about 1 to 8 percentage points lower than the rates calculated using the practitioner-level MDM, and the beneficiary-level Next Gen participation rates for all analysis groups in the baseline year were about 0.1 to 0.5 percentage points lower than the rates calculated using the practitioner-level MDM.⁹¹ The differences between the practitioner- and beneficiary-level rates is likely explained by our method of calculating these rates. For the rate using the practitioner-level MDM, we considered a practice (and all of its assigned beneficiaries) as participating in an ACO model (i.e., SSP or Next Gen) if at least one of its practitioners participated in an ACO. This blanket approach naturally inflates the participation rate because we flagged beneficiaries as participating in an ACO if *any practitioner* in their assigned *practice* was identified as participating in an ACO, even if the ACO-aligned practitioner did not provide any care for the beneficiary. In contrast, we calculated the beneficiary-level participation rate based on beneficiaries' actual alignment to ACOs according to the MDM, regardless of their practitioners' or practice's alignment.⁹²

⁹¹ We found a larger difference in the participation rates between the practitioner- and beneficiary-level MDMs for SSP than Next Gen. This is likely due to a larger increase in the SSP practitioner-level rates than in those for Next Gen. In the practitioner-level MDM, less than 10 percent of SSP records have both a Taxpayer Identification Number (TIN) and a National Provider Identifier (NPI), while the remaining 90 percent only have a TIN. As a result, if at least one TIN assigned to the practice participated in SSP, all of the practice's assigned beneficiaries were counted as participating in SSP. Conversely, all of the Next Gen records have both a TIN and an NPI, so a practice's beneficiaries were only counted as participating in Next Gen if the NPI/TIN combination was assigned to that practice.

⁹² Both SSP and Next Gen use a prospective beneficiary alignment method that determines beneficiary participation prior to the start of a performance year. After the performance year, both models may retroactively reconcile or exclude beneficiaries based on applicable eligibility criteria (i.e., death). The beneficiary-level MDM includes the final reconciled beneficiary alignment list for the baseline and CPC+ program years (i.e., 2016 to 2018).

D. Participation in other primary care transformation initiatives

Accountable Health Communities. Unlike the participation pattern in SSP and in Next Gen, we found a slightly higher rate of participation in AHC among CPC+ practices than among comparison group practices. We cannot calculate difference-in-differences estimates for AHC because the first performance period started in May 1, 2017, during PY 1. In PY 1, practices had a low participation rate (about 1 to 3 percent) due to the mid-year AHC start date and gradual enrollment. In PY 2, the participation rates increased to about 4 percent among CPC+ practices and about 2 percent among comparison group practices. Although these trends indicate a slightly higher likelihood of participation among CPC+ practices, differences in geographic penetration of AHC in CPC+ versus comparison regions may explain the higher likelihood of participation among CPC+ practices. Of the 30 AHC participants, 11 are located in CPC+ regions, 17 are located in CPC+ comparison regions, and 2 are not located in CPC+ or comparison regions.⁹³ Although more AHC participants are located in comparison regions in absolute terms, AHC penetration in CPC+ regions is relatively much higher, given that we have two to three times as many comparison practices as CPC+ practices but there are less than twice as many AHC participants in comparison regions.

Transforming Clinical Practice Initiative. Over the first two program years of CPC+, TCPI participation among CPC+ practices fell substantially while it remained constant for comparison practices. For Track 1 CPC+ practices, participation fell from 10.9 percent in the baseline year to 2.6 percent in PY 2; for Track 2 CPC+ practices, participation fell from 9.9 percent in the baseline year to 2.0 percent in PY 2. At the same time, participation for comparison practices stayed relatively constant at about 10 percent for Track 1 and about 12 percent for Track 2. These rates led to difference-in-differences estimates of -8.0 percentage points and -10.1 percentage points for Track 1 and Track 2, respectively (each statistically significant at the 1 percent level). Although TCPI participation was much smaller in PY 2 for CPC+ practices, it was still greater than zero. Although CPC+ practices are not allowed to participate in TCPI, this finding likely reflects either additional belated withdrawals from TCPI or differences between the SK&A roster of practitioners participating in CPC+ and the actual CMS CPC+ practitioner rosters. The widening gap between CPC+ and comparison group practices suggests that some CPC+ practices would have participated in TCPI even in the absence of CPC+.

E. Combination of initiatives

We found that between 51 and 61 percent of practices participated during baseline in any Medicare FFS value-based purchasing model or primary care transformation initiative (i.e., SSP, Next Gen, AHC, or TCPI), and there was little difference in participation between CPC+ and comparison practices. As we saw with participation in each individual initiative, participation grew more among comparison practices than among CPC+ practices. By PY 2, Track 1 comparison practices had a 13.4 percentage point higher participation rate in one or more of these initiatives than CPC+ practices, and Track 2 comparison practices had a 17 percentage point higher participation rate. Two to 4 percent of practices participated in more than one of these programs, with comparison practices being slightly more likely to participate in more than one initiative than CPC+ practices. This suggests that, in the absence of CPC+, CPC+ practices

⁹³ The list of AHC participants is available at: <https://innovation.cms.gov/initiatives/ahcm/>.

would have increased their participation in other programs, and possibly even participated in multiple other programs.

E. Participation in CMS bundled payment initiatives

We found low levels of participation (less than 2 percent) in the Bundled Payment for Care Improvement (BPCI) initiative for CPC+ and comparison groups in both tracks, and similar slight decreases in participation. These results are not surprising since BPCI is a national program and both CPC+ and comparison practices can participate in it.

6.G.4. Combined 2017 and 2018 Starter results for first intervention year

Tables 6.G.4 and 6.G.5 report participation of beneficiaries in various CMS initiatives by time period (baseline year and PY 1) for the combined sample of 2017 and 2018 Starters in Tracks 1 and 2, respectively.⁹⁴

We found very similar participation rates and trends during baseline and PY 1 among the combined 2017 and 2018 Starters and the 2017 Starters only.

Table 6.G.4. Participation in other CMS initiatives by beneficiaries in CPC+ practices and comparison practices in the baseline year and first program year: Track 1 combined 2017 and 2018 Starters

Name of initiative	Time period	Percentage of Medicare FFS beneficiaries exposed to the initiative		Percentage point difference	Percentage point difference-in-differences estimate (90% CI)
		CPC+ group	Comparison group		
Type of initiative: Medicare FFS Care Management Charges					
Name of initiative					
Chronic Care Management (all beneficiaries)	Base	1.2	1.8	-0.6	N/A
	PY 1	0.7	2.8	-2.2	-1.5 (-1.8, -1.2)
Chronic Care Management (high-risk beneficiaries ^a)	Base	2.1	3.0	-0.9	N/A
	PY 1	1.4	4.7	-3.3	-2.5 (-2.9, -2.0)
Transitional Care Management (all beneficiaries)	Base	3.8	3.5	0.4	N/A
	PY 1	4.8	3.9	0.9	0.5 (0.4, 0.7)
Transitional Care Management (high-risk beneficiaries ^a)	Base	8.0	7.2	0.8	N/A
	PY 1	9.9	8.2	1.7	0.9 (0.6, 1.2)
Other care management ^b (all beneficiaries)	Base	3.1	2.0	1.1	N/A
	PY 1	3.8	3.2	0.7	-0.4 (-0.9, 0.0)
Other care management ^b (high-risk beneficiaries ^a)	Base	4.0	3.2	0.8	N/A
	PY1	5.3	4.9	0.4	-0.4 (-0.9, 0.1)

⁹⁴ Given the negligible number of claims for Psychiatric Collaborative Care Management and General Behavioral Health Integration services among the 2017 starters, we did not repeat the analyses among the combined sample of 2017 and 2018 starters.

	Time period	Percentage of Medicare FFS beneficiaries exposed to the initiative		Percentage point difference	Percentage point difference-in-differences estimate (90% CI)
		CPC+ group	Comparison group		
Combined measure of care management services					
Any care management ^c	Base	7.7	6.7	0.9	N/A
	PY1	8.8	8.9	-0.1	-1.0 (-1.5,-0.6)
Type of initiative: Other Medicare FFS value-based purchasing models					
Name of initiative					
Medicare Shared Savings Program Practitioner-level MDM ^e	Base ^d	50.4	51.3	-0.9	N/A
	PY 1 ^f	51.7	58.1	-6.4	-5.5 (-8.3, -2.7)
Medicare Shared Savings Program Beneficiary-level MDM ^{g,h}	Base ^d	48.2	43.4	4.8	N/A
	PY 1 ^f	49.9	49.2	0.8	-4.0 (-6.4, -1.6)
Next Generation or Pioneer ACO Practitioner-level MDM ⁱ	Base ^d	0.0	0.0	0.0	N/A
	PY 1 ^f	0.2	2.9	-2.7	-2.7 (-3.4, -2.0)
Next Generation or Pioneer ACO Beneficiary-level MDM ^{g,h}	Base ^d	0.0	0.1	0.0	N/A
	PY 1 ^f	0.3	2.8	-2.5	-2.5 (-3.0, -2.0)
Type of initiative: Other primary care transformation initiatives					
Name of initiative					
Accountable Health Communities Model ^j	Base	-	-	-	N/A
	PY 1	2.7	0.0	2.7	N/A
Transforming Clinical Practice Initiative	Base	11.6	11.6	0.0	N/A
	PY 1	10.6 ^k	12.4	-1.8	-1.8 (-3.4, -0.3)
Combined measure of other Medicare FFS value-based purchasing models and primary care transformation initiatives					
Participation in any Medicare FFS value-based purchasing model or primary care transformation initiative ^l	Base	59.3	61.1	-1.8	N/A
	PY 1	57.9	68.8	-10.9	-9.1 (-12.3, -5.9)
Type of initiative: Bundled payment initiatives					
Name of initiative					
Bundled Payment for Care Improvement ^m	Base	1.6	1.7	-0.1	N/A
	PY 1	-	-	-	-

Source: Analysis of Medicare FFS claims for 2016, 2017, 2018; MDM extracts from January 27, 2017, February 23, 2018, February 26, 2019; CMS January 2017, 2018, and 2019 TCPI roster; and the non-claims-based payment extract from May 24, 2019.

Notes: We report participation in initiatives as the percentage of beneficiaries who were exposed to the initiative in each period in each group (Track 1 CPC+ or comparison practices), with comparison practices weighted using matching weights. We calculated the difference in participation in a given year between Track 1 CPC+ and comparison practices as the percentage point difference. We calculated the difference-in-differences estimate as the difference in percentage participation between CPC+ and comparison practices in the relevant program period (PY 1), minus the difference in the baseline period. The difference-in-differences estimate is in percentage point units. We estimated 90 percent confidence intervals calculating standard errors using linear regression and clustering at the practice level. Dashes (-) indicate that participation or difference values were not available, due to limitations of the data source. N/A indicates that the difference-in-differences estimate is not applicable, because we did not have data for the baseline period. 0.0 indicates that <0.05 percent of beneficiaries participated in the initiative. Note that the percentage point difference and the percentage point difference-in-difference estimate shown may differ from the corresponding calculations based on the percentages in the cells due to rounding.

^a We defined high-risk beneficiaries as those with an HCC score greater than the 75th percentile of the distribution of HCC scores among assigned beneficiaries within their track. We looked at participation by high-risk beneficiaries in just Medicare FFS Care Management Charges, because care management services are specifically targeted to high-risk beneficiaries.

^b This includes CPT codes G0181 (physician supervision of a Home Health Agency patient, patient not present), G0182 (physician supervision of hospice patient, patient not present), G0502-G0504 and 99492-99494 (Collaborative Care Model), G0505 and 99483 (cognitive and function assessment for patient with cognitive impairment), G0511 (General Care Management Services for use by RHCs and FQHCs), G0512 (psychiatric collaborative care model for use by RHCs and FQHCs), and 99497 (advance care

planning). These codes capture some type of care management but are not chronic care management or transitional care management codes.

^c This includes beneficiaries whose physicians billed at least one chronic care management, transitional care management, or other care management service.

^d To be consistent with baseline matching, where SSP and Next Gen participation were defined as participating as of 1/1/17 for 2017 Starters and 1/1/2018 for 2018 Starters, we defined baseline participation for SSP and Next Gen as participating as of January 1, 2017 for 2017 Starters and as of January 1, 2018 for 2018 Starters.

^e In the practitioner MDM, 91 percent of participation in SSP is counted at TIN-level, while the remaining 9 percent is at the NPI/TIN level. If an NPI was listed in the practitioner MDM, we counted all practices with an NPI/TIN listed in that year as participating in SSP. If the NPI was missing in the practitioner MDM, we counted all practices with the TIN listed in that year as participating in SSP. We then weighted practices by the number of beneficiaries.

^f We defined PY 1 participation value as participation as of January 1, 2018 for 2017 Starters and as of January 1, 2019 for 2018 Starters.

^g In the beneficiary MDM, participation is at the beneficiary level and we measured participation as the fraction of beneficiaries in each sample that participated in the initiative.

^h We measured participation based on the beneficiary MDM as a robustness check for the measure of participation based on the practitioner MDM.

ⁱ In the practitioner MDM, participation in Next Gen is at the NPI-TIN-level. We counted all practices with an NPI/TIN listed in that year as participating in Next Gen, and then weighted by number of beneficiaries in the practice in that year.

^j We did not have data for the baseline year for the 2017 Starters (i.e., 2016) because the model began on May 1, 2017.

^k CPC+ practices were technically unable to participate in TCPI during the first year of CPC+; however, we found that 10.6 percent of CPC+ practices did not withdraw from TCPI before the beginning of PY1. This is likely because the practices did not immediately initiate withdrawal.

^l This includes beneficiaries whose practice participated in SSP based on the practitioner MDM, Next Gen based on the practitioner MDM, Accountable Health Communities, or the Transforming Clinical Practice Initiative.

^m We measured participation based on the non-claims-based payment extract. Data for 2018 (i.e., PY 1 for 2018 Starters) were incomplete for the Bundled Payment for Care Improvement initiative. We expect final data to be available in early 2020.

ACO = Accountable Care Organization; CI = confidence interval; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; FFS = fee-for-service; FQHC = Federally Qualified Health Center; HCC = hierarchical condition category; MDM = CMS Master Data Management System; NPI = National Provider Identifier; PY = Program Year; QI = quality improvement; RHC = Rural Health Clinic; SSP = Medicare Shared Savings Program; TCPI = Transforming Clinical Practice Initiative; TIN = Taxpayer Identification Number.

Table 6.G.5. Participation in other CMS initiatives by beneficiaries in CPC+ practices and comparison practices in the baseline year and first program year: Track 2 combined 2017 and 2018 Starters

Name of initiative	Time period	Percentage of Medicare FFS beneficiaries exposed to the initiative		Percentage point difference	Percentage point difference-in-differences estimate (90% CI)
		CPC+ group	Comparison group		
Type of initiative: Medicare FFS Care Management Charges					
Name of initiative					
Chronic Care Management (all beneficiaries)	Base	1.6	2.0	-0.4	N/A
	PY 1	0.8	2.6	-1.8	-1.4 (-1.8, -1.1)
Chronic Care Management (high-risk beneficiaries ^a)	Base	3.0	3.5	-0.5	N/A
	PY 1	1.6	4.4	-2.8	-2.3 (-2.9, -1.7)
Transitional Care Management (all beneficiaries)	Base	4.8	3.5	1.3	N/A
	PY 1	5.3	3.9	1.5	0.2 (0.0, 0.3)
Transitional Care Management (high-risk beneficiaries ^a)	Base	9.9	7.3	2.6	N/A
	PY 1	11.1	8.1	3.0	0.4 (0.1, 0.7)
Other care management ^b (all beneficiaries)	Base	2.8	2.2	0.5	N/A
	PY 1	3.8	3.3	0.5	0.0 (-0.4, 0.3)
Other care management ^b (high-risk beneficiaries ^a)	Base	3.8	3.5	0.2	N/A
	PY 1	5.2	4.9	0.3	0.1 (-0.4, 0.5)
Combined measure of care management services					
Any care management ^c	Base	8.5	6.9	1.6	N/A
	PY 1	9.3	8.7	0.6	-1.0 (-1.4, -0.5)
Type of initiative: Other Medicare FFS value-based purchasing models					
Name of initiative					
Medicare Shared Savings Program Practitioner-level MDM ^e	Base ^d	43.4	43.4	0.0	N/A
	PY 1 ^f	44.1	52.6	-8.5	-8.6 (-11.5, -5.6)
Medicare Shared Savings Program Beneficiary-level MDM ^{g,h}	Base ^d	40.6	37.5	3.1	N/A
	PY 1 ^f	42.3	45.7	-3.4	-6.5 (-9.1, -4.0)
Next Generation or Pioneer ACO Practitioner-level MDM ⁱ	Base ^d	0.2	0.0	0.2	N/A
	PY 1 ^f	1.0	2.9	-1.9	-2.1 (-3.1, -1.0)
Next Generation or Pioneer ACO Beneficiary-level MDM ^{g,h}	Base ^d	0.0	0.0	0.0	N/A
	PY 1 ^f	1.1	2.9	-1.8	-1.8 (-2.7, -0.8)
Type of initiative: Other primary care transformation initiatives					
Name of initiative					
Accountable Health Communities Model ^j	Base	-	-	-	N/A
	PY 1	1.4	0.1	1.4	N/A
Transforming Clinical Practice Initiative	Base	11.0	12.7	-1.7	N/A
	PY 1	11.0 ^k	14.5	-3.4	-1.7 (-2.9, -0.5)
Combined measure of other Medicare FFS value-based purchasing models and primary care transformation initiatives					
Participation in any Medicare FFS value-based purchasing model or primary care transformation initiative ^l	Base	52.9	55.8	-2.9	N/A
	PY 1	51.3	66.1	-14.8	-11.9 (-15.1, -8.7)
Type of initiative: Bundled payment initiatives					
Name of initiative					
Bundled Payment for Care Improvement ^m	Base	1.7	1.8	0.0	N/A
	PY 1	-	-	-	-

Source: Analysis of Medicare FFS claims for 2016, 2017, 2018; MDM extracts from January 27, 2017, February 23, 2018, February 26, 2019; CMS January 2017, 2018, and 2019 TCPI roster; and the non-claims-based payment extract from May 24, 2019.

Notes: We report participation in initiatives as the percentage of beneficiaries who were exposed to the initiative in each period in each group (Track 2 CPC+ or comparison practices), with comparison practices weighted using matching weights. We calculated the difference in participation in a given year between Track 1 CPC+ and comparison practices as the percentage point difference. We calculated the difference-in-differences estimate as the difference in percentage participation between CPC+ and comparison practices in the relevant program period (PY 1), minus the difference in the baseline period. The difference-in-differences estimate is in percentage point units. We estimated 90 percent confidence intervals calculating standard errors using linear regression and clustering at the practice level. Dashes (-) indicate that participation or difference values are not available, due to limitations of the data source. N/A indicates that the difference-in-differences estimate is not applicable, because we did not have data for the baseline period. 0.0 indicates that <0.05 percent of beneficiaries participated in the initiative. Note that the percentage point difference and the percentage point difference-in-difference estimate shown may differ from the corresponding calculations based on the percentages in the cells due to rounding.

^a We defined high-risk beneficiaries as those with an HCC score greater than the 75th percentile of the distribution of HCC scores among assigned beneficiaries within their track. We looked at participation by high-risk beneficiaries in just Medicare FFS Care Management Charges, because care management services are specifically targeted to high-risk beneficiaries.

^b This includes CPT codes G0181 (physician supervision of a Home Health Agency patient, patient not present), G0182 (physician supervision of hospice patient, patient not present), G0502-G0504 and 99492-99494 (Collaborative Care Model), G0505 and 99483 (cognitive and function assessment for patient with cognitive impairment), G0511 (General Care Management Services for use by RHCs and FQHCs), G0512 (psychiatric collaborative care model for use by RHCs and FQHCs), and 99497 (advance care planning). These codes capture some type of care management but are not chronic care management or transitional care management codes.

^c This includes beneficiaries whose physicians billed at least one chronic care management, transitional care management, or other care management service.

^d To be consistent with baseline matching, where SSP and Next Gen participation were defined as participating as of 1/1/17 for 2017 Starters and 1/1/2018 for 2018 Starters, we defined baseline participation for SSP and Next Gen as participating as of January 1, 2017 for 2017 Starters and as of January 1, 2018 for 2018 Starters.

^e In the practitioner MDM, 91 percent of participation in SSP is counted at TIN-level, while the remaining 9 percent is at the NPI/TIN level. If an NPI was listed in the practitioner MDM, we counted all practices with an NPI/TIN listed in that year as participating in SSP. If the NPI was missing in the practitioner MDM, we counted all practices with the TIN listed in that year as participating in SSP. We then weighted practices by the number of beneficiaries.

^f We defined PY 1 participation value as participation as of January 1, 2018 for 2017 Starters and as of January 1, 2019 for 2018 Starters.

^g In the beneficiary MDM, participation is at the beneficiary level and we measured participation as the fraction of beneficiaries in each sample that participated in the initiative.

^h We measured participation based on the beneficiary MDM as a robustness check for the measure of participation based on the practitioner MDM.

ⁱ In the practitioner MDM, participation in Next Gen is at the NPI-TIN-level. We counted all practices with an NPI/TIN listed in that year as participating in Next Gen, and then weighted by number of beneficiaries in the practice in that year.

^j We did not have data for the 2017 Starter's baseline year (i.e., 2016) because the model began on May 1, 2017.

^k CPC+ practices were technically unable to participate in TCPI during the first year of CPC+; however, we found that 11.0 percent of CPC+ practices did not withdraw from TCPI before the beginning of PY1. This is likely because the practices did not immediately initiate withdrawal.

^l This includes beneficiaries whose practice participated in SSP based on the practitioner MDM, Next Gen based on the practitioner MDM, Accountable Health Communities, or the Transforming Clinical Practice Initiative.

^m We measured participation based on the non-claims-based payment extract. Data for 2018 (i.e., PY 1 for 2018 Starters) were incomplete for the Bundled Payment for Care Improvement initiative. We expect final data to be available in early 2020.

ACO = Accountable Care Organization; CI = confidence interval; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; FFS = fee-for-service; FQHC = Federally Qualified Health Center; HCC = hierarchical condition category; MDM = CMS Master Data Management System; NPI = National Provider Identifier; PY = Program Year; QI = quality improvement; RHC = Rural Health Clinic; SSP = Medicare Shared Savings Program; TCPI = Transforming Clinical Practice Initiative; TIN = Taxpayer Identification Number.

6.G.5. Implications for CPC+ impact analyses

The moderately larger increases in participation in Medicare FFS value-based purchasing models for comparison group compared to CPC+ practices could decrease the marginal impact of the CPC+ incentives and supports in improving primary care, relative to a case in which these other initiatives did not exist. That is, if these other initiatives are encouraging types of changes in the comparison group similar to those occurring in the CPC+ group, and the changes improve outcomes, we may observe only small effects of CPC+ or none at all, even if the broader model of care transformation is indeed effective in improving quality or lowering costs. However, the

initiative for which these participation differences in change are the largest—SSP—is a nationwide model, and the comparison group’s participation likely represents the correct counterfactual to the scenario where CPC+ did not exist. Due to the increasing differential changes in participation between the CPC+ and comparison groups in SSP, the SSP subgroups should be interpreted with caution, as there is increasing participation in SSP of the comparison group in the non-SSP subgroup, and decreasing participation in SSP of the CPC+ group in the SSP subgroup. Instead of interpreting the SSP subgroup estimates as the impact of CPC+ combined with SSP throughout the intervention period, these estimates should be interpreted as the impact of starting CPC+ in SSP. Participation in Next Gen by both the CPC+ and comparison groups remains small, and while it has grown slightly more for the comparison group, the gap in participation remains low, which suggests that contamination by Next Gen is unlikely to bias our estimates.

6.G.6. Future initiatives

Although there appears to be little risk that the current set of initiatives bias our CPC+ impacts, CMS will be making several changes to regulations and programs that could affect our estimates in future years of CPC+. In future reports, we plan to track participation in these initiatives. If we find large differential participation between the CPC+ and comparison groups, we will adjust our methodology accordingly to ensure that our impact estimates remain unbiased.

Table 6.G.6. Selected regulatory reforms and programmatic changes related to CPC+

Program	Time period	Potential implications for CPC+
<p>Pathways to Success: Redesign of the Shared Savings Program</p> <ul style="list-style-type: none"> Although the majority of Medicare Shared Savings Program (SSP) ACOs chose to enter an upside-only model under Track 1, the redesign intends to make the transition to two-sided risk more gradual and transparent, and to support additional ACOs to progress to performance-based risk. 	<p>5-year agreement periods beginning July 1, 2019</p>	<ul style="list-style-type: none"> There is already a fair amount of shifting in and out of SSP and this new program could further encourage shifts. If comparison practices’ shifts in participation do not represent the relevant counterfactual for what CPC+ practices would do in the absence of CPC+, and if the redesign helps encourage comparison practices to make changes, then this change could decrease estimated impacts of CPC+. The redesign could also increase the estimated effects of CPC+ if the redesign complements or reinforces the CPC+ model.

Table 6.G.6. (continued)

Program	Time period	Potential implications for CPC+
New payment model options under the CMS Primary Cares Initiative		
<ul style="list-style-type: none"> • Primary Care First (PCF) <ul style="list-style-type: none"> – Building on the principles of CPC+, but with more focus on paying for outcomes than for model implementation, this 5-year model provides payment to reward advanced primary care practices that are ready to assume financial risk in exchange for reduced administrative burden and performance-based payments. It will be offered in 26 regions, including the current 18 CPC+ regions, and 2 of the CPC+ comparison regions. – A second model option encourages practices to take responsibility for members of a high-cost, high-need seriously ill population, who currently lack a primary care practitioner or effective care coordination. 	<p>PCF:</p> <p>Two 5-year cohorts, beginning in 2021 and 2022</p>	<ul style="list-style-type: none"> • In 2021, CPC+ comparison group practices in PCF regions can join PCF. In 2022, CPC+ practices can leave CPC+ to join PCF. • Comparison practices can participate in DC if they are part of a larger organization (e.g., a Medicare ACO) that decides to participate. CPC+ practices cannot participate in DC. • Differences in participation in non-CPC+ initiatives between CPC+ and comparison practices could decrease the estimated impacts of the CPC+ incentives and supports in improving primary care, if those other initiatives are encouraging comparison group practices to make changes similar to those occurring in the CPC+ group.
<ul style="list-style-type: none"> • Direct Contracting (DC) <ul style="list-style-type: none"> – The objective of the DC model is to engage a wider variety of organizations, beyond primary care practices, with experience taking on financial risk and serving larger patient populations, such as ACOs, Medicare Advantage plans, and Medicaid managed care organizations. – Model options include global population-based payment (100% financial risk via primary care capitation or total care capitation), professional (share 50% risk with CMS via primary care capitation), and geographic (assume responsibility for the total cost of care and health needs of a population in a defined target region). 	<p>DC:</p> <p>Jan 1, 2021, through Dec 31, 2025</p>	<ul style="list-style-type: none"> • In 2021, CPC+ comparison group practices in PCF regions can join PCF. In 2022, CPC+ practices can leave CPC+ to join PCF. • Comparison practices can participate in DC if they are part of a larger organization (e.g., a Medicare ACO) that decides to participate. CPC+ practices cannot participate in DC. • Differences in participation in non-CPC+ initiatives between CPC+ and comparison practices could decrease the estimated impacts of the CPC+ incentives and supports in improving primary care, if those other initiatives are encouraging comparison group practices to make changes similar to those occurring in the CPC+ group.

6.H. CPC Classic long-term effects analysis

Comprehensive Primary Care (CPC) Classic's changes to primary care delivery were expected to lower overall Medicare fee-for-service (FFS) expenditures and certain types of service use (hospitalizations and emergency department [ED] visits). The CPC Classic fourth annual report showed that CPC Classic reduced the growth in hospitalizations and ED visits by 2 percent for CPC Classic practices versus comparison practices, with the favorable impacts on ED visits concentrated in the last two years of CPC Classic, and the favorable impacts on hospitalizations statistically significant for the first but not subsequent intervention years. Any effects might have persisted or improved after the initiative ended, for two reasons. First, CPC Classic practices could have continued some care delivery improvements that began under CPC Classic. Second, 86 percent of practices that had participated in CPC Classic immediately joined Comprehensive Primary Care Plus (CPC+) in 2017—a primary care model whose introduction was motivated by the initial success of CPC Classic practices and is a natural progression of CPC Classic. This appendix presents the results from an analysis that added another year of findings to examine the longer-term effects of CPC Classic combined with CPC+ on Medicare Part A and B expenditures (excluding care management fees) and health care service use. Results in these two years reflect:

- a. Any enduring effects of CPC Classic that persisted or strengthened after the initial four-year intervention period
- b. The impact of CPC Classic beneficiaries' subsequent first-year participation in CPC+

We estimated these longer-term effects of CPC Classic on attributed Medicare FFS beneficiaries by using difference-in-differences regressions that compared mean outcomes of beneficiaries served by CPC Classic practices and their original matched comparison practices—that is, the comparison practices that were matched to CPC Classic practices according to their characteristics during 2012 (the baseline year for CPC Classic). We used propensity score matching to ensure pre-intervention similarity between CPC Classic and matched comparison practices across Medicare FFS beneficiaries, practices, and practices' markets. We used the year before CPC Classic began (October 2011 to September 2012) as the baseline period, and the four intervention years of CPC Classic (October 2012 to December 2016) and one calendar year after CPC Classic (January 2017 to December 2017) as the intervention period. We included all beneficiaries assigned to CPC Classic and their matched comparison practices during the baseline period and the four intervention years of CPC Classic, and followed them into one calendar year after CPC Classic ended.

We found that the effects in the year after CPC Classic ended were generally similar to the effects during the four intervention years of CPC Classic. However, the favorable impact on hospitalizations was 3.1 percent and was statistically significant ($p < 0.01$) in the year after CPC Classic ended, whereas such effects were 1.8 percent or lower during each of the first four years of CPC Classic. Specifically,

- a. Compared to matched comparison practices, there was a relative reduction of (1) 3.1 percent in hospitalizations, (2) 2.4 percent in total ED visits, and (3) 2.2 percent in outpatient ED visits in the year after CPC Classic ended.
- b. Similar to the four years of the CPC Classic intervention, there were neither sizable nor statistically significant changes in Medicare Part A and B expenditures (excluding care management fees) of CPC Classic practices relative to their matched comparison practices one year after CPC Classic ended.

6.H.1. Background

In October 2012, the Centers for Medicare & Medicaid Services (CMS) launched the multipayer CPC Classic initiative. Nearly 500 primary care practices in seven regions across the United States participated in the initiative. CPC Classic tested whether requiring practices to implement a new approach to delivering primary care, and providing financial and technical support to help them do so, reduced expenditures and improved quality over a four-year period. CPC Classic required primary care practices to make changes in five areas: (1) access to and continuity of care, (2) planned care for preventive and chronic needs, (3) risk-stratified care management, (4) engagement of patients and their caregivers, and (5) coordination of care with patients' other care providers. CPC Classic supported practices' transformation with enhanced payment, data feedback, and learning support. The initiative's primary outcomes of interest were Medicare expenditures, hospitalizations, and ED visits. Over the four years of the initiative, CPC Classic reduced the growth in hospitalizations by about 1.6 percent and ED visits (both total and outpatient) by 2 percent among CPC Classic practices relative to comparison practices, but it did not appreciably affect Medicare Part A and B expenditures (Peikes et al. 2018a, 2018b). A favorable 1.7 percent ($p = 0.06$) reduction in hospitalizations emerged in Year 1, but the estimated effect was slightly smaller and not quite statistically significant in Years 2 to 4 (Peikes et al. 2018a, 2018b). The favorable impacts on ED visits became more pronounced over time and were statistically significant ($p < 0.03$) in the third and fourth intervention years (Peikes et al. 2018a, 2018b). This temporal pattern fit the expectation that practice transformation takes time to alter results.

6.H.2. Research question

This analysis evaluates whether CPC Classic practices experienced any favorable effects relative to their matched comparison practices on four core expenditures and service use outcomes (Medicare Part A and B expenditures without care management fees, hospitalizations, outpatient ED visits, and total ED visits) one year after CPC Classic ended.

6.H.3. Hypotheses

We expected the effects of CPC Classic during the four years of the initiative to persist in the year after the initiative ended, as the care delivery transformation brought by Classic continued to take effect. In addition, resources from CPC+, such as care management fees, could enable the CPC Classic practices that participated in CPC+ to continue providing care management support and other care delivery changes for their patients, leading to persistent or even increasing favorable effects.

6.H.4. Methods and analysis

A. Methods overview

We used an intent-to-treat (ITT) design to assign beneficiaries to practices; that is, once we had attributed beneficiaries to a practice (CPC Classic or comparison) at any time during the intervention period, they remained in the analysis sample as long as they met the eligibility criteria (alive and enrolled in Medicare Part A and Part B with Medicare as the primary payer and not in a health maintenance organization).

This analysis used the CPC Classic and matched comparison practices from the CPC Classic evaluation (Peikes et al. 2018a), which used propensity score matching to ensure pre-intervention similarity between CPC Classic and matched comparison practices across beneficiaries, practices, and practices' markets. Matching was performed separately in each of the seven CPC regions. The pool of potential comparison practices included (1) practices in nearby areas that were external to the CPC regions but that the Mathematica research team and CMS considered to have reasonably similar demographics and market factors for face validity and enough practices for matching (external comparison practices) and (2) practices that had applied to CPC in the same regions as the CPC practices but were not selected (internal comparison practices). Matching variables included patients' characteristics (such as age, sex, hierarchical condition category scores, and prior expenditures and service use); practice-level characteristics (such as meaningful use of electronic health records, number of clinicians, and percentage of clinicians with a primary care specialty); and characteristics of the practice's market (such as mean county income). We selected as many as five comparison practices for each CPC Classic practice.

Our difference-in-differences analysis compared changes in outcomes from the year before CPC Classic began (baseline) to the five-year period after it began, between Medicare FFS beneficiaries served by CPC Classic practices and those served by matched comparison practices.

B. Data and study sample

B.1. Data and outcomes

Using Medicare claims files (research-identifiable files) from the Virtual Research Data Center, we estimated impacts for the following primary claims-based outcomes for attributed Medicare FFS beneficiaries:

- Medicare Part A and Part B expenditures without care management fees per beneficiary per month (PBPM)
- Number of hospitalizations per 1,000 beneficiaries per year
- Number of outpatient ED visits per 1,000 beneficiaries per year
- Number of total ED visits per 1,000 beneficiaries per year

We also examined impacts on expenditures for the following Medicare Part A and Part B service categories for attributed Medicare FFS beneficiaries:

- Inpatient
- Outpatient
- Physician
- Home health
- Hospice
- Skilled nursing facility
- Durable medical equipment (DME)

B.2. Time period

Table 6.H.1 shows the time period of this analysis. We treated the year before CPC Classic began (October 2011 to September 2012) as the baseline period, and the four intervention years of CPC Classic and one calendar year after CPC Classic ended as the intervention period.

Table 6.H.1. Time period (year) definitions

Calendar period	Description
October 2011–September 2012	Baseline year
October 2012–September 2013	First intervention year
October 2013–September 2014	Second intervention year
October 2014–September 2015	Third intervention year
October 2015–December 2016	Fourth intervention year
January 2017–December 2017	Fifth year after CPC Classic began; first year of CPC+

Note: To ensure consistency in the impact analysis, we assumed an October 2012 start date for all CPC Classic regions, although the intervention actually started in November 2012 for five CPC Classic regions: New York’s Capital District–Hudson Valley region, New Jersey, Colorado, Oregon, and Ohio and Kentucky’s Cincinnati–Dayton region. Because CPC Classic continued through December 2016, the fourth intervention year consisted of five quarters, or 15 months.

B.3. Practices included in the study sample

The analysis included 497 practices participating at the end of CPC Classic’s first quarter (the ITT sample) and 908 matched comparison practices. Table 6.H.2 shows that CPC Classic and matched comparison practices had similar characteristics, including similar Medicare Part A and B expenditures and service use for their attributed beneficiaries (Dale et al. 2016). In 2017, many CPC Classic practices (86 percent) joined CPC+ and a similarly large proportion of their matched comparison practices (79 percent) did not join CPC+ (either because they did not have the opportunity to join because their region did not offer the program or because they opted not to join).⁹⁵

⁹⁵ Seventy-two CPC Classic practices joined Track 1 of CPC+ and constituted 5 percent of all Track 1 2017 Starters in CPC+; 353 CPC Classic practices joined Track 2 of CPC+ and constituted 24 percent of all Track 2 2017 Starters in CPC+. Among the 57 CPC Classic practices that withdrew or were terminated from CPC Classic for reasons other than their practice closing and were located in CPC+ regions, 15 joined CPC+. Ten of these 15 practices had withdrawn from CPC Classic to join a Medicare Shared Saving Program (SSP) Accountable Care Organization. Participation in SSP was not allowed by CPC Classic but was by CPC+.

Table 6.H.2. Baseline characteristics of CPC Classic and comparison practices

Characteristic	CPC Classic practices	Comparison practices	Difference between CPC Classic and comparison practices	p-Value
Practice characteristics				
Percentage of practices with one or more clinicians who was a Medicare meaningful EHR user as of June 2012 ^a	79	79	0	>0.99
Percentage of practices with state or NCQA medical-home recognition by autumn 2012	39	37	2.9	0.20
Mean number of clinicians ^b	4.2	4.6	0.4	0.64
Percentage of practices' clinicians with primary care specialty ^b	94	94	0	0.92
Percentage of practices owned by larger organization ^b	55	54	1	0.85
Percentage of practices located in medically underserved area ^c	11	14	-3	0.17
Percentage of practice's county that is urban ^d	78	75	3	0.08
Mean number of attributed Medicare beneficiaries ^e	635	698	-63	0.14
Beneficiary characteristics				
Percentage of attributed Medicare beneficiaries who are white ^e	91	92	-1	0.23
Mean HCC score among attributed Medicare beneficiaries ^{d,f}	0.99	1.00	-0.01	0.57
Annualized inpatient hospital visits among attributed Medicare beneficiaries (mean number per patient) ^e	0.26	0.26	0	0.91
Annualized ED visits among attributed Medicare beneficiaries (mean number per patient) ^e	0.57	0.58	-0.01	0.48
Average annualized total Medicare Part A and B expenditures among attributed Medicare beneficiaries (\$) ^e	7,224	7,172	52	0.71

Source: Mathematica's analysis of baseline practice characteristic data of CPC Classic and matched comparison practices (Dale et al. 2016).

Note: Because CPC Classic was a practice-level intervention, and to aid computation, we matched using practice-level data rather than beneficiary-level data. The means in this table represent practice-level means, weighted to account for matching. Patient-level averages are based on the services used from January 2010 to February 2012 among Medicare fee-for-service beneficiaries attributed to practices during the period before the beginning of the initiative (May 2010 through April 2012).

^a A meaningful EHR user is a clinician who qualifies for CMS incentive programs by having used certified EHR technology to improve the quality of health care and to meet other objectives specified by CMS.

^b Data are from SK&A, a health care marketing vendor.

^c Numbers are based on 2009 data from the HRSA.

^d Data are from the 2009 Area Health Resource Files provided by the HRSA.

^e Data are from the CMS Virtual Research Data Center.

^f HCC scores were calculated by CMS such that the average for the Medicare fee-for-service population nationally was 1.0. A patient with a risk score of 1.30 was predicted to have costs that would be approximately 30 percent

Table 6.H.2. (continued)

above the average, whereas a patient with a risk score of 0.70 was expected to have costs that would be approximately 30 percent below the average (Pope et al. 2004).

CMS = Centers for Medicare & Medicaid Services; ED = emergency department; EHR = electronic health record; HCC = hierarchical condition category; HRSA = Health Resources and Services Administration; NCQA = National Committee for Quality Assurance.

B.4. Beneficiaries included in the study sample

From the baseline period until the fourth intervention year (October 2012 to December 2016), we included all beneficiaries attributed to CPC Classic and their matched comparison practices, using an ITT design to assign beneficiaries to practices. This sample is the same as the analytic sample used for the CPC Classic fourth annual report (Peikes et al. 2018a).

For the fifth year after CPC Classic began (January 2017 to December 2017), instead of conducting yearly attribution, which would have been prohibitively costly, we chose to follow the beneficiaries already assigned in the fourth-year analysis sample into their fifth year, and assigned them to the same treatment or comparison status as in CPC Classic.⁹⁶ Approximately 90 percent of the beneficiaries in the fourth-year analysis sample of CPC Classic were alive and eligible (enrolled in Medicare Part A and Part B with Medicare as primary payer and no Part C enrollment) for at least some part of 2017 and are thus included in the fifth-year analysis sample. Therefore, our results can be interpreted as the effects of CPC Classic and the first year of CPC+ on beneficiaries attributed during the time of the CPC Classic initiative. We assessed the baseline

⁹⁶ We could not conduct yearly attribution for years 5 because of the costs associated with (1) tracking the provider composition of CPC Classic and comparison practices for the two additional years of follow up and (2) replicating the CPC Classic attribution methodology conducted by CMS. Due to this, we do not have newly attributed beneficiaries for year 5.

We expect that the favorable effects on hospitalizations and ED visits that we observe in the fifth year would have been greater if we could have included the beneficiaries who would have been newly attributed in Year 5. The ITT assignment that we used keeps beneficiaries assigned to the same practice to which they were once attributed even when they are no longer receiving the plurality of their primary care from that practice, leading to dilution of effects over time. Adding the newly attributed beneficiaries to the yearly samples increases the proportion of beneficiaries in the sample who are actually receiving the plurality of their care from the practice to which they are assigned, thus offsetting some of this dilution.

Sensitivity tests from the CPC+ impact evaluation support this hypothesis (Peikes et al. 2019; Anglin et al. 2019). Specifically, we checked impact estimates of the first two years of CPC+ on key outcomes (expenditures, hospitalizations, and ED visits) for three samples: (1) a no-ITT sample, from which we removed all beneficiaries who were assigned to practices only because of ITT and were not actually attributed to the practice in the relevant time period; (2) our main sample, which includes the ITT beneficiaries as well as a sample of newly attributed beneficiaries in each time period; and (3) a sample of beneficiaries attributed only in Quarter 1 of CPC+, who are followed over the first two years' of CPC+ and remain assigned to the same practice to which they were attributed in the first quarter of the CPC+ intervention. In terms of proportion of beneficiaries who are actually receiving the plurality of their care from their assigned practices, these samples can be ranked as no-ITT sample, then main sample, and finally, sample of beneficiaries attributed only in Quarter 1. We find that the magnitude of the impact estimates follows the same ranking; that is, estimates are most favorable (more negative/less positive) in the no-ITT sample, followed by the main sample, and they are least favorable in the sample of beneficiaries attributed only in Quarter 1. The sample that we used for the fifth year in this study is similar to the fixed cohort of beneficiaries from only Quarter 1 of CPC+ used in these sensitivity tests, and we expect the favorable effects observed in this sample to be (at least slightly) smaller relative to what would have been if we could have included newly attributed beneficiaries.

balance of the characteristics and outcomes of beneficiaries in the fifth-year sample, as shown in Tables 6.H.3a and 6.H.3b. For beneficiaries in the Year 5 sample, the treatment and comparison means at baseline were similar (with standardized differences of less than or equal to 0.02) for the key expenditures and service use outcomes we examine in this analysis. As a point of comparison, we also show balance for all beneficiaries in the sample (that is, all beneficiaries included in any of the yearly samples, except for those who did not have a baseline observation because they were new to Medicare). The standardized differences (and actual differences) between the treatment and comparison groups were similar in the full sample and in the fifth-year sample, so our approach of following the beneficiaries already assigned in the fourth-year analysis sample into their fifth year does not seem to be problematic in terms of sample composition changes.

Table 6.H.3a. Baseline characteristics of beneficiaries included in the full sample and in the fifth-year sample (percentage, unless otherwise noted)

Measure	Beneficiaries in the full sample				Beneficiaries in the fifth-year sample			
	CPC Classic mean ^a (N = 565,674)	C mean ^a (N = 1,165,284)	Differences	Standardized differences	CPC Classic mean ^a (N = 431,557)	C mean ^a (N = 880,445)	Differences	Standardized differences
Age								
Younger than 50	6.1	6.7	0.6	0.03	6.5	7.3	0.8	0.03
50–64	16.7	16.8	0.2	0.00	21.9	21.5	-0.4	-0.01
65–74	41.2	41.0	-0.2	-0.01	43.7	43.6	-0.1	0.00
75–84	24.8	24.8	0.0	0.00	21.5	21.6	0.0	0.00
85 or older	11.2	10.7	-0.6	-0.02	6.4	6.1	-0.3	-0.01
Race								
White	90.6	91.0	0.4	0.02	90.2	90.9	0.7	0.02
Black	4.4	4.5	0.2	0.01	4.1	4.3	0.1	0.01
Native American	1.8	1.1	-0.7	-0.06	1.9	1.1	-0.8	-0.06
Other	3.3	3.4	0.1	0.01	3.8	3.8	0.0	0.00
Male	41.7	42.1	0.4	0.01	41.5	41.9	0.4	0.01
Original reason for Medicare eligibility								
Age	78.5	77.3	-1.2	-0.03	79.1	77.8	-1.4	-0.03
Disabled	21.3	22.6	1.2	0.03	20.7	22.1	1.4	0.03
ESRD	0.1	0.1	0.0	0.00	0.1	0.1	0.0	0.00
Dually eligible for Medicare and Medicaid	11.4	13.1	1.7	0.06	9.8	11.3	1.6	0.05
HCC score ^b	1.0	1.0	0.0	0.01	0.9	0.9	0.0	0.01
HCC score missing	9.7	9.6	-0.2	-0.01	15.9	15.2	-0.7	-0.02

Source: Medicare claims data for October 2011 through December 2017.

^a Means were weighted to account for (1) the share of the year for which the beneficiary's data were observed and (2) the matching (for beneficiaries in comparison practices only).

^b HCC scores are a measure of risk for subsequent expenditures. CMS calculates them such that the average for the Medicare FFS population nationally is 1.0. A patient with a risk score of 1.30 is predicted to have expenditures that would be approximately 30 percent above the average, whereas a patient with a risk score of 0.70 is expected to have expenditures that would be approximately 30 percent below the average.

C = comparison; ESRD = end-stage renal disease; HCC = hierarchical condition category.

Table 6.H.3b. Baseline outcomes of beneficiaries included in the full sample and in the fifth-year sample

Measure	Beneficiaries in the full sample who had baseline data				Beneficiaries in the fifth-year sample who had baseline data			
	CPC Classic mean ^a (N = 442,709)	C mean ^a (N = 954,199)	Differences	Standardized differences	CPC Classic mean ^a (N = 324,522)	C mean ^a (N = 704,034)	Differences	Standardized differences
Primary outcomes								
Medicare expenditures without fees (PBPM)	\$574.2	\$578.3	\$4.1	0.00	\$518.6	\$523.6	\$5.0	0.00
Hospitalizations (per 1,000 beneficiaries per year)	227.6	228.8	1.2	0.00	198.2	200.5	2.3	0.00
Total ED visits (per 1,000 beneficiaries per year)	556.3	580.4	24.1	0.02	500.1	526.4	26.2	0.02
Outpatient ED visits (per 1,000 beneficiaries per year)	417.4	440.5	23.2	0.02	386.6	410.2	23.6	0.02
Other outcomes: Expenditures by service category (PBPM)								
Inpatient expenditures	\$196.9	\$192.4	-\$4.5	-0.01	\$173.3	\$171.3	-\$2.0	0.00
Outpatient expenditures	\$97.2	\$103.1	\$5.8	0.02	\$93.0	\$98.1	\$5.1	0.02
Physician expenditures	\$199.6	\$195.0	-\$4.6	-0.01	\$190.7	\$186.5	-\$4.2	-0.01
Skilled nursing expenditures	\$29.6	\$31.8	\$2.3	0.01	\$21.1	\$23.0	\$1.9	0.01
Home health expenditures	\$26.3	\$30.3	\$4.0	0.04	\$19.7	\$23.1	\$3.4	0.03
Hospice expenditures	\$2.0	\$2.4	\$0.5	0.01	\$0.7	\$0.7	\$0.0	0.00
Durable medical equipment expenditures	\$22.5	\$23.2	\$0.7	0.01	\$20.2	\$21.0	\$0.7	0.01

Source: Medicare claims data for October 2011 through December 2017.

^a Means were weighted to account for (1) the share of the year for which the beneficiary's data were observed and (2) the matching (for beneficiaries in comparison practices only).

C = comparison; ED = emergency department; PBPM = per beneficiary per month.

C. Statistical analysis

We used a difference-in-differences regression model to estimate effects in Year 5. The difference-in-differences model compared the changes in mean outcomes over time before CPC Classic (that is, the baseline period) and after CPC Classic began, for Medicare FFS beneficiaries attributed to CPC Classic practices and those in matched comparison practices. We controlled for beneficiary, practice, and market characteristics observed at baseline to net out observable pre-existing differences between CPC Classic and comparison beneficiaries at baseline for which propensity score matching did not account. Our estimated standard errors accounted for beneficiary outcomes clustered at the practice level and for weighting. The overall weights were equal to the product of two separate weights that accounted for (1) the share of the year for which the beneficiary's data were observed and (2) the matching (for beneficiaries in comparison practices only).

C.1. Model specification

Let i index the beneficiary, j index the practice, and t index time, where t ranges from 1 to 6, with 1 denoting the baseline year. Given the study population and unit of observation defined above, we will estimate the difference-in-differences (DD) regression model of the following form:

$$(1) \quad Y_{ijt} = \alpha + \beta X_{ij} + \mu P_j + \tau Treatment_j + \sum_{t=2}^6 \gamma_t A_t + \sum_{t=2}^6 \theta_t Treatment_j A_t + \varepsilon_{ijt}$$

where:

- Y = outcome variable for beneficiary i , in practice j , in year t .
- X = vector of beneficiary-level controls measured in the pre-intervention period, such as demographics (age categories, race categories, and gender); variables capturing Medicare and Medicaid eligibility (original reason for Medicare eligibility, dual status); and hierarchical condition category (HCC) score.
- P = vector of practice-level controls measured in the pre-intervention period. It includes practice characteristics such as patient-centered medical home status; whether any clinicians in a practice meet meaningful use criteria for electronic health records set by CMS; practice size categories, as measured by the number of clinicians (physicians, nurse practitioners, and physician assistants); having multiple specialties; ownership by a larger organization; and characteristics of the county where the practice is located, including the Medicare Advantage penetration rate, median household income, percentage urban, and status as a medically underserved area.
- $Treatment$ = binary indicator of treatment status or of being in a CPC practice.
- A_t = year (time) indicators, going from the first intervention year in the data ($t = 2$) to the last intervention year ($t = 6$) included in the model, with the pre-intervention year ($t = 1$) serving as the reference category. The coefficients in these year dummies capture changes experienced by the comparison group in each intervention year relative to the pre-

intervention year. Note that instead of using a linear time trend, the use of year dummies enables a more flexible specification that imposes no assumption of linearity.

- ε_{ijt} = the idiosyncratic error term.

C.2. Interpretation of key coefficients and model estimation

The set of interaction terms ($\theta_i Treatment_i A_i$) captures CPC–comparison differences for each intervention year relative to the average treatment–comparison difference in the pre-intervention year. The term θ_i indicates the year-specific impact estimates that capture whether the intervention made a difference to an outcome of interest during the intervention period. By estimating Equation (1) for the annual impact analysis, we obtain DD estimates for each year after CPC Classic began as well as predicted means for pre-intervention and intervention periods, by treatment status. Table 6.H.4 shows how the regression-adjusted CPC Classic and comparison means and DD impact estimates are obtained from Equation (1) for the pre-intervention year and for each intervention year. The following example applies to a linear regression model (used for the outcome of Medicare Part A and Part B expenditures without fees). For nonlinear regressions—that is, the zero-inflated negative binomial regressions used for service use outcomes to account for a large percentage of zeroes, including hospitalizations, outpatient ED visits, and overall ED visits—we used post-estimation predictions to estimate marginal effects and DD estimates on the natural scale.

Table 6.H.4. CPC Classic and comparison group means for outcomes based on the difference-in-differences analysis in Equation (1): a stylized representation

Year	C mean	CPC Classic mean	Difference in CPC Classic – C means	DD impact estimate
Baseline year (A_1)	α	$\alpha + \tau$	τ	NA
First intervention year (A_2)	$\alpha + \gamma_2$	$\alpha + \tau + \gamma_2 + \theta_2$	$\tau + \theta_2$	θ_2
Second intervention year (A_3)	$\alpha + \gamma_3$	$\alpha + \tau + \gamma_3 + \theta_3$	$\tau + \theta_3$	θ_3
Third intervention year (A_4)	$\alpha + \gamma_4$	$\alpha + \tau + \gamma_4 + \theta_4$	$\tau + \theta_4$	θ_4
Fourth intervention year (A_5)	$\alpha + \gamma_5$	$\alpha + \tau + \gamma_5 + \theta_5$	$\tau + \theta_5$	θ_5
Fifth intervention year (A_6)	$\alpha + \gamma_6$	$\alpha + \tau + \gamma_6 + \theta_6$	$\tau + \theta_6$	θ_6

Note: To highlight the key coefficients in Equation (1), we excluded the coefficients on beneficiary characteristics and the practice characteristics in the expressions for the CPC Classic and comparison group means in this table, especially because they were differenced out from the final DD estimates.

C = comparison; DD = difference-in-differences; NA = not applicable.

D. Results

D.1. Results for primary outcomes

Table 6.H.5 shows cumulative and annual estimated impacts and regression-adjusted means for the four primary outcomes. Over the five years since CPC Classic began, the cumulative estimates indicate that CPC Classic and comparison practices had similar Medicare FFS expenditures over time. However, there was an overall slower growth in hospitalizations, total ED visits, and outpatient ED visits among CPC Classic practices, relative to comparison practices. When assessing the annual impacts (shown in Figure 6.H.1), we found the following:

1. There were favorable impacts on hospitalizations and total ED visits in the fifth year after CPC Classic began. Specifically, relative to comparison practices, CPC Classic beneficiaries had slower growth in:
 - Hospitalizations by 10 per 1,000 beneficiaries (3.1 percent, $p = 0.01$). During the first four years of CPC Classic, there were also relative reductions in hospitalizations, but the estimated effects were 1.8 percent or smaller each year and generally not statistically significant.
 - Total ED visits by 18 visits per 1,000 beneficiaries (2.4 percent, $p = 0.02$) and in outpatient ED visits by 12 visits per 1,000 beneficiaries (2.2 percent, $p = 0.09$).
2. There was no discernible effect on Medicare Part A and B expenditures excluding care management fees among CPC Classic practices in the fifth year after it began, relative to comparison practices.
 - For Medicare Part A and B expenditures excluding care management fees, the difference in differences estimate (-\$6.4 or -0.7 percent) in the fifth year after CPC Classic began was not statistically significant ($p = 0.45$).

Table 6.H.5. Regression-adjusted means and difference-in-differences estimates of impacts on expenditures and service use among attributed Medicare fee-for-service beneficiaries, annual and five-year cumulative estimates

	CPC Classic mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-Value
Medicare expenditures (per beneficiary per month)						
Total Medicare Part A and B expenditures excluding additional payments from CPC Classic, CPC+ or SSP^b						
Baseline	\$574	\$578	NA	NA	NA	NA
Y1	\$774	\$796	-\$17.9*** (\$6.6)	-2.3%***	(-\$28.7, -\$7.0)	0.01
Y2	\$802	\$817	-\$10.5 (\$6.9)	-1.3%	(-\$21.8, \$0.9)	0.13
Y3	\$837	\$845	-\$3.3 (\$7.6)	-0.4%	(-\$15.8, \$9.1)	0.66
Y4	\$857	\$862	-\$1.3 (\$8.4)	-0.2%	(-\$15.1, \$12.5)	0.88
Y5	\$905	\$915	-\$6.4 (\$8.4)	-0.7%	(-\$20.3, \$7.5)	0.45
Y1–Y5	\$839	\$851	-\$7.9 (\$6.2)	-0.9%	(-\$18.1, \$2.4)	0.21
Service use (per 1,000 beneficiaries per year)						
Hospitalizations						
Baseline	228	229	NA	NA	NA	NA
Y1	309	316	-5.5* (2.9)	-1.7%*	(-10.3, -0.6)	0.06
Y2	295	301	-5.0 (3.3)	-1.7%	(-10.5, 0.4)	0.13
Y3	302	306	-2.8 (3.4)	-0.9%	(-8.3, 2.7)	0.41
Y4	294	301	-5.3 (3.4)	-1.8%	(-10.9, 0.4)	0.13
Y5	288	298	-9.1*** (3.5)	-3.1%***	(-14.9, -3.3)	0.01
Y1–Y5	297	304	-6.1** (2.9)	-2.0%**	(-10.9, -1.3)	0.04
Outpatient ED visits, including observation stays						
Baseline	417	441	NA	NA	NA	NA
Y1	466	492	-2.4 (4.8)	-0.5%	(-10.2, 5.4)	0.61
Y2	489	515	-3.1 (5.1)	-0.6%	(-11.5, 5.4)	0.55
Y3	503	539	-13.1** (5.4)	-2.5%**	(-22.0, -4.2)	0.02
Y4	502	536	-11.3** (5.7)	-2.2%**	(-20.6, -1.9)	0.05
Y5	514	549	-11.5* (6.9)	-2.2%*	(-22.8, -0.2)	0.09
Y1–Y5	496	529	-9.3* (4.9)	-1.8%*	(-17.3, -1.3)	0.06

Table 6.H.5. (continued)

	CPC Classic mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-Value
Total ED visits, including observation stays						
Baseline	556	580	NA	NA	NA	NA
Y1	678	710	-8.0 (5.5)	-1.2%	(-17.1, 1.0)	0.14
Y2	693	723	-6.0 (5.8)	-0.9%	(-15.5, 3.5)	0.30
Y3	717	756	-14.9** (6.0)	-2.0%**	(-24.7, -5.1)	0.01
Y4	709	749	-15.4** (6.5)	-2.1%**	(-26.0, -4.7)	0.02
Y5	723	766	-18.1** (7.7)	-2.4%**	(-30.8, -5.4)	0.02
Y1–Y5	706	744	-13.7** (5.5)	-1.9%**	(-22.8, -4.6)	0.01
Sample sizes						
Number of practices	497	908				
Number of beneficiaries	565,674	1,165,284				
Number of beneficiary years	2,574,459	5,312,801				

Source: Medicare claims data for October 2011 through December 2017.

Note: Impact estimates are regression-adjusted for baseline beneficiary characteristics and baseline practice characteristics. We based each impact estimate on a difference-in-differences analysis, and each reflects the difference in the regression-adjusted average outcome for attributed Medicare FFS beneficiaries in CPC Classic practices in Years 1 to 5 compared with baseline relative to the same difference over time for attributed Medicare FFS beneficiaries in comparison practices.

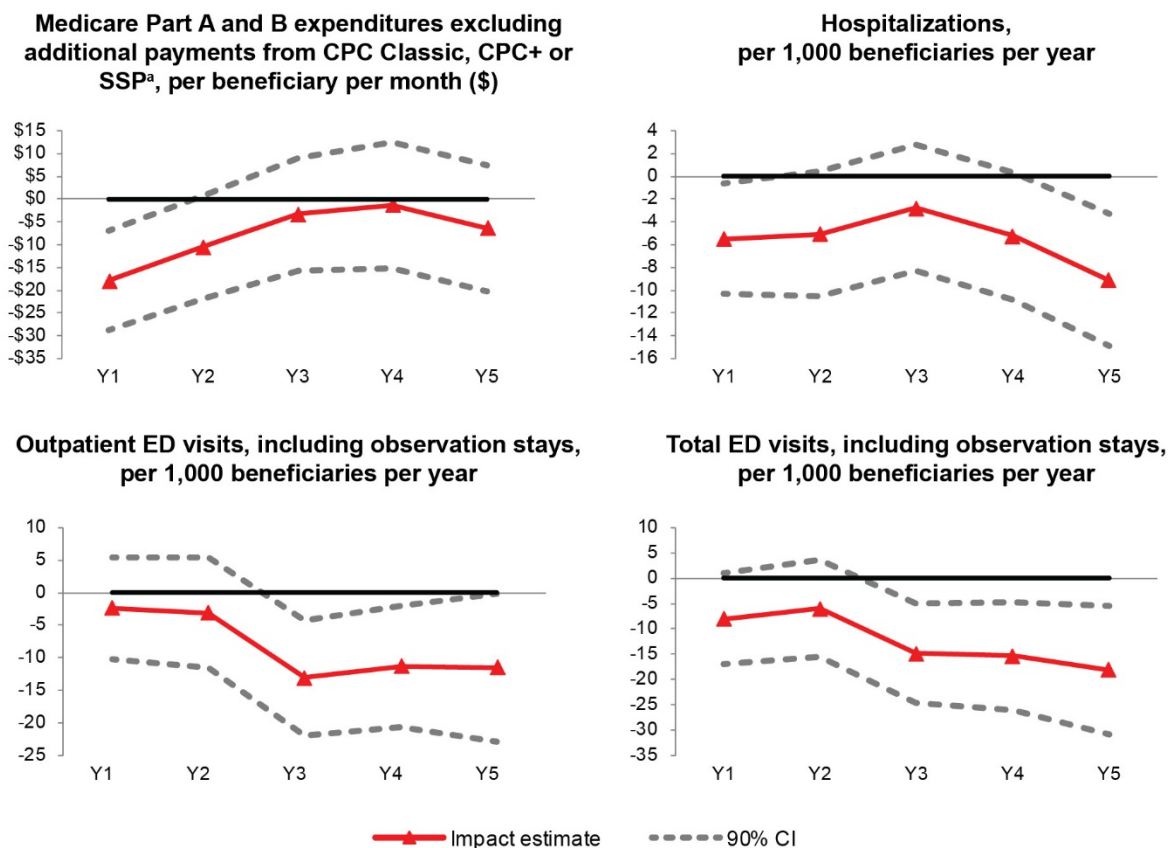
^a We calculated percentage impacts relative to what the CPC Classic mean would have been in the absence of the intervention—that is, the unadjusted CPC Classic mean minus the impact estimate.

^b The expenditure outcome used in these estimates does not include (1) CPC Classic care management fees; (2) CPC+ care management fees, Performance-based Incentive Payments, and the comprehensiveness supplement for CPC+ Track 2 practices; and (3) shared savings payments to the Accountable Care Organizations of practices that participate in Medicare SSP.

*/**/** Significantly different from zero at the 0.10/0.05/0.01 levels, two-tailed test.

C = comparison; ED = emergency department; FFS = fee-for-service; NA = not applicable; SSP = Medicare Shared Savings Program; SE = standard error; Y = year.

Figure 6.H.1. Estimated impact on expenditures and service use, by year



Source: Medicare claims data for October 2011 through December 2017.

Note: The estimated impact, denoted by a separate triangle for each intervention year in the figure, is equal to the difference in mean outcomes between attributed Medicare FFS beneficiaries in CPC+ and comparison group practices in any year since CPC Classic began minus the average difference between the two groups during the baseline period. The impacts are regression-adjusted to control for baseline differences in beneficiary and practice characteristics between the CPC Classic and comparison groups. The dashed lines indicate the 90 percent confidence interval.

^a The expenditure outcome used in these estimates does not include (1) CPC Classic care management fees; (2) CPC+ care management fees, Performance-based Incentive Payments, and the comprehensiveness supplement for CPC+ Track 2 practices; and (3) shared savings payments to the Accountable Care Organizations of practices that participate in Medicare SSP.

CI = confidence interval; ED = emergency department; FFS = fee-for-service; SSP = Medicare Shared Savings Program; Y = year.

D.2. Results for fee-for-service expenditures by service category

Table 6.H.6 shows cumulative and annual estimated impacts and regression-adjusted means for expenditures by service category. Over the five years since CPC Classic began, the cumulative estimates indicate that there were no statistically significant changes in Medicare FFS expenditures for inpatient, physician, home health, or DME. There was slower growth in outpatient expenditures and skilled nursing facility expenditures among CPC Classic practices, relative to comparison practices. When assessing the annual impacts of CPC Classic (shown in Table 6.H.6), we found that in the fifth year after CPC Classic began, relative to beneficiaries in comparison practices, beneficiaries assigned to CPC Classic practices experienced:

- A small change in inpatient expenditures that was not statistically significant: there was a relative decline of \$2.8 PBPM (0.9 percent, $p = 0.54$).
- Less growth in outpatient expenditures by \$7.8 PBPM (4.6 percent, $p < 0.01$). The slower growth in outpatient expenditures was also observed in the third and fourth years of CPC Classic: there was less growth in outpatient expenditures by 2.8 percent ($p = 0.02$) in Year 3 and by 2.5 percent ($p = 0.07$) in Year 4.
- More growth in physician expenditures by \$4.7 PBPM (1.8 percent, $p = 0.09$). We found a similar increase (1.9 percent, $p = 0.05$) in the fourth year of CPC Classic.
- More growth in hospice expenditures by \$3.4 PBPM (12.1 percent, $p = 0.01$). The effects were similar in the third and fourth years of CPC Classic (10.6 percent, $p = 0.06$ for year 3; 7.7 percent, $p = 0.13$ for year 4).

Table 6.H.6. Regression-adjusted means and difference-in-differences estimates of the impact on expenditures by service categories among attributed Medicare fee-for-service beneficiaries, annual and five-year cumulative estimates

	CPC Classic mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-Value
Medicare expenditures (per beneficiary per month)						
Inpatient						
Baseline	\$197	\$192	NA	NA	NA	NA
Y1	\$287	\$293	-\$10.5** (\$4.3)	-3.5%**	(-\$17.5, -\$3.4)	0.01
Y2	\$292	\$291	-\$3.3 (\$4.5)	-1.1%	(-\$10.7, \$4.0)	0.45
Y3	\$299	\$295	-\$0.7 (\$4.4)	-0.2%	(-\$7.9, \$6.4)	0.87
Y4	\$303	\$299	-\$1.1 (\$4.6)	-0.4%	(-\$8.6, \$6.4)	0.80
Y5	\$319	\$317	-\$2.8 (\$4.5)	-0.9%	(-\$10.1, \$4.6)	0.54
Y1–Y5	\$301	\$300	-\$3.6 (\$3.4)	-1.2%	(-\$9.2, \$2.1)	0.30
Outpatient						
Baseline	\$97	\$103	NA	NA	NA	NA
Y1	\$116	\$123	-\$1.7 (\$1.4)	-1.4%	(-\$4.0, \$0.6)	0.23
Y2	\$128	\$137	-\$2.5 (\$1.8)	-1.9%	(-\$5.5, \$0.4)	0.16
Y3	\$138	\$148	-\$4.0** (\$1.8)	-2.8%**	(-\$7.0, -\$1.1)	0.02
Y4	\$147	\$156	-\$3.7* (\$2.0)	-2.5%*	(-\$7.0, -\$0.4)	0.07
Y5	\$162	\$176	-\$7.8*** (\$2.6)	-4.6%***	(-\$12.0, -\$3.6)	0.00
Y1–Y5	\$140	\$150	-\$4.2*** (\$1.5)	-2.9%***	(-\$6.8, -\$1.7)	0.01
Physician						
Baseline	\$200	\$195	NA	NA	NA	NA
Y1	\$228	\$223	-\$0.2 (\$1.7)	-0.1%	(-\$2.9, \$2.6)	0.91
Y2	\$233	\$229	-\$1.3 (\$1.8)	-0.5%	(-\$4.3, \$1.8)	0.49
Y3	\$243	\$237	\$1.6 (\$2.0)	0.7%	(-\$1.6, \$4.9)	0.40
Y4	\$252	\$242	\$4.7** (\$2.4)	1.9%**	(\$0.8, \$8.5)	0.05
Y5	\$258	\$249	\$4.7* (\$2.7)	1.8%*	(\$0.2, \$9.1)	0.09
Y1–Y5	\$244	\$237	\$2.0 (\$1.7)	0.8%	(-\$0.7, \$4.8)	0.23

Table 6.H.6. (continued)

	CPC Classic mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-Value
Home health						
Baseline	\$26	\$30	NA	NA	NA	NA
Y1	\$39	\$44	-\$1.3** (\$0.6)	-3.4%**	(-\$2.4, -\$0.3)	0.03
Y2	\$40	\$43	\$0.8 (\$0.7)	2.0%	(-\$0.4, \$2.0)	0.27
Y3	\$42	\$45	\$0.3 (\$0.7)	0.8%	(-\$0.9, \$1.6)	0.65
Y4	\$41	\$46	-\$0.4 (\$0.9)	-0.9%	(-\$1.8, \$1.1)	0.67
Y5	\$43	\$48	-\$1.2 (\$1.0)	-2.6%	(-\$2.7, \$0.4)	0.22
Y1–Y5	\$41	\$46	-\$0.4 (\$0.6)	-0.9%	(-\$1.4, \$0.6)	0.54
Hospice						
Baseline	\$2	\$2	NA	NA	NA	NA
Y1	\$20	\$20	\$0.3 (\$1.0)	1.5%	(-\$1.4, \$1.9)	0.78
Y2	\$23	\$23	\$0.4 (\$1.3)	1.8%	(-\$1.7, \$2.5)	0.75
Y3	\$25	\$23	\$2.4* (\$1.3)	10.6%*	(\$0.3, \$4.6)	0.06
Y4	\$27	\$26	\$2.0 (\$1.3)	7.7%	(-\$0.2, \$4.1)	0.13
Y5	\$31	\$28	\$3.4*** (\$1.3)	12.1%***	(\$1.3, \$5.5)	0.01
Y1–Y5	\$26	\$24	\$1.7 (\$1.1)	7.3%	(\$0.0, \$3.5)	0.11
Skilled nursing facility						
Baseline	\$30	\$32	NA	NA	NA	NA
Y1	\$61	\$68	-\$4.6*** (\$1.7)	-7.0%***	(-\$7.4, -\$1.8)	0.01
Y2	\$64	\$70	-\$4.1** (\$1.8)	-6.0%**	(-\$7.0, -\$1.1)	0.02
Y3	\$68	\$72	-\$2.1 (\$2.0)	-3.0%	(-\$5.3, \$1.1)	0.29
Y4	\$66	\$70	-\$1.7 (\$2.1)	-2.5%	(-\$5.1, \$1.7)	0.41
Y5	\$68	\$74	-\$2.9 (\$2.2)	-4.1%	(-\$6.5, \$0.7)	0.19
Y1–Y5	\$66	\$71	-\$3.0* (\$1.7)	-4.4%*	(-\$5.8, -\$0.3)	0.07
DME						
Baseline	\$23	\$23	NA	NA	NA	NA
Y1	\$25	\$26	\$0.1 (\$0.4)	0.4%	(-\$0.5, \$0.7)	0.79
Y2	\$22	\$23	-\$0.5 (\$0.5)	-2.2%	(-\$1.3, \$0.4)	0.34
Y3	\$23	\$24	-\$0.9* (\$0.5)	-3.8%*	(-\$1.8, \$0.0)	0.09
Y4	\$21	\$23	-\$1.0* (\$0.6)	-4.6%*	(-\$2.0, -\$0.1)	0.08

Table 6.H.6. (continued)

	CPC Classic mean	C mean	Impact estimate (SE)	Percentage impact ^a	90% confidence interval	p-Value
Y5	\$21	\$22	-\$0.9 (\$0.7)	-4.2%	(-\$2.0, \$0.2)	0.18
Y1–Y5	\$22	\$23	-\$0.7 (\$0.4)	-3.0%	(-\$1.4, \$0.0)	0.11
Sample sizes						
Number of practices	497	908				
Number of beneficiaries	565,674	1,165,284				
Number of beneficiary years	2,574,459	5,312,801				

Source: Medicare claims data for October 2011 through December 2017.

Note: Impact estimates are regression-adjusted for baseline beneficiary characteristics and baseline practice characteristics. We based each impact estimate on a difference-in-differences analysis, and each reflects the difference in the regression-adjusted average outcome for attributed Medicare FFS beneficiaries in CPC Classic practices in Years 1 to 5 compared with baseline relative to the same difference over time for attributed Medicare FFS beneficiaries in comparison practices.

^a We calculated percentage impacts relative to what the CPC Classic mean would have been in the absence of the intervention—that is, the unadjusted CPC Classic mean minus the impact estimate.

*/**/** Significantly different from zero at the 0.10/0.05/0.01 levels, two-tailed test.

C = comparison; DME = durable medical equipment; ED = emergency department; FFS = fee-for-service; NA = not applicable; SE = standard error; Y = year.

E. Discussion

Results from this analysis provide estimates of the longer-term effects of four years of CPC Classic, followed by one year of CPC+ for most practices.

- We found that a sizable (3.1 percent) favorable impact on hospitalizations emerged in the fifth year.⁹⁷
- In addition, the favorable effects on total ED visits and outpatient ED visits (approximately 2 percent each) that were observed in the later years of the CPC Classic intervention also persisted in the fifth year.

The temporal pattern of effects on ED visits and hospitalizations is consistent with our expectations about how primary care transformation works—outcomes like ED visits could be easier to improve in the short run, which would explain the quick emergence of effects, whereas a longer time horizon may be needed to see improvements in outcomes like hospitalizations.

Because many CPC Classic practices (86 percent) joined CPC+ in 2017 and many of their matched comparison practices (79 percent) did not join CPC+, these favorable impacts reflect the four years of CPC Classic and the first year of CPC+. We cannot determine how much of the effects are attributable to the lagged effects of CPC Classic versus the additional year of support

⁹⁷ Estimated reductions in hospitalizations in all previous years were under 2 percent and were statistically significant at the 10 percent level of significance ($p = 0.07$) only in Year 1.

through CPC+. Although the impacts of CPC+ in the first year of the intervention for all CPC+ practices were small and mostly not statistically significant,⁹⁸ it is still possible that CPC+ provided important support to continue the work begun in CPC Classic for the Classic practices that joined CPC+.

The favorable estimates are likely a lower bound of the true combined impact of CPC Classic and CPC+ for two reasons. First, 21 percent of CPC Classic comparison practices joined CPC+ and although the beneficiaries assigned to these practices were affected by CPC+, they remained in the comparison group in Years 5. Second, 14 percent of CPC Classic practices did not join CPC+ and although the beneficiaries assigned to them were not affected by CPC+, they remained in the treatment group in the last year.

The favorable impacts in hospitalizations and ED visits in the fifth year did not translate to a discernable impact in Medicare Part A and Part B expenditures.⁹⁹ There are two potential explanations. First, the 3.1 percent relative reduction in hospitalizations led to a very small relative reduction in inpatient expenditures of 0.9 percent that was not statistically significant ($p = 0.54$). This suggests that the avoided hospitalizations were relatively less severe and thus less costly. Second, there were offsetting estimated increases in physician expenditures and hospice expenditures.

⁹⁸ Across all practices (not just CPC Classic alumni), in the first year, CPC+ was associated with a relative reduction in total and outpatient ED visits of about 1 percent ($p < 0.01$), no discernable effects on acute hospitalizations, and no evidence that impacts were more favorable within the subgroup of practices with experience in prior primary care transformation (24 percent of whom are CPC Classic practices) (Peikes et al. 2019; Anglin et al. 2019).

⁹⁹ We confirmed that this finding was not driven by larger outliers in expenditures in the CPC Classic than comparison practices.

6.I. Bayesian Causal Forests

6.I.1. Introduction

Traditional methods for estimating subgroup effects suffer important limitations. First, the traditional methods rely on expert judgment of the intervention's theory of change to determine which subgroups are considered. Though subject matter expertise is essential to sound statistical modeling and study design, this approach might fail to identify important but unanticipated sources of variation, leaving us with an incomplete picture of the intervention's effects. Second, even when theory correctly predicts the key sources of variation in impacts, small subgroup sample sizes can produce extreme, imprecise estimates, and multiple comparisons can increase the false positive rate (Gelman and Hill 2006).

A new method called Bayesian Causal Forests (BCF) addresses these limitations (Hahn et al. 2014). BCF enables data-driven identification of subgroup variables, increases the statistical power of subgroup estimates by drawing on information from related subgroups, provides a built-in correction for multiple comparisons, and can improve the causal validity of both subgroup and overall impact estimates.

6.I.2. Methods

2.A. BCF

BCF combines a non-parametric regression tree model with Bayesian prior distributions, gaining all the flexibility of the tree model while guarding against spurious conclusions because of multiple comparisons.^{100,101} The regression tree component is highly flexible, automatically including interaction terms and nonlinearities in the control variables, but it is prone to overfitting, which means that the model fails to distinguish between noise in the data and true relationships between covariates and the outcome variable. As a result, this type of model often fits the observed data very well but generalizes poorly to new observations. The Bayesian component of BCF reins in this tendency through a prior that better distinguishes between noise and true relationships in the data (Chipman et al. 2010).

BCF fits two separate sum-of-trees models: one captures the relationship between the *outcome* and the control variables, and the other captures the relationship between the *treatment effects* and the control variables. The prior on the relationships between treatment effects and control variables is stronger, which is consistent with findings from the literature that variation in treatment effects is typically smaller than variation in control variable effects (Hahn et al. 2014). BCF calibrates these important priors based on the data, but it does so in a pre-specified way. As

¹⁰⁰ In a Bayesian model, a prior distribution represents the analyst's assumptions about the distributions of model parameters; the Bayesian estimation process combines the data with these assumptions to produce the results.

¹⁰¹ BCF extends a precursor method called Bayesian Additive Regression Trees developed by Chipman et al. (2010). The advantages of Bayesian Additive Regression Trees in the causal inference context were first described by Hill (2011).

a result, the algorithm can develop an appropriate prior for each new data set without input from the user (Chipman et al. 2010 and Hahn et al. 2014). (By analogy, the BCF prior is similar to a standard, all-purpose shrinkage prior, in which the appropriate *amount* of shrinkage is learned from the specific dataset being analyzed.) Because of this rigorously validated built-in structure, we did not conduct sensitivity tests gauging the influence of different prior assumptions.

2.B. Implementation

The outcome of interest in our analysis is total Medicare expenditures without enhanced CPC+ payments, as in the parametric Bayesian analysis described in detail in Appendix 6.F. With large data sets, BCF rapidly reaches a computational ceiling—the iterative model-fitting algorithm can run for weeks without converging—so we used practice-level data created by calculating practice-level averages from the beneficiary-level data set used in the main regressions. In addition, we analyzed 2017 Starter practices only, because 2018 Starter practices contribute only 5 percent of the combined sample and had only one year of follow-up data at the time of our analysis. For computational reasons, we also fit the model separately to Medicare Shared Savings Plan (SSP) and non-SSP practices and then stitched the results together; as a result, the model cannot correct for multiple comparisons across the two groups.

BCF does not currently support longitudinal data; therefore, we could not take the difference-in-differences approach used in the main regression analyses. Thus, we fit a cross-sectional, practice-level model, including the practice’s average baseline Medicare expenditures as a covariate to approximate the primary strategy as closely as possible. Reassuringly, Imbens and Wooldridge (2009) describe this “unconfoundedness-based-approach” as producing similar results to difference-in-differences when baseline outcomes are well balanced. Fortunately, within-subgroup balance is not a serious concern for BCF because the method allows for nonlinearities and interactions in the treatment effects and relationships among the covariates (Hill 2011). This flexibility reduces the model’s reliance on generalized linear models’ global linearity assumptions, assumptions that lead to bias in treatment effect estimates if the treatment and comparison group covariate means differ substantially (Imbens and Wooldridge 2009).

Although the claim that BCF’s more flexible modeling strategy can overcome deficiencies in balance sounds like exaggeration, simulation evidence provides strong and consistent support. In fact, BCF’s progenitor method, Bayesian Additive Regression Trees, has consistently outperformed traditional matching- and regression-based approaches, as well as many cutting-edge alternatives, in causal inference competitions held at the Atlantic Causal Inference Conference in recent years (Dorie et al. 2019). These competitions are notoriously rigorous and serve as a proving ground for cutting-edge methods, so BCF’s strong performance indicates that model flexibility can achieve highly accurate impact estimates even in a post-period only analysis with imperfect balance.

To summarize, we fit a cross-sectional, practice-level model, including the practice’s average baseline Medicare expenditures as a covariate. Our covariates included baseline practice-level characteristics and practice-level averages of baseline beneficiary-level characteristics. We included the 50 covariates used as controls in the main regressions as control variables (modeling the relationship with the *outcome*) and—to ensure computational tractability—a reduced set of 30 as effect modifiers (modeling the relationship with the *treatment effect*). We obtained the reduced set of

effect modifiers by dropping individual hierarchical condition category (HCC) indicators, because our model includes a summary measure of these indicators: the HCC risk score. We also included the propensity score as a control variable, following the advice of Hahn et al. (2014).

For the analysis presented here, we extended the approach and software package of Murray (2019) to allow for heteroskedastic error terms, such that large practices received more weight in our analysis than small ones. This innovation is important for our application because practice-level averages based on larger beneficiary samples are more precise than averages based on smaller beneficiary samples. The weights also incorporate a practice-level matching weight used to ensure balance on baseline covariates.

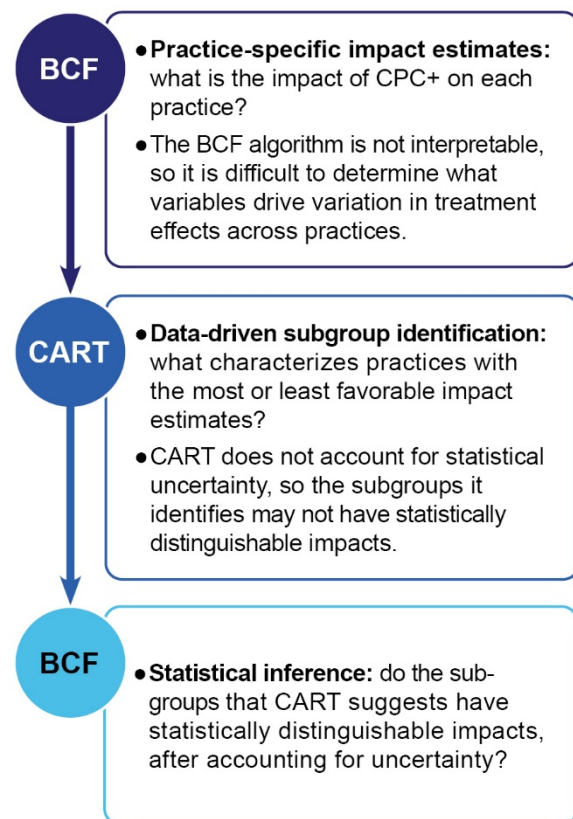
2.C. Inference

To obtain causal inferences, BCF uses the fitted model to predict the outcome assuming all observations are in the treatment group, then assuming all observations are in the comparison group. The difference between each practice's predicted outcome under treatment and its predicted outcome under comparison is the observation's conditional average treatment effect. In this way, each practice serves as its own counterfactual.

Averaging these practice-specific treatment effect estimates across all observations in the treatment group provides an estimate of the average treatment effect on the treated (ATT), and averaging the practice-specific treatment effect estimates across all observations in the treatment group with a specific characteristic gives an estimate of the ATT in that subgroup.

As described in the flowchart that follows, to learn which characteristics are most strongly associated with favorable Comprehensive Primary Care Plus (CPC+) impacts, we investigate patterns in the practice-specific treatment effect estimates. Because the BCF output—a series of regression trees—does not provide interpretable information about which covariates drive differences across practices' treatment effects, we summarize these relationships through a “fit-the-fit” procedure recommended in Hahn et al. 2014. Treating these estimates as data, we fit a regression tree (CART; Breiman et al. 1984) model that searches for relationships between practice characteristics and practice impacts. We treated the 30 modifier variables from the BCF analysis as predictors and weighted the regression tree by the precision of the impact estimate.

Although CART can summarize relationships between practice-specific impact estimates and practice characteristics to identify candidate subgroup variables, it does not account for



statistical uncertainty. For that reason, the subgroups that CART identifies might not have statistically distinguishable impacts. We therefore use the complete BCF output to compare impact estimates in the subgroups that CART suggests, which enables us to estimate the associated uncertainty and determine whether impacts are statistically distinguishable.

We used the R programming language to process the data and output results, fitting the model using our updated version of the R package BCF (Murray 2019).

6.I.3. Results

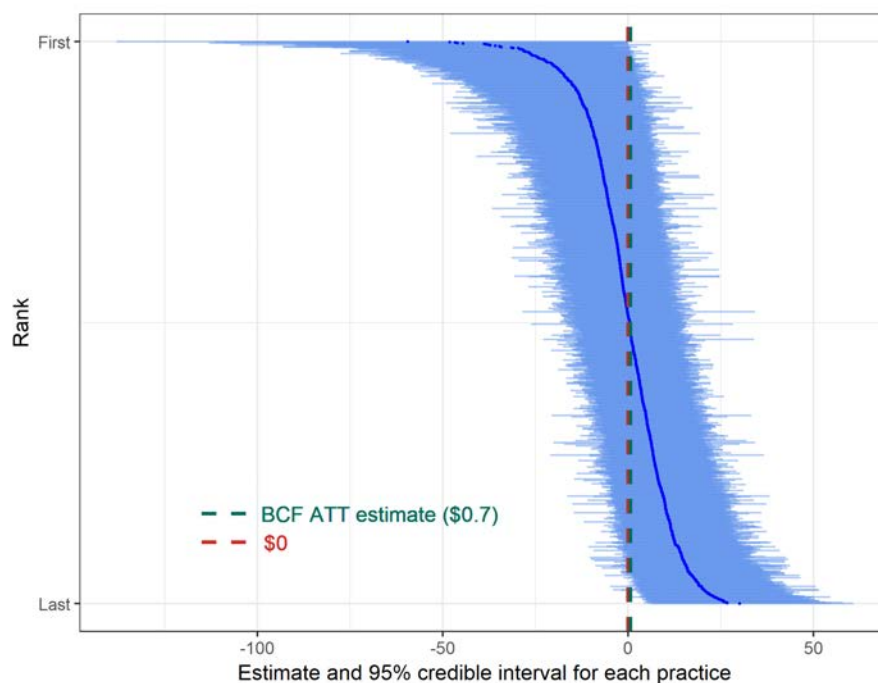
3.A. Track 1

3.A.1. Practice-specific treatment effect estimates

We fit BCF to the Track 1 2017 Starters data described previously and estimated the effect of CPC+ on each participating practice. Figure 6.I.1 shows—for each practice—the impact estimate and 95 percent uncertainty interval, ordered from the practice with the most favorable (reduced expenditures) to least favorable impact (increased expenditures).

Figure 6.I.1. Distribution of practice-specific treatment effects in Track 1

Practice-specific impact estimates for Track 1 2017 Starters show considerable variation, with some impacts as favorable as -\$50 PBPM and others as unfavorable as \$25 PBPM.



Notes: Each dot represents the impact on total Medicare expenditures without enhanced CPC+ payments for a Track 1 2017 Starter practice, and each line represents the corresponding 95 percent credible interval, calculated as the 2.5 and 97.5 quantiles of the posterior distribution for the impact estimate. This interval represents the range in which we have a 95 percent chance of finding the true impact. One dot/line = 1 practice. A total of 1,373 Track 1 CPC+ practices are included.

ATT = average treatment effect on the treated; BCF = Bayesian Causal Forests; CPC+ = Comprehensive Primary Care Plus; PBPM = per beneficiary per month.

From this figure, we see that the overall ATT is roughly \$1 (95 percent credible interval: -\$6, \$7) and that more extreme treatment effect estimates have wider credible intervals. The wide range of impact estimates across practices suggests that although our best guess at the intervention's overall effect is a \$1 per beneficiary per month (PBPM) increase in Medicare expenditures, this effect is far from uniform across practices. Some practices saw increases as large as \$25, and others saw reductions as large as \$50. Even though the sample size of beneficiaries within any given practice is small compared with the total sample size of our analysis, BCF draws on information from similar practices to produce precise enough estimates that we can statistically distinguish among practice-specific impacts at the extremes with confidence: there is more than a 99 percent chance that the best-performing practice reduced expenditures more than the worst-performing practice; the chances are 98 and less than 1 percent, respectively, that the best- and worst performing practices reduced expenditures; the chances are 98 and 1 percent, respectively, that the best- and worst-performing practices reduced expenditures more than the ATT (not depicted in Figure 6.I.1). Furthermore, estimates for groups of practices with impacts closer to the ATT are statistically distinguishable as well; there is a 100 percent chance that practices with impacts below the 25th percentile (most favorable impacts) have more favorable impacts than practices with impacts above the 75th percentile (not depicted in Figure 6.I.1).

3.A.2. Subgroup identification

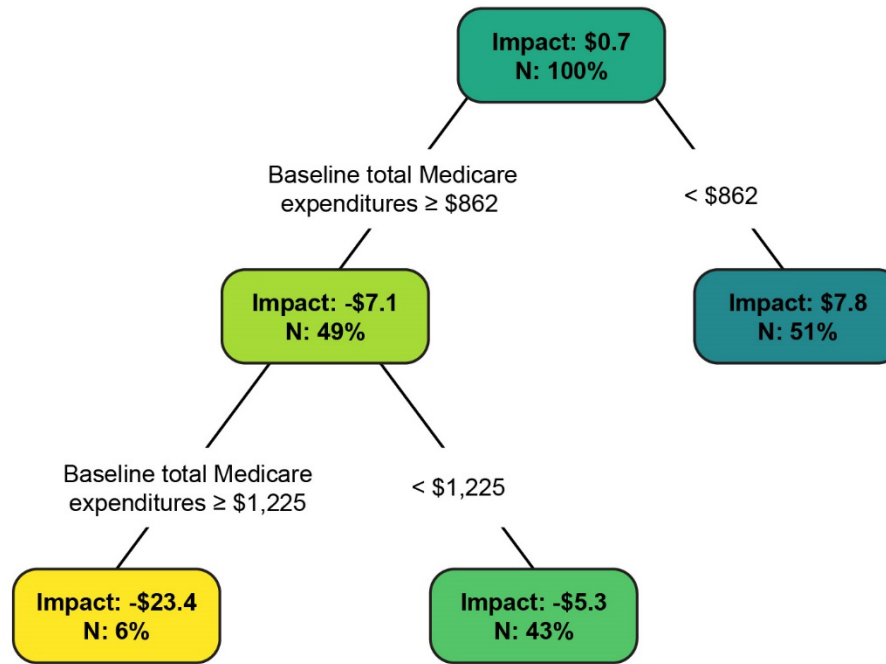
Figure 6.I.2 presents the CART tree we obtained for data-driven subgroup identification.¹⁰² The subtree had two nodes that both split on the same variable, emphasizing its importance as an effect modifier. As the figure shows, baseline Medicare expenditures (that is, the baseline value of the outcome variable) is the most important predictor of impacts, with practices with higher (worse) baseline expenditures being more likely to reduce (improve) expenditures in the first two years.

Notably, this variable was not included in the list of pre-specified subgroups for the primary CPC+ analysis as described in the evaluation design report. This is because it is not possible to study the effects of baseline expenditures using the main approach's longitudinal design, so, in this analysis, BCF has fulfilled its promise to detect unanticipated subgroups by learning about treatment effect variation directly from the data (Peikes et al. 2018b). Of course, data-driven discoveries must undergo scrutiny from subject matter experts to ensure that they represent plausible effects rather than statistical flukes. In this case, the relationship between baseline performance and impacts is well-known anecdotally and documented in the literature (McWilliams et al. 2016); BCF provides evidence that this relationship holds for CPC+ as well.

¹⁰² To avoid overfitting our data, we pruned the CART tree to show only the splits that best distinguish practices with favorable versus unfavorable impact estimates. (Specifically, we pruned splits that didn't decrease the tree's overall lack of fit by at least 10 percent.)

Figure 6.I.2. Regression tree identifying potential Track 1 subgroups that reduce Medicare expenditures without enhanced payments

Regression tree analysis of the practice-specific impact estimates indicates that Track 1 2017 Starter practices with baseline Medicare expenditures exceeding \$1,225 PBPM had the most favorable impacts, at -\$23.4 PBPM on average.



Notes: Regression tree fit to posterior means of practice-specific treatment effects for 1,373 Track 1 2017 Starter practices. Each box represents a group of practices, with all practices at the top and smaller subsets in the lower nodes. In each box, the impact value is given in \$PBPM, and the percentage refers to the proportion of the sample in that category. For example, 6 percent of Track 1 2017 Starters had baseline Medicare expenditures greater than \$1,225 PBPM, placing them in the bottom-left node with mean impact -\$23.4 PBPM.

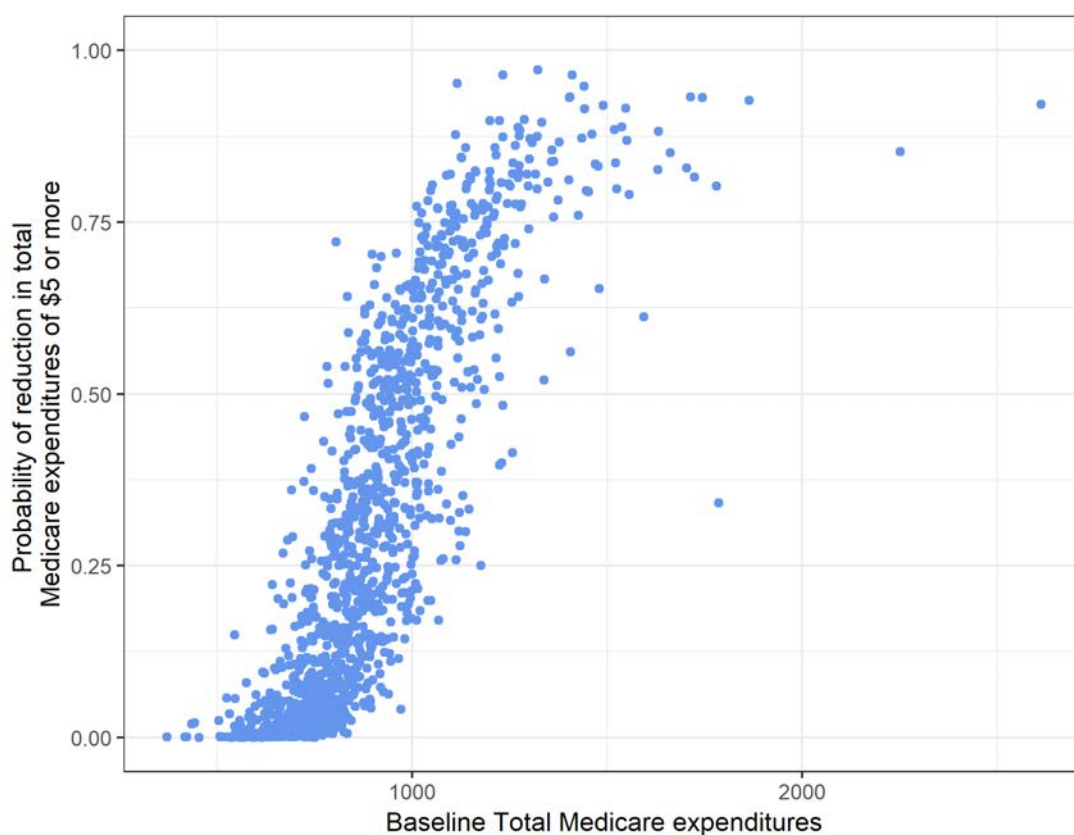
PBPM = per beneficiary per month.

At first glance, the relationship between high Medicare expenditures at baseline and large reduction in expenditures resulting from the intervention might suggest an effect of regression to the mean, in which practices with an extreme value of a variable in one time period are no longer extreme in the next time period. For CPC+, we might fear that we're misidentifying a reversion from an unusually high baseline value to an average value in the intervention period as a favorable impact estimate. But the process we use to calculate practice-specific impact estimates makes this sort of error unlikely. Recall that we estimate the impact in a practice by using the fitted BCF model to predict that practice's outcome under the treatment condition and its outcome under the comparison condition; its impact is the difference in these predicted values. As such, given that our model controls for key confounders, we would expect regression to the mean to affect the treatment and comparison predictions equally and thus to cancel out the impact estimate.

Baseline expenditures is a continuous variable, so to categorize practices based on this variable, CART must assign a cut-point along the continuum. The selected cut-point of \$862 PBPM satisfies CART's objective of maximizing explanatory power but might not imply a meaningful difference in impacts between practices on either side of the threshold. To assess the validity of the cut-point, we plotted the practice-specific probability of saving at least \$5 PBPM as a function of baseline expenditures. We use \$5 to denote a non-trivial impact relative to CMS' care management fees paid to Track 1 practices, which averaged \$13 PBPM over this period. The results, shown in Figure 6.I.3, indicate that baseline expenditures are strongly correlated with impacts, with practices that spend more at baseline having a higher probability of reducing expenditures by at least \$5 PBPM. The relationship is so smooth, however, that there is little evidence to support the idea of a clear cut-off. Nonetheless, there are meaningful differences in impacts between practices at the extremes; there is a 100 percent chance that practices with baseline expenditures in the top quartile (that is, greater than \$993 PBPM) reduced expenditures more as a result of CPC+ than did practices with baseline expenditures in the bottom quartile (less than \$743 PBPM).

Figure 6.I.3. Relationship between practice-specific treatment effects and baseline total Medicare expenditures without enhanced CPC+ payments in Track 1

Baseline Medicare expenditures are strongly positively correlated with the probability that a practice reduced Medicare expenditures by 5 percent or more as a result of CPC+. The relationship is smooth, with no clear cut-points.



Notes: One dot = 1 practice. Sample includes 1,373 Track 1 2017 Starter practices and 5,240 comparison practices.
CPC+ = Comprehensive Primary Care Plus.

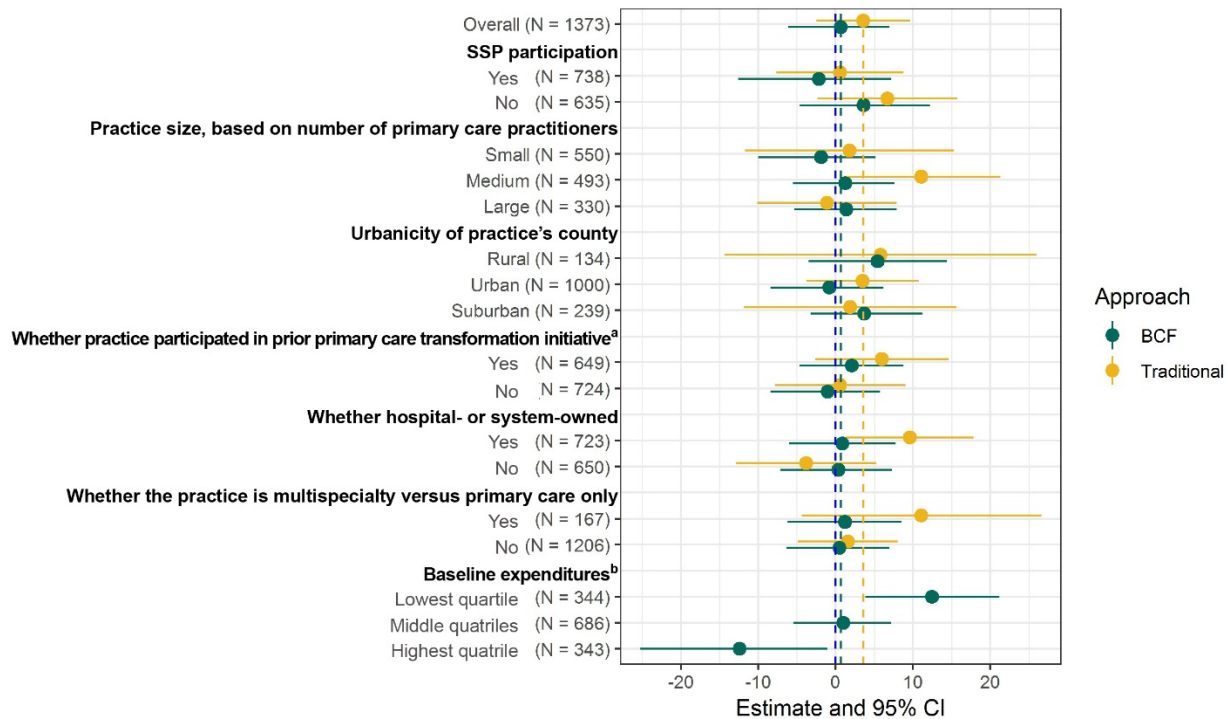
To test for other effect modifiers, we conducted a random forest analysis that enabled us to estimate the relative importance of each covariate in distinguishing high- from low-impact practices (Ho 1995). The results confirm that baseline expenditures is the most important effect modifier, followed by another measure of patient complexity, the practice-level average of the baseline beneficiary-level HCC risk score, which has a correlation of 0.70 with the baseline expenditure variable. To check the robustness of this finding, we removed the baseline expenditures variable and re-ran the CART analysis. As expected, the HCC score rose to the top of the CART tree. We found that practices in the top quartile of the HCC risk score (HCC score greater than 1.2) reduced expenditures by an estimated \$10 PBPM, whereas practices in the bottom quartile (HCC score less than 1.0) increased expenditures by an estimated \$11 PBPM. These impact estimates are statistically distinguishable: there is a 100 percent chance that practices with HCC scores in the top quartile reduced expenditures more as a result of CPC+ than did practices with HCC scores in the bottom quartile.

3.A.3. Comparison with the main analysis

We can also use BCF to improve estimates for the pre-specified subgroups in the main analysis. Figure 6.I.4 shows that BCF consistently provides more precise subgroup impact estimates (that is, narrower uncertainty intervals) than the traditional approach. BCF also produces more plausible subgroup estimates that are closer to the ATT, underscoring the importance of its prior. Furthermore, because BCF includes a built-in correction for multiple comparisons, there is no need to discount differences between BCF subgroup estimates as potentially arising because of chance alone, as is required when interpreting the traditional findings.

Figure 6.I.4. Summary of traditional difference-in-differences subgroup results and BCF results for Track 1 effects on Medicare expenditures without enhanced payments

Subgroup impact estimates from BCF largely agree with the results of the main analysis but show less variation and more precision.



Note: The dashed blue vertical line marks an impact estimate of \$0 PBPM, and the green and yellow dashed vertical lines identify the overall ATT for the BCF and traditional analyses, respectively.

^a Recognized as a medical home or participated in Multi-Payer Advanced Primary Care Practice or Comprehensive Primary Care Classic.

^b The traditional analysis did not include baseline expenditures as a subgroup of interest, so we do not include traditional estimates for this subgroup.

ATT = average treatment effect on the treated; BCF = Bayesian Causal Forest; PBPM = per beneficiary per month; SSP = Medicare Shared Savings Program.

Although Figure 6.I.4 shows that BCF produces more precise and less extreme impact estimates for the subgroups pre-specified in the main analysis, the BCF results are compatible with the main analysis results. In fact, in all cases, the uncertainty intervals of the main and BCF estimates overlap substantially, indicating that the two sets of estimates are not statistically distinguishable.

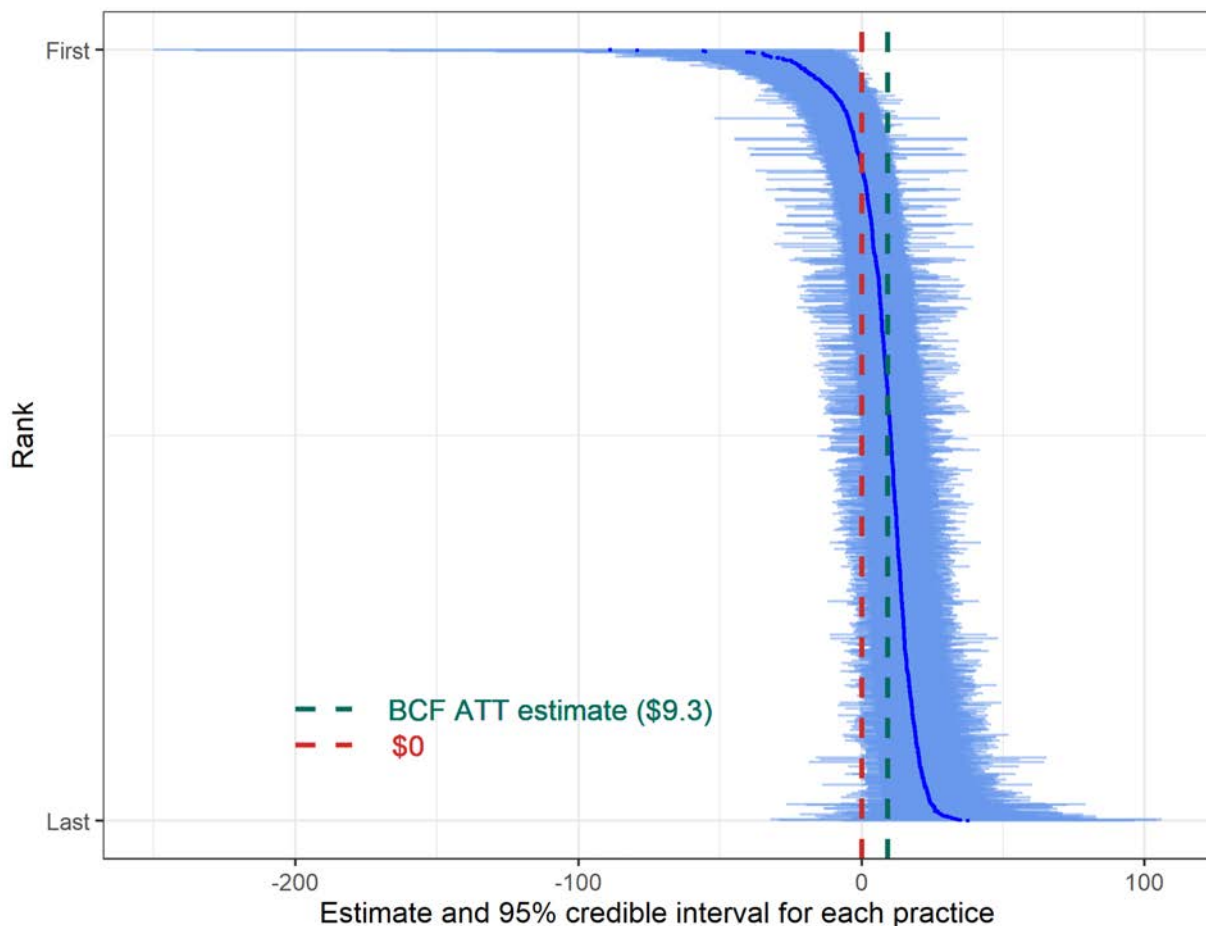
3.B. Track 2

3.B.1. Practice-specific treatment effect estimates

We fit BCF to the Track 2 2017 Starters data described previously and estimated the effect of CPC+ on each participating practice. Figure 6.I.5 shows—for each practice—the impact estimate and 95 percent uncertainty interval, ordered from the practice with the most favorable impact (reduced expenditures) to the least favorable impact (increased expenditures).

Figure 6.I.5. Distribution of practice-specific treatment effects in Track 2

Practice-specific impact estimates for Track 2 2017 Starters vary from -\$80 PBPM to \$25 PBPM.



Notes: Each dot represents the impact on total Medicare expenditures without enhanced CPC+ payments for a Track 2 2017 Starter practice, and each line represents the corresponding 95 percent credible interval, calculated as the 2.5 and 97.5 quantiles of the posterior distribution for the impact estimate. This interval represents the range in which we have a 95 percent chance of finding the true impact. One dot/line = 1 practice. A total of 1,515 Track 2 CPC+ practices are included.

ATT = average treatment effect on the treated; BCF = Bayesian Causal Forest; CPC+ = Comprehensive Primary Care Plus; PBPM = per beneficiary per month.

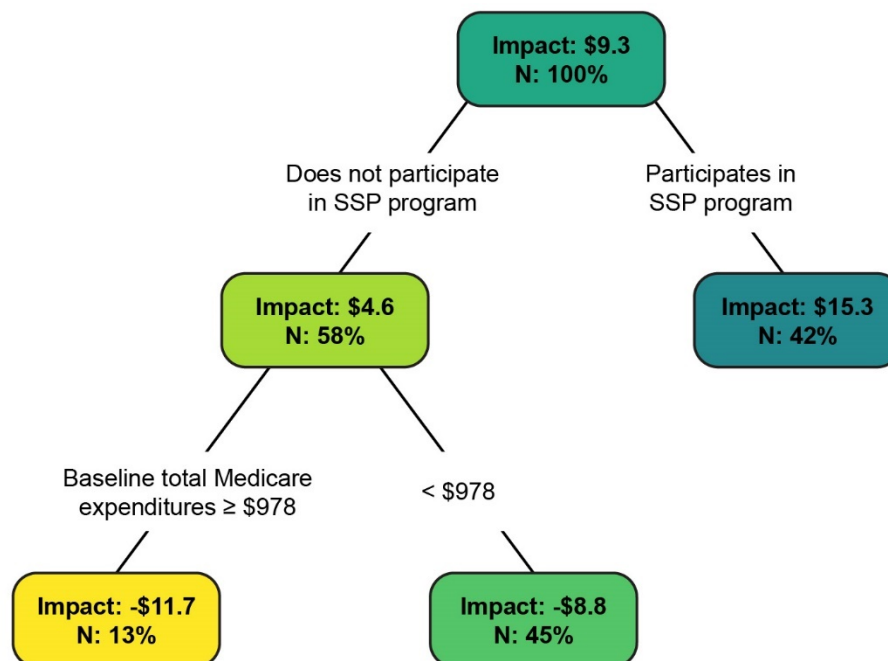
From this figure, we see that the overall ATT is roughly \$9 (95 percent credible interval: \$2, \$16) and that more extreme treatment effect estimates have wider uncertainty intervals. The wide range of impact estimates across practices suggests that although our best guess at the intervention's overall effect is a \$9 PBPM increase in Medicare expenditures, this effect is far from uniform across practices. Some practices saw increases as large as \$25, and others saw reductions as large as \$80. Even though the sample size of beneficiaries within any given practice is small compared with the total sample size of our analysis, BCF draws on information from similar practices to produce precise enough estimates that we can statistically distinguish among practice-specific impacts at the extremes with confidence; there is more than a 99 percent chance that the best-performing practice reduced expenditures more than the worst-performing practice; the chances are over 99 and 9 percent, respectively, that the best- and worst performing practices reduced expenditures; the chances are over 99 and 26 percent, respectively, that the best- and worst-performing practices reduced expenditures more than the ATT (not depicted in Figure 6.I.5). Furthermore, estimates for groups of practices with impacts closer to the ATT are statistically distinguishable as well; there is a 100 percent chance that practices with impacts below the 25th percentile (most favorable impacts) reduced expenditures more than practices with impacts above the 75th percentile (not depicted in Figure 6.I.5).

3.B.2. Subgroup identification

Figure 6.I.6 presents the CART tree we obtained for data-driven subgroup identification. We pruned the CART tree to only show splits that improve the relative error of each branch by 0.1 in order to keep the tree a reasonable size and highlight only the most significant effect modifiers. Unlike in Track 1, the tree splits first on SSP status, indicating that SSP practices had more unfavorable impacts on average than non-SSP practices. Among non-SSP practices, high baseline expenditures again appear as a strong effect modifier; in practices with baseline expenditures greater than \$978 PBPM, Track 2 reduced expenditures by \$12 PBPM on average, compared with non-SSP practices with lower baseline expenditures, for which expenditures increased by \$9 PBPM.

Figure 6.I.6. Regression tree identifying potential Track 2 subgroups that reduce Medicare expenditures without enhanced payments

High baseline Medicare expenditures are also a strong predictor of favorable impacts in Track 2—but only for non-SSP practices.



Note: Regression tree fit to posterior means of practice-specific treatment effects for 1,515 Track 2 2017 Starter practices. Each box represents a group of practices, with all practices at the top and smaller subsets in the lower nodes. In each box, the impact value is given in \$PBPM, and the percentage refers to the proportion of the sample in that category. For example, 13 percent of Track 2 2017 Starters are non-SSP and had baseline Medicare expenditures greater than \$978 PBPM, placing them in the bottom-left node with mean impact -\$11.7 PBPM.

PBPM = per beneficiary per month; SSP = Medicare Shared Savings Program.

Although BCF results suggest that high baseline expenditures are associated with reductions in expenditures in Track 2, this relationship is limited to non-SSP practices. Unlike in Track 1, there is no evidence of an overall relationship between baseline expenditures and favorable impacts. Nonetheless, compared with SSP practices, non-SSP practices with baseline Medicare expenditures greater than \$978 PBPM are highly likely (99 percent probability) to have more favorable impacts.

Similar to our process for Track 1, we tested for other effect modifiers by conducting a random forests analysis, which enabled us to estimate the relative importance of each covariate in distinguishing high-impact from low-impact practices (Ho 1995). The results confirm that for non-SSP practices, baseline expenditures is the most important effect modifier, followed by another measure of patient complexity, the practice-level average of the baseline beneficiary-level HCC risk score, which has a correlation of 0.72 with the baseline expenditure variable. To check the robustness of this finding, we removed the baseline expenditures variable and re-ran the CART analysis. As expected, the HCC score rose to the top of the CART tree, below the SSP status covariate. Non-SSP practices in the top quartile of the HCC risk score (HCC score greater than 1.2) increased expenditures by an estimated \$3 PBPM, whereas non-SSP practices in the

bottom quartile (HCC score less than 0.9) increased expenditures by an estimated \$14 PBPM. These impact estimates are statistically distinguishable: there is a 99 percent chance that non-SSP practices with HCC scores in the top quartile reduced expenditures more as a result of CPC+ than did non-SSP practices with HCC scores in the bottom quartile.

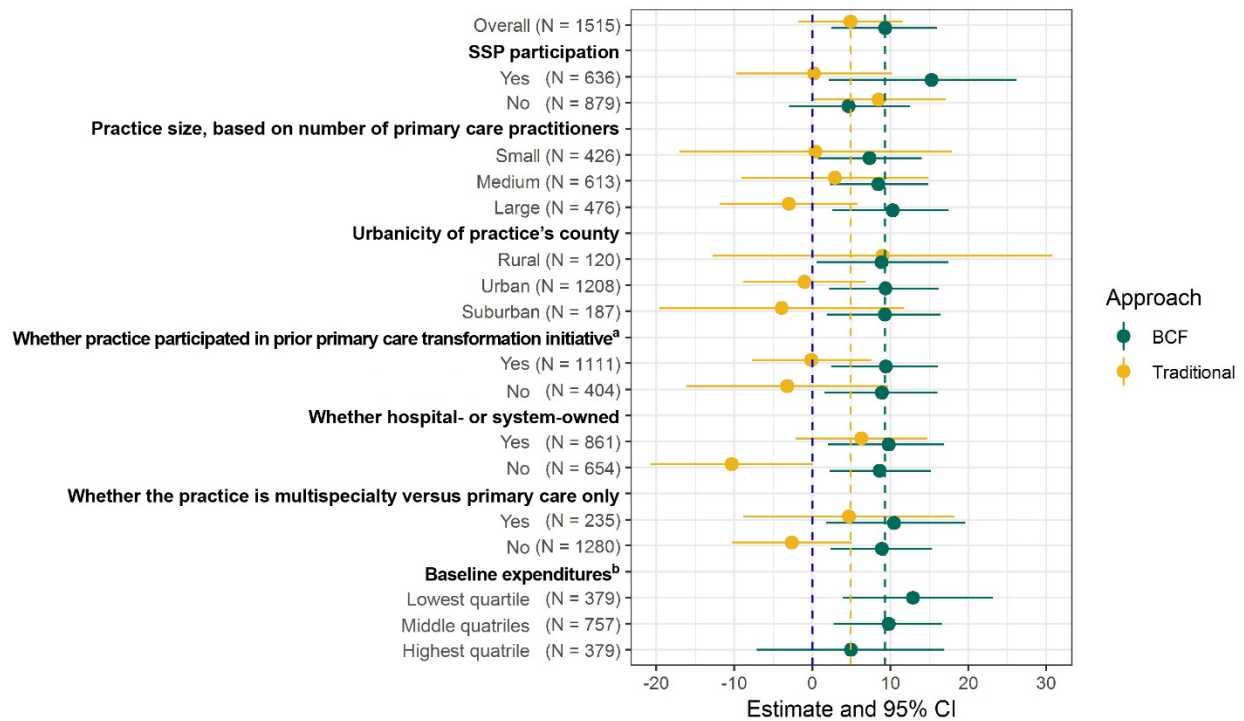
Finally, the fact that the regression tree first splits on SSP status appears to imply that SSP participation is an important factor driving CPC+ impacts for Track 2. But after accounting for uncertainty, the impacts of \$5 and \$15 PBPM for non-SSP and SSP practices, respectively, are not statistically distinguishable from one another, as we show in the next section. This result is consistent with both the main regression analysis and the parametric Bayesian analysis.

3.B.3. Comparison with the main analysis

We can also use BCF to improve estimates for the pre-specified subgroups from the main analysis. Figure 6.I.7 shows that BCF consistently provides more precise subgroup impact estimates (that is, narrower uncertainty intervals) than the traditional approach. BCF also produces more plausible subgroup estimates that are closer to the ATT, underscoring the importance of its prior. Furthermore, because BCF includes a built-in correction for multiple comparisons, there is no need to discount differences between BCF subgroup estimates as potentially arising because of chance alone, as is required when interpreting the traditional findings.

Figure 6.I.7. Summary of traditional difference-in-differences subgroup results and BCF results for Track 2 effects on Medicare expenditures without enhanced payments

As in Track 1, in Track 2 BCF subgroup impact estimates are compatible with the corresponding estimates from the main analysis.



Note: The dashed blue vertical line marks an impact estimate of \$0 PBPM, and the green and yellow dashed vertical lines identify the overall ATT for the BCF and traditional analyses, respectively. The analysis included 1,515 Track 2 2017 Starter practices.

^a Recognized as a medical home or participated in Multi-Payer Advanced Primary Care Practice or Comprehensive Primary Care Classic.

^b The traditional analysis did not include baseline expenditures as a subgroup of interest, so we do not include traditional estimates for this subgroup.

ATT = average treatment effect on the treated; BCF = Bayesian Causal Forest; PBPM = per beneficiary per month; SSP = Medicare Shared Savings Program.

Although Figure 6.I.7 shows that BCF produces more precise and plausible (closer to the ATT) impact estimates for the subgroups pre-specified in the main analysis, the BCF results are compatible with the main analysis results. In fact, in all cases but one (not owned by a hospital or system), the uncertainty intervals of the main and BCF estimates overlap substantially, indicating that the two sets of estimates are not statistically distinguishable.

6.1.4. Discussion

This appendix presents an innovative method for estimating the practice-specific impacts of CPC+ and examining variation in those impacts. Practice-specific impacts expand our understanding of the model's effects by offering a more granular view of performance. The practice-specific impacts indicate wide variation across practices in both tracks, with some practices reducing expenditures substantially and other practices increasing expenditures.

BCF also identified a previously unexamined driver of impacts: baseline Medicare expenditures. Although in health services research it is understood that high baseline expenditures signal greater opportunity for improvement (McWilliams et al. 2016), it was not possible to investigate this relationship using the main regression approach. As such, BCF provides a useful complement to the main analysis, revealing not only whether but how much this phenomenon applies to CPC+. Further analysis suggests that the average HCC score of the practice's Medicare fee-for-service beneficiaries strongly predicts impacts as well; practices with higher average HCC scores tend to have more favorable impacts and vice versa. These two predictors, which are highly correlated (0.70 in Track 1 and 0.72 in Track 2), suggest a common theme of greater benefits for practices serving more complex patients, in line with the program's focus on improving care for complex patients.

Although BCF's innovations enable us to examine aspects of the evaluation that we cannot investigate with the main regression approach, BCF also suffers from additional limitations. Computational intensity is a primary limitation; to obtain convergence from our BCF models, we had to fit separate models for SSP and non-SSP practices in each track, even after aggregating data from the beneficiary-quarter to practice-year levels and estimating impacts for the cumulative follow-up period only (rather than annually). To improve computation time and performance, we also restricted the number of variables we considered as effect modifiers. This decision in particular highlights the important synergy between subject matter expertise and data-driven discovery in that we relied on both substantive and methodological considerations to determine the final set of effect modifiers.

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