

Letters

RESEARCH LETTER

Primary Care Spending in the Fee-for-Service Medicare Population

Greater health system orientation toward primary care is associated with higher quality, better outcomes, and lower costs.^{1,2} Recent payment and delivery system reforms emphasize investment in primary care,³ but resources presently devoted to primary care have not been estimated nationally.^{4,5} In this study, we calculated primary care spending as a proportion of total spending among Medicare fee-for-service beneficiaries and describe variation by beneficiary characteristics and by state.

Methods | We analyzed spending for all Medicare beneficiaries 65 years or older with 12 months of Parts A and B fee-for-service medical coverage and Part D prescription coverage in 2015. We used the Master Beneficiary Summary File (MBSF) Base segment (enrollment and demographic data), MBSF Cost and Utilization segment (total medical and prescription spending), and MBSF Chronic Conditions segment (27 chronic con-

ditions); Carrier File (professional claims) and Outpatient File (professional claims absent from the Carrier File including critical access hospitals, rural health centers, federally qualified health centers, and electing teaching amendment hospitals); and Medicare Data on Provider Practice and Specialty File (practitioner characteristics). This study was approved by the RAND Corporation Human Subjects Protection Committee with waiver of informed consent for analysis of deidentified data.

We measured primary care spending by using narrow and broad definitions of primary care practitioners (PCPs) and primary care services.⁵ The narrow PCP definition included family practice, internal medicine, pediatric medicine, and general practice; the broad PCP definition also included nurse practitioners, physician assistants, geriatric medicine, and gynecology. Both definitions excluded hospitalists.

The narrow primary care services definition included Healthcare Common Procedure Coding System codes on professional claims, including evaluation and management visits, preventive visits, care transition or coordination services, and in-office preventive services, screening, and counseling; the broad definition included all professional services billed

Table. Patient Characteristics and Primary Care Spending Among Fee-for-Service Medicare Beneficiaries in 2015

Characteristic	Primary Care Practitioner Definition, %			
	Narrow ^a		Broad ^b	
	Narrow Primary Care Services ^c	All Professional Services	Narrow Primary Care Services ^c	All Professional Services
Age, y				
65-69	2.28	3.92	2.92	5.15
70-74	2.28	3.97	2.86	5.12
75-79	2.19	3.90	2.71	4.96
80-84	2.03	3.73	2.52	4.71
>85	1.76	3.38	2.24	4.34
Sex				
Male	2.15	3.87	2.60	4.82
Female	2.11	3.74	2.72	4.92
Race/ethnicity ^d				
White	2.13	3.82	2.70	4.96
Black	1.76	3.28	2.21	4.15
Asian	3.04	4.73	3.35	5.30
Hispanic	2.18	3.70	2.57	4.42
North American Native	1.51	3.02	2.16	4.23
Other	2.61	4.25	2.99	4.99
Unknown	2.61	4.27	3.14	5.31
Dually eligible for Medicare and Medicaid				
Yes	1.64	3.23	2.16	4.23
No	2.32	4.02	2.88	5.14

(continued)

Table. Patient Characteristics and Primary Care Spending Among Fee-for-Service Medicare Beneficiaries in 2015 (continued)

Characteristic	Primary Care Practitioner Definition, %			
	Narrow ^a		Broad ^b	
	Narrow Primary Care Services ^c	All Professional Services	Narrow Primary Care Services ^c	All Professional Services
Chronic conditions				
Acute myocardial infarction	1.30	2.90	1.66	3.70
Alzheimer disease	1.40	2.99	1.99	4.11
Alzheimer disease and related disorders or senile dementia	1.40	3.02	1.90	4.03
Atrial fibrillation	1.54	3.15	1.95	4.04
Cataract	2.07	3.74	2.61	4.81
Chronic kidney disease	1.53	3.11	1.94	3.99
Chronic obstructive pulmonary disease	1.66	3.32	2.12	4.25
Congestive heart failure	1.49	3.09	1.90	3.95
Diabetes	1.91	3.55	2.37	4.47
Glaucoma	2.06	3.66	2.56	4.65
Hip or pelvic fracture	1.08	2.54	1.46	3.41
Ischemic heart disease	1.79	3.40	2.24	4.33
Depression	1.73	3.33	2.28	4.41
Osteoporosis	1.88	3.54	2.40	4.59
Rheumatoid arthritis or osteoarthritis	1.97	3.61	2.49	4.68
Stroke or transient ischemic attack	1.55	3.19	1.99	4.10
Cancer				
Breast	1.75	3.20	2.27	4.23
Colorectal	1.48	3.06	1.86	3.89
Prostate	1.85	3.41	2.23	4.28
Lung	1.12	2.49	1.42	3.18
Endometrial	1.54	3.00	2.10	4.19
Anemia	1.76	3.35	2.22	4.31
Asthma	1.66	3.32	2.11	4.26
Hyperlipidemia	2.13	3.80	2.66	4.86
Benign prostatic hyperplasia	2.04	3.76	2.46	4.67
Hypertension	2.06	3.71	2.58	4.75
Hypothyroidism	1.98	3.64	2.51	4.68
Primary care spending				
Per beneficiary, \$	308.32	550.62	387.79	708.23
Fraction of total medical and prescription spending ^e	2.12	3.79	2.67	4.88

^a Includes family practice, internal medicine, pediatric medicine, and general practice.

^b Includes family practice, internal medicine, pediatric medicine, general practice, nurse practitioner, physician assistant, geriatric medicine, and gynecology.

^c Includes Healthcare Common Procedure Coding System codes on professional claims including evaluation and management visits, preventive visits, care

transition or coordination services, and in-office preventive services, screening, and counseling.

^d All race/ethnicity variables in this analysis are from the Master Beneficiary Summary File (variable name BENE_RACE_CD).

^e In 2015, for the selected population, mean per capita total medical and prescription spending was \$14 519 (\$11 596 in medical spending and \$2913 in prescription spending).

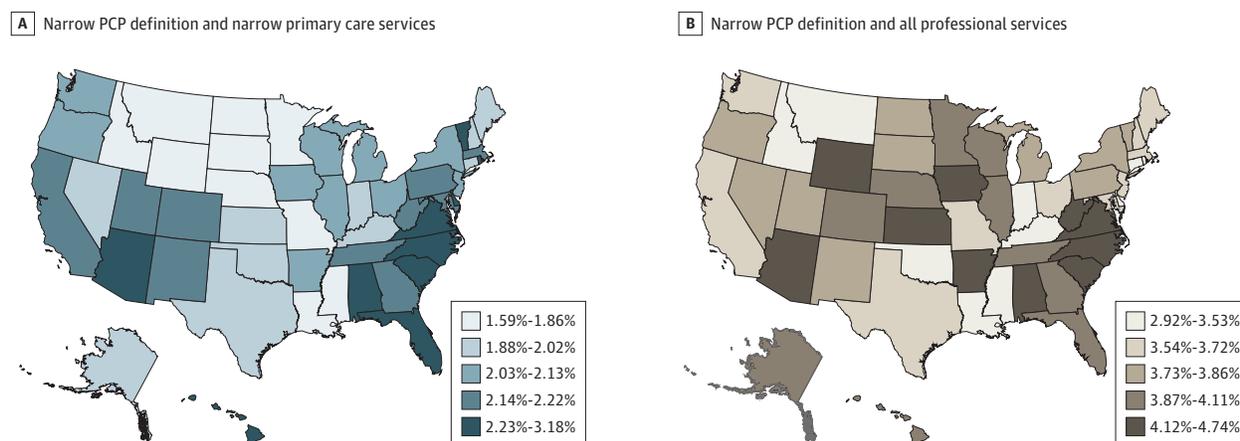
by PCPs. We excluded facility fees for outpatient primary care services billed in the Carrier File and did not include services ordered but not performed directly by PCPs (eg, tests and medications).

We measured primary care spending as a percentage of total medical and prescription spending nationally, by beneficiary characteristics, and by state. Statistical analyses were

performed using SAS software, version 9.4 (SAS Institute). Results were reported as 2015 US dollars and Spearman correlation coefficients. We reported 2-tailed $P < .05$ as statistically significant.

Results | Among 16 244 803 beneficiaries, primary care represented 2.12% of total medical and prescription spending for

Figure. Primary Care Spending as a Proportion of Total Medical and Prescription Spending Among Fee-for-Service Medicare Beneficiaries



Definitions of primary care practitioner (PCP) and primary care services are given in the Methods section.

the narrow definitions of PCPs and primary care services and 4.88% for the broad definitions (Table). For all definitions, primary care spending percentages were lower among beneficiaries who were older (eg, 1.76% for beneficiaries 85 years or older vs 2.12% for all beneficiaries, using the narrow definition), black (1.76%) or North American Native (1.51%), dually eligible for Medicare and Medicaid (1.64%), and who had chronic medical conditions (except hyperlipidemia). Primary care spending percentages varied by state (Figure), from 1.59% in North Dakota to 3.18% in Hawaii for the narrow health care provider and service definitions and from 2.92% in the District of Columbia to 4.74% in Iowa for the narrow health care provider and broad service definition. States' primary care spending percentages were not significantly correlated with per capita PCP headcounts⁶ (Spearman correlation coefficients 0.10 [$P = .47$] and -0.07 [$P = .61$], respectively).

Discussion | Primary care spending represented a small percentage of total fee-for-service Medicare spending and varied substantially across populations and states. Primary care spending percentages were lower among medically complex populations and were not correlated with state-level PCP headcounts, which suggests that headcounts might mismeasure primary care investment. Our estimates of primary care spending percentages in Medicare were lower than previous estimates among a convenience sample of commercial insurers, states, and other countries^{4,5}; these comparisons were confounded by differences in patient age, payer type, and other factors.

One limitation of this study is that our broader definitions of primary care spending may have included nonprimary care services delivered by PCPs, while our narrower definitions of primary care services may have excluded some PCPs or primary care services.

The optimal percentage of Medicare spending for primary care is unclear. Future research should evaluate effects on quality or outcomes of state efforts (eg, Rhode Island and Oregon) to institute minimum primary care spending

percentages.⁴ Our estimates may constitute reference points for future policies across the United States.

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Use of Opioid Overdose Deaths Reported in One State's Criminal Justice, Hospital, and Prescription Databases to Identify Risk of Opioid Fatalities

The United States is in the midst of an opioid overdose epidemic, with 45 000 opioid overdose deaths in 2017, most involving fentanyl and heroin.¹ The President's Commission on Combating Drug Addiction and the Opioid Crisis has recommended data integration between state-based prescription drug monitoring programs and other systems to identify individuals who are at an elevated risk of overdose.² Linking prescription drug monitoring program data with other large databases can provide insight into how different service systems could have reached many individuals who fatally overdosed and how risk rates for each subgroup compare with statewide means.

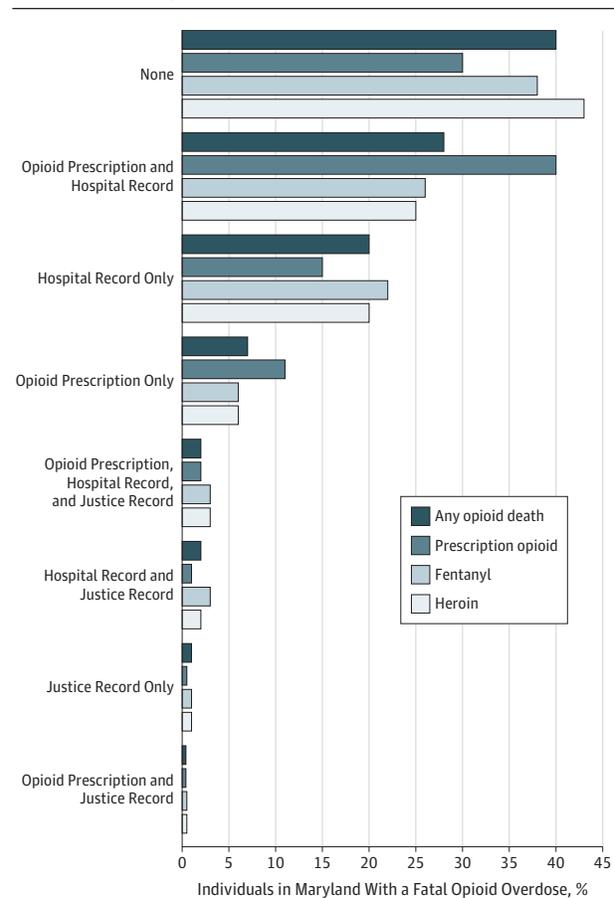
Methods | We identified Maryland residents with at least 1 record in 2015-2016 in any of 3 state-level data sets: opioid prescriptions in the prescription drug monitoring program data (n = 1 740 332), inpatient hospitalization or emergency department visits in the Health Services Cost Review Commission data (n = 2 047 397), or at least 1 record for an adjudicated arrest, incarceration, or community supervision record (parole or probation) related to a property or drug offense in the Department of Public Safety and Correctional Services data (n = 42 925). These data were linked with opioid overdose death records (intentional and unintentional) from the Office of the Chief Medical Examiner (n = 2902), which could be separated into deaths involving heroin (n = 1938), fentanyl (n = 1452), and/or prescription opioids (n = 765) (numbers do not sum to 2902, as multiple types of opioids could be in-

involved in a death). Data were linked and deidentified through a health information exchange that maintains a sharing agreement with the Maryland Department of Health by using a validated algorithm.³ The study was approved by the institutional review boards at the Johns Hopkins School of Public Health and the Maryland Department of Health.

We described the proportion of individuals with a fatal opioid overdose who previously appeared in 1 or more of the above-described data sets. In addition, we compared the overdose death rate across each combination of data sources. All analyses were performed using STATA/MP, version 15 (StataCorp).

Results | Most individuals with fatal opioid overdose events appeared in at least 1 of the 3 data sets between 2015 and 2016 (**Figure 1**): 27.7% had opioid prescriptions and hospital records, 19.7% had hospital records only, 7.1% had opioid prescriptions only, and 5.9% had criminal justice records (either alone or in combination with clinical records). A total of 39.6% of individuals with fatal overdoses could not be linked with records in any

Figure 1. Percent of Persons With a Fatal Opioid Overdose Found Within Data Source in Maryland, 2015-2016



Persons experiencing fatal overdoses in 2015-2016 in Maryland who had opioid prescriptions, hospital records, and/or criminal justice records prior to overdose, separated by type of opioid death. More information on opioid prescriptions, hospital records, and justice records can be found in the Methods section.