Characteristics and Disparities among Primary Care Practices in the United States

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BACKGROUND: Despite new incentives for US primary care, concerns abound that patient-centered practice capabilities are lagging.

OBJECTIVE: Describe the practice structure, patient-centered capabilities, and payment relationships of US primary care practices; identify disparities in practice capabilities.

DESIGN: Analysis of the 2015 Medical Organizations Survey (MOS), part of the nationally representative Medical Expenditure Panel Survey (MEPS).

SETTING: Practice-reported information from primary care practices of MEPS respondents who reported receiving primary care and made at least one visit in 2015 to that practice.

PARTICIPANTS: Surveyed primary care practices (*n* = 4318; 77% response rate) providing primary care to 7161 individuals, representing 101,159,263 Americans.

MAIN MEASURES: Practice structure (ownership and personnel); practice capabilities (certification as a patient-centered medical home [PCMH], electronic health record [EHR] use, and x-ray capability); and payment orientation (accountable care organization [ACO] and capitation).

KEY RESULTS: Independently owned practices served 55% of patients, hospital-owned practices served 19%, and nonprofit/government/academic-owned served 20%. Solo practices served 25% of patients and practices with 2–10 physicians served 53% of patients. Forty-one percent of patients were served by practices certified as PCMHs. Practices with EHRs cared for 90% of patients and could exchange secure messages with 78% of patients. Practices with in-office x-ray capability cared for 34% of patients. Practices participating in ACOs and capitation served 44% and 46% of patients, respectively. Primary care patients in the South, compared to the rest of the country, had less access to nearly all practice capabilities, including patient care coordination (adjusted difference, 13% [95% CI, 8–18]) and secure EHR messaging (adjusted difference, 6% [95% CI, 1–10]). Uninsured patients were less likely to be served at a practice that used an EHR (adjusted difference, 9% [95% CI, 2–16]).

CONCLUSIONS: Participants' primary care practices were mostly independently owned, nearly always used EHRs (albeit of varying capability), and frequently participated in innovative payment arrangements for a portion of their patients. Patient practices in the South had fewer capabilities than the rest of the country.

INTRODUCTION

Primary care practices form the backbone of comprehensive health care delivery in the United States[1,2] and throughout the developed world.[3,4] Comprehensive primary care is associated with lower costs, improved health outcomes, greater efficiency, and reduced disparities.[5] Despite the importance of primary care, concerns abound that practice capabilities are lagging. Additionally, concerns exist that practices are merging or being purchased by health systems and hospitals,[6,7] which may bring advantages of care coordination and disadvantages of higher prices.[8,9]

To bolster primary care, recent federal policy initiatives provide strong incentives to primary care practices to enter new payment relationships and to upgrade their patient-centered capabilities. The American Recovery and Reinvestment Act of 2009 included $30 billion to promote adoption of electronic health records.[10] The Affordable Care Act of 2010 introduced risk-sharing in accountable care organizations and enacted penalties for preventable readmissions. Most recently, the Medicare Access and CHIP Reauthorization Act (MACRA) of 2015 will shift physician reimbursement in Medicare toward a value-based system, tying payments to quality and cost performance through one of two mechanisms: participation in an advanced alternative payment model (e.g., an accountable care organization with downside risk) or in the Merit-based Incentive Payment System.

These programs may inadvertently result in consolidation among primary care practices, including mergers between independent practices or acquisitions by hospitals or larger

health systems, in order to fund the large investments needed in this environment.[6] Timely data are lacking as to the extent of consolidation, how it might impact the capabilities of primary care practices to deliver high-value care, and disparities in practice capabilities. In addition, current efforts to improve the delivery of primary care through the patient-centered medical home have yielded inconsistent effects on quality, though these efforts may evolve and strengthen over time.[12,13] Data on practice capabilities would enable policymakers to craft informed policies that target specific deficits both nationally and for traditionally underserved populations. We analyzed recent nationally representative data to summarize trends in consolidation, participation in value-based models, and disparities in practice capabilities.

METHODS

Data Source and Study Population

We analyzed data from the 2015 Medical Expenditure Panel Survey (MEPS), a nationally representative annual survey of repeated cross sections of the non-institutionalized United States civilian population.[14] The MEPS sample is drawn from respondents to the annual National Health Interview Survey. The MEPS uses a complex survey design that delivers English or Spanish computer-assisted interviews and collects detailed data on demographic characteristics, health conditions, health status, medical services utilization, medications, costs, source of payments, health insurance coverage, income, and employment. We included participants of all ages.

The MEPS determines whether a participant had a usual source of care (USC) by asking if a respondent had a clinician to which "you usually go if you are sick or need advice about your health." In 2015, MEPS sampled 33,893 participants (point-in-time response rate, 52%), of whom 25,811 had a USC and 11,188 had at least one visit with their USC (hereafter termed "patients").

In 2015, the MEPS fielded a new supplemental questionnaire, the Medical Organizations Survey File (MOS), with the goal of detailing the organizational and financial characteristics of the office-based USC practice identified by each patient who had made a visit to their USC in the last year. The MOS questions were answered via telephone, mostly by office managers or practice administrators. Of the 11,188 patients, 9494 being seen in 5588 unique practices gave permission for their practice to be contacted. Ultimately, 4318 practices responded (77% practice response rate), which served 7350 patients, of which 7161 had a positive person-weight. Because the practice data are linked to patients in the MEPS, all results refer to the percentage of patients cared for in practices with specified characteristics or capabilities. For example, when we describe use of an electronic health record (EHR), we report that 90% of patients were served at practices with EHRs, not that 90% of practices used EHRs, although these numbers are likely quite similar due to minimal patient overlap.

Sensitivity Analysis

To be confident that "USC" and "primary care" were analogous, we conducted a sensitivity analysis by considering a patient as having primary care only if they would see their USC for all four of the following: "new health problems"; "preventive health care, such as general checkups, examinations, and immunizations"; "referrals to other health professionals when needed"; and "ongoing health problems." With this more exclusive definition, of the 7161 USC patients, 6865 met this definition of primary care. We observed no substantive differences in practice characteristics or disparities, and therefore use "USC" and "primary care" interchangeably.

Practice Characteristic Measures

The MOS determined a practice's organizational structure (ownership, number of locations, whether multispecialty) and the number of physicians, advanced practice clinicians, and primary care physicians. It also collected data on each practice's capabilities, including certification as a patient-centered medical home (PCMH); use of case managers; use of an electronic health record (EHR) and associated EHR capabilities; follow-up timeliness; same-day appointment availability; in-clinic x-ray capabilities; and whether physicians received personalized quality reports. Finally, the MOS asked whether physicians were paid a base salary, whether a practice had capitated contracts, and whether a practice participated in an accountable care organization (ACO). Notably, the percentage of contracts in an innovative payment model (capitation or ACO) was not captured, only that services for some portion of the practice's patients were reimbursed in an innovative manner, unlike the dominant fee-for-service model.

Disparities in Practice Capabilities

To examine whether practice capabilities differed for practices caring for underserved populations, we performed multivariable regression to obtain adjusted estimates for each practice capability, adjusting for all variables in Table 1 except the disparity variable of interest. We examined groups with characteristics known to be associated with poor access to high-functioning health care, including black race/ethnicity, lack of insurance, geographic location in the South, and less than high school education.[15–17] We also examined practices serving children versus adults.

Statistical Analysis

In all analyses we accounted for the complex design of the MEPS to allow for national estimates, applying person-weights, strata, and clusters to adjust for non-response.[18,19] In addition to these standard weighting procedures, weighting for the MOS adjusted for lack of permission, non-response, and key demographic subgroups.[20] We present weighted percentages.

We performed all analyses with SAS statistical software version 9.4 (SAS Institute Inc., Cary, NC, USA). We considered two-sided $p < 0.05$ to be significant. The Harvard Medical School institutional review board determined that this study was not human subjects research and was therefore exempt from approval.

Table 1 Characteristics of Americans with at Least One Primary Care Visit, 2015

Characteristic	Mean % (95% CI)* (n = 7161 patients)
AGE, mean years (95% CI)	40 (39, 41)
FEMALE	55 (54, 57)
RACE/ETHNICITY	
Non-Hispanic white	62 (59, 65)
Hispanic	18 (15, 20)
Non-Hispanic black	11 (9, 12)
Non-Hispanic Asian	5 (4, 6)
Non-Hispanic other or multiple	5 (4, 6)
CENSUS REGION	
Northeast	19 (15, 22)
Midwest	21 (18, 23)
South	36 (33, 40)
West	25 (22, 28)
PARTNER STATUS	
Married/partnered	52 (50, 55)
Never married	9 (8, 10)
Divorced/separated	13 (12, 15)
Widowed	25 (24, 27)
EDUCATION	
< High school	31 (29, 33)
High school/GED/some college	45 (43, 47)
Bachelor's degree	15 (13, 16)
> Bachelor's degree	9 (8, 11)
HEALTH INSURANCE COVERAGE	
Any private	62 (59, 64)
Public only	34 (32, 37)
Uninsured	4 (3, 5)
PERCEIVED HEALTH STATUS†	
Excellent	30 (28, 32)
Very good	30 (29, 32)
Good	25 (23, 26)
Fair	11 (10, 12)
Poor	4 (3, 4)
EMPLOYED†	58 (56, 60)
CURRENTLY SMOKE†	10 (9, 11)
ADL HELP‡	4 (3, 4)
iADL HELP‡	6 (5, 7)
SF-12 PHYSICAL COMPONENT SUMMARY†	47 (46, 47)
SF-12 MENTAL COMPONENT SUMMARY†	51 (51, 51)
KESSLER INDEX†§	3 (3, 4)
BODY MASS INDEX, mean kg/m² (95% CI)†	29 (28, 29)
CHRONIC DISEASE†	
Hypertension	47 (45, 49)
Diabetes	16 (14, 17)
Chronic obstructive pulmonary disease	6 (5, 6)
Heart disease	8 (7, 9)
Cancer	15 (14, 17)
Asthma	12 (11, 13)
Arthritis	40 (38, 42)
Stroke	6 (5, 7)

Percentages may not sum to 100 due to rounding
†Asked only of adults
‡Three-part screener question to determine whether respondent required assistance with activities of daily living (ADL) or instrumental activities of daily living (iADL)
§Measure of non-specific psychological distress.[11] Sum of six psychological distress variables, each on a scale of 0 = "none of the time" to 4 = "all of the time"

RESULTS

Population Characteristics

In 2015, the MEPS included 7161 patients with primary care who visited their primary care office at least once that year, representing 101,159,263 Americans. They were predominantly female (55%), middle-aged (40 years old), white (62%), partnered (52%), at least high school-educated (69%), and employed (58%; Table 1). Most were privately insured (62%). Many reported chronic diseases, including 47% with hypertension, 40% with arthritis, 15% with cancer, and 16% with diabetes.

Practice Characteristics

Fifty-five percent of patients were served at independently owned practices, 19% at hospital-owned practices, and 20% at nonprofit/government/academic-owned practices (Table 2).

Table 2 Characteristics of United States Primary Care Practices, 2015

Characteristic	Mean % (95% CI)* (n = 7161 patients)
Practice organizational structure	
Ownership description	
Independent	55 (52, 57)
Physician network owned by hospital	19 (17, 22)
Nonprofit/government/academic medical center	20 (18, 22)
Health maintenance organization	1 (1, 2)
Corporation-owned	3 (2, 4)
Other	1 (1, 2)
More than one location	46 (43, 48)
Multispecialty group practice	37 (34, 39)
Physicians per practice	
Solo	25 (23, 27)
2–10	53 (51, 56)
>10	22 (20, 24)
Practices with nurse practitioners and/or physician assistants	72 (70, 74)
Practice capability	
EHR capabilities	
Practice uses electronic health record	90 (89, 92)
Electronic health record sends guideline/screening reminders†	88 (87, 90)
Exchange secure messages with patients via electronic health record†	78 (76, 80)
Other capabilities	
Certified patient-centered medical home	41 (38, 44)
Case manager coordinates patient care	51 (49, 54)
Patient follow-up occurs within 48 h of discharge	72 (70, 75)
Routinely sends reminders for preventive and follow-up care	89 (88, 91)
In-clinic x-ray capability	34 (31, 37)
Same-day appointment availability	95 (94, 96)
MD receives individualized quality report	89 (88, 90)
Payment orientation	
Participate in accountable care organization (Medicare or private)	44 (41, 47)
Physician paid a base salary	74 (72, 76)
Capitated contracts	46 (43, 49)
Medicaid coverage	
< 10%	33 (30, 36)
10–50%	38 (35, 42)
> 50%	28 (26, 31)

Percentages may not sum to 100 due to rounding
†Of the 90% of practices that used electronic health records

Table 3 Association of Practice Capabilities Stratified by Patient Sociodemographic Factors (n = 7161 patients)

Characteristic	Black	Not black	Adjusted difference*	Uninsured	Not uninsured	Adjusted difference*	South	Not South	Adjusted difference*	<HS	Not <HS	Adjusted difference*
Certified PCMH	44	41	−5 (−11, 1)	38	42	3 (−6, 13)	33	46†	**14 (9, 19)**	43	41	−4 (−10, 2)
Case manager coordinates patient care	54	50	−3 (−9, 3)	53	50	1 (−10, 11)	45	53†	**13 (8, 18)**	50	50	2 (−4, 8)
Practice uses EHR	91	90	−2 (−5, 2)	83	90	**9 (2, 16)**	88	91	3 (−1, 6)	88	91	3 (−1, 6)
EHR sends guideline/screening reminders	90	89	−3 (−6, 1)	88	89	4 (−5, 12)	87	90	**5 (0, 9)**	88	89	2 (−2, 7)
Exchange secure messages with patients via EHR	78	78	−1 (−6, 4)	67	78	**13 (2, 25)**	74	80	**6 (1, 10)**	73	79†	4 (−2, 10)
Patient follow-up occurs within 48 h of discharge	71	73	1 (−4, 7)	65	73	5 (−3, 14)	69	75	**6 (1, 12)**	74	72	2 (−3, 7)
Routinely sends reminders for preventive and followup care	92	90	−4 (−8, 1)	84	90	2 (−4, 8)	88	91	**6 (2, 10)**	90	90	−1 (−5, 2)
In-house x-ray capability	30	33	3 (−3, 9)	35	32	9 (−3, 21)	34	32†	−5 (−12, 3)	27	35†	−1 (−6, 4)
Same-day appointment availability	95	96	−1 (−3, 2)	94	96	0 (−6, 6)	94	97†	**5 (2, 7)**	96	96	1 (−2, 3)

*Absolute difference (95% confidence interval). The adjusted difference is adjusted for all variables in Table 1, except the variable of interest
†Unadjusted difference is significant at $p < 0.05$
Bold: adjusted difference is significant at $p < 0.05$
EHR, electronic health record; HS, high school; PCMH, patient-centered medical home

Forty-six percent and 37% of patients were cared for at primary care practices that were part of multisite and multispecialty practices, respectively. About 25% of patients were served by solo practices, 53% by practices with 2–10 physicians, and 22% at practices with more than 10 physicians. Seventy-two percent were served at practices with at least one nurse practitioner or physician assistant.

Certified PCMH practices served 41% of patients, and practices using case managers to coordinate care served 51% of patients. EHRs were found in practices serving 90% of patients. Of this 90%, EHRs provided guideline/screening reminders for 88% and were able to send secure messages for 78%. Practices serving 72% of patients reported that a practice member would contact a patient discharged from the hospital within 48 h of discharge. Practices serving 95% of patients could provide same-day appointment availability. In-clinic x-ray capability was available to 34% of patients.

Forty-four percent of patients were served by practices that participated in a Medicare or private ACO, and a similar percentage of patients (46%) were seen at practices that participated in at least one capitated contract. Practices serving 74% of patients paid physicians a base salary.

Disparities in Practice Capabilities

Patients in the South were served at practices with fewer capabilities (Table 3). For example, 33% of patients in the South were served at PCMHs, compared to 46% outside the South (adjusted difference, 14% [95% CI, 9% to 19%]). Practices in the South also used case managers less frequently (adjusted difference, 13% [95% CI, 8% to 18%]), had lower use of EHR reminders (adjusted difference, 5% [95% CI, 0% to 9%]) and messaging (adjusted difference, 6% [95% CI, 1% to 10%]), and less commonly sent reminders for preventive and follow-up care (adjusted difference, 6% [95% CI, 2% to 10%]) or provided same-day appointment availability (adjusted difference, 5% [95% CI, 2% to 7%]).

Uninsured patients were less likely to be served at a practice that used an EHR (83% vs. 90%; adjusted difference, 9% [95% CI, 2% to 16%]) and that exchanged secure messages with patients (67% vs. 78%; adjusted difference, 13% [95% CI, 2% to 25%]).

We found no significant differences in practice capabilities among practices serving primary care patients who were black or had less than a high school education. We also observed no differences in characteristics among practices serving children versus adults.

DISCUSSION

Despite the prevailing notion that practice capabilities are lagging and practices are merging into larger practice organizations or being purchased by health systems and hospitals, we demonstrate in this nationally representative sample that most patients are served by primary care practices that are

independently owned, and almost all have implemented EHRs. A large minority are certified PCMHs and participate in innovative payment models. Disparities in nearly all practice capabilities were evident for patients in the South (where 36% of visits occurred) and, to a lesser degree, for uninsured patients, but not for blacks, those with less than a high school education, or children.

This 2015 snapshot of United States primary care demonstrates a system that has made important strides but still has more to do before providing truly comprehensive care.[21,22] About one in five Americans cannot exchange secure messages with their clinician, two in three cannot obtain imaging in the office, and about half lack access to case management within primary care. Some of these shortcomings may explain why primary care faces stiff competition from less traditional sites of care such as urgent care clinics and retail clinics.[23]

Our findings build on prior surveys and provide updated information about the current practice context. The most comparable nationally representative data available on practice organization and capability comes from the National Ambulatory Medical Care Survey (NAMCS), although it reports capabilities by visit, not on a population basis of those who made a visit, and reports on all visits, not only those to primary care.[24] In 2012, 11% of visits occurred in practices of 11 or more physicians; we found that 22% of patients in 2015 were cared for in practices that had 11 or more physicians. NAMCS found that only 18% of visits occurred at certified PCMHs in 2012; we found that 41% of primary care patients were served by PCMHs. NAMCS also reports that 78% of visits used an EHR in 2012; our data suggest that practices used EHRs for 90% of patients. Data on ACO participation from the Medscape Physician Compensation Report suggests that 33% of physicians participated in ACOs, compared to our finding that practices participating in ACOs served 44% of patients.[25] Data from Physician Compare based on the Medicare Provider Enrollment, Chain, and Ownership System may differ somewhat from our findings. In 2015, Muhlestein and Smith found that only 19% of primary care physicians practiced in solo or two-person practices, compared to our finding that solo practitioners served 25% of primary care patients.[26] However, their unit of analysis was the practice, not the patient, and their data only reflected primary care physicians in Physician Compare, not the nation's primary care physicians.

Our study has limitations. First, respondents varied among practices, and some may not have had full knowledge of all aspects of the practice. Second, the MOS has no prior data for comparison. Other large surveys such as NAMCS may not be directly comparable due to sampling of visits, not patients. Neither publicly report practice-level measures. Third, when examining disparities in practice capabilities, some of our samples were likely too small. Fourth, residual confounding may exist between potential patient disparities and practice characteristics. Fifth, we report on in-office x-ray capabilities,

but some practices might have had ready access to x-ray in the same or a nearby building.

CONCLUSIONS

Primary care patients were served by mostly independently owned and small practices that employed health information technology, had patient-facing capabilities, and undertook innovative payment models. Patients in the South had access to practices with fewer capabilities than those in the rest of the country; future studies should examine how these gaps affect outcomes and should target improvements in the South. Future work should also assess changes over time as MACRA begins to impact the primary care landscape.

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