What Factors Are Associated With Medicaid Patients' Use of Health Centers?

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Abstract

Objective: To identify patient and neighborhood factors associated with health center (HC) use. **Methods:** A cross-sectional study of Medicaid fee-for-service claims in 2009 comparing HC users and nonusers. **Results:** Dually eligible patients (odds ratio [OR] 95% CI = [0.60, 0.61]) and those with high chronic disease burden (OR 95% CI = [0.73, 0.74]) had lower odds of HC use. Temporary Assistance for Needy Families participants (OR 95% CI = [1.20, 1.24]), black (OR 95% CI = [1.33, 1.36]) and Hispanic (OR 95% CI = [1.22, 1.25]) beneficiaries had higher odds. Local HC presence predicted higher HC use (OR 95% CI = [2.63, 2.70]). **Conclusion:** Findings may be useful in steering HC policies affecting critical access for Medicaid beneficiaries.

Keywords

access to care, community health, community health centers, primary care, patient-centeredness

Introduction

Ensuring adequate access to primary care services has been a long-standing concern of the Medicaid program.[1] Recently, this concern heightened as Medicaid coverage expanded under the Affordable Care Act (ACA), potentially worsening the balance of supply and demand for primary care services. Even if the ACA is repealed or modified, state Medicaid programs will continue to face the critical policy question of how to ensure Medicaid enrollees have access to primary care providers.

Federally funded community health centers (HCs) provide important access to primary care for Medicaid patients. HCs serve an underserved area or population, offer a sliding fee scale and meet a range of operating and reporting requirements designed to ensure high-quality care. In exchange, they receive grant funding under the Public Health Service Act.[2] Nationally, HCs provide primary care for 1 in 7 Medicaid enrollees.[3]

Despite the importance of HCs for Medicaid enrollees, previous studies have focused on determinants of HC use for the population overall without disaggregation by payer. As a result, we know relatively little about what factors are associated with Medicaid enrollees' use of HCs. To the extent that source of primary care determines quality of care and health care costs, it is important for Medicaid programs to examine the factors associated with enrollee choice of primary care setting to forecast and plan for the future demand for primary care.

Another motivation to understand the factors driving HC use among Medicaid patients is to inform comparisons of HC and non-HC patients. A number of studies have compared quality and cost of care at HCs compared to non-HCs[4,5]; however, there is little quantitative study of the factors that are associated with relatively high or low HC use. By understanding the factors associated with HC use, we can improve matching and controls in these comparison studies.

Given the lack of previous study in this area, we described variation in Medicaid patient use of HCs in a sample of 13 US states in the year 2009 and identified factors associated with a Medicaid patient's use of HCs for their primary care.

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Table 1. Conceptual Model for Factors Associated with Medicaid Patient Health Center Use.

	Concept	Measure	Data
Neighborhood characteristics	Capacity	Total number of visits by HC	UDS 2009
	Alternatives	% PCPs accept new Medicaid patients	Decker 2011
		Population density (indicated by MSA)	OWCP 2013
Patient characteristics	Proximity	No. of FQHCs in PCSA	Medicaid MAX 2009
		Patient age	
	Demographics	Patient sex	Medicaid MAX 2009
		Patient race/ethnicity	
	Disease burden	Patient diagnostic codes	Medicaid MAX 2009
	Socioeconomics	Median household income	Medicaid MAX 2009
		Medicaid eligibility class	

Abbreviations: HC, health center; PCP, primary care physician; FQHC, federally qualified health center; MSA, metropolitan statistical area; PCSA, primary care service area; UDS, Uniform Data System; OWCP, Office of Workers' Compensation Programs.

Literature Review

Existing work provides some descriptive guidance with regard to HC use, describing both demographic and socioeconomic factors associated with HC use as well as patient survey results. One summary of the 2006 National Ambulatory Medical Care Survey describes significant differences between HC and non-HC users: HC patients were more likely to be younger, minority, and from low-income, low-education communities. Within this study, Medicaid patients comprised 50% of the HC sample and only 13.6% of the private office sample.[6] Other studies have been survey based, as one study conducted in Massachussetts in 2009 found that affordability and convenience were more likely to be cited by HC patients as their reasons for HC use compared with inability to access health care elsewhere.[7]

To say that HC users differ from non-HC users, however, does not directly address whether Medicaid enrollees who choose to use HCs are different in important ways from other Medicaid recipients. A 2002 study using the Community Health Center User Survey and National Health Interview Survey documents some differences between Medicaid patients by care setting type. Compared with non-HC users, Medicaid HC users were more likely to have incomes <100% of the federal poverty level and less likely to be disabled. In contrast to the payer-aggregated comparison above, they did not find that HC patients were significantly younger on average or more likely to be members of a racial or ethnic minority.[8,9] Among Medicaid users, the study reported a higher likelihood of any visit to a general practitioner, OB/GYN, mental health provider, nurse practitioner or vision care provider for HC users compared with non-HC users. Medicaid HC users were also more likely to report having a regular source of care.

In contrast to this study, which conducted a direct cross-tabulation between groups, we examine a more recent dataset for factors predicting HC use at the patient and neighborhood levels. Because HC use is our primary outcome of interest, we are also able to provide more a substantive discussion regarding the multifactorial nature of setting choice within this target population.

One additional consideration is the impact of such work on the comparison literature. A number of studies have compared the quality and cost of care for Medicaid beneficiaries at HCs compared to non-HC using myriad outcomes such as emergency department use, inpatient hospitalization and ambulatory sensitive care use.[10-13] To the extent that some care setting selection is systematic and unobserved by control variables, estimates from these efforts may be biased. Thus, our work can also inform comparison group construction within this context.

Methods

Conceptual Framework

Medicaid patients may seek primary care from a range of providers such as a primary care physician's office, hospital outpatient department, HC, or emergency department. This setting choice may depend on a variety of factors including health status, preference, relative costs, and ability to pay. Additionally, setting choice may be constrained by provider acceptance or density. A summary of factors is given in Table 1.

Data Sources

We obtained 2009 Medicaid claims in the form of the MAX files for 13 states based on availability: Alabama, California, Colorado, Connecticut, Florida, Iowa, Illinois, Mississippi, Montana, North Carolina, Vermont, Texas, and West Virginia. We extracted independent variables from the Dartmouth Atlas of Healthcare 2007, Kaiser Family Foundation (KFF) 2012, Office of Workers' Compensation Programs (OWCP) and the Uniform Data System (UDS) 2009.

Independent Variables

We included a range of patient and neighborhood-level characteristics in our model. Most were included based on their association with HC use in previous studies (Table 1).

Patient characteristics included were indicators for female sex, eligibility category, number of months eligible, Temporary Assistance for Needy Families (TANF) participation, and restricted benefits status. Eligibility categories included dual-eligibility for Medicare and Medicaid, eligibility based on receipt of cash assistance, medical need, eligibility by state-dependent income cutoff (poverty), age, disability receipt and other. Indicators were included for race/ethnicity categories of African American, Asian, Hispanic, other and unknown.

The Chronic Illness and Disability Payment System (CDPS) is a claims-based risk adjustment scheme containing chronic disease measures. We used 72 of the CDPS binary diagnosis variables and index the CDPS score such that a value of 1.0 reflects a patient with predicted average expenditure at the Medicaid population mean. Subsequently, we stratify patients into high, medium and low risk based on CDPS disease burden. CDPS weights were recoded such that individuals with weights 1.5 or higher were categorized as high risk and weights less than 0.4 were categorized as low risk in accordance with literary precedent.[13]

Metropolitan statistical area (MSA) is included to reflect population density which scales nonlinearly with provider density.[14] Primary care service area (PCSA)–level characteristics of median household income, number of HCs in each PCSA, and PCSA total population were obtained from the Dartmouth Atlas of Healthcare (2007). HC medical capacity data by PCSA was obtained from the Uniform Data System (2009).

Dependent Variables

The outcome variable is an indicator for whether the patient received at least 50% of their primary care for the year 2009 from a HC, conditional on having positive primary care visits.[4]

Analyses

We drop Medicaid enrollees with missing eligibility data, demonstration or long-term care participation, no primary care visits, age less than 18 years, or deceased. Patients whose ZIP code had no reported HC patients of any insurance status were not deemed to have a plausible choice to access HCs and were excluded.

Two versions of the logistic regression were run: one using the 72 individual diagnostic criteria included in CDPS and one using only the CDPS risk group. Only the latter regression is displayed. Differences are noted in the Results section.

Results

Our final sample contained 3 063 887 observations across 13 states and is described in Table 2.

Patient-Level Findings

At the patient level, a Medicaid patient's receipt of Medicare, TANF participation, race, ethnicity, and chronic disease burden were particularly important patient-level predictors of preferential primary care utilization at HCs (Table 3). Dual-eligibility with Medicare decreased the odds that a patient would be an HC patient, odds ratio (OR) [95% CI] = 0.60 [0.60, 0.61]. TANF program participation was associated with increased in the odds, OR = 1.22 [1.19, 1.24]. Black race or Hispanic ethnicity were associated with OR = 1.35 [1.33, 1.36] and OR = 1.23 [1.22, 1.25] of being an HC patient, respectively. Compared with the reference group of low chronic disease burden patients, patients with medium burden had mildly lower odds of HC use OR = 0.93 [0.93, 0.94] and patients with the highest burden had considerably lower odds OR = 0.74 [0.73, 0.74].

Neighborhood-Level Findings

The distribution of HC use by PCSA shows significant variation across the 3987 PCSAs included in our sample. While a small number of PCSAs demonstrate a high use of HCs per PCSA Medicaid population, the median PCSA sees only 1.6% of this population using HCs for a majority of their primary care. The mean percentage of Medicaid HC patients per PCSA was 10.6%.

The strongest predictor of HC use was the presence of an HC within the patient's primary care service area, OR [95% CI] = 2.66 [2.63, 2.70]. After the introduction of the first HC, however, additional HCs were not associated with higher utilization, OR = 1.02 [1.01, 1.02]. Furthermore, HC medical capacity alone did not seem to explain a particularly large share of the differences observed in HC utilization. The odds that a patient living in an MSA would use a HC for the majority of his or her primary care was markedly lower than for those living outside an MSA, OR = 0.61 [0.60, 0.61].

Discussion

Given the significant expansion in Medicaid and the large national investment in HC capacity that are expected to provide access for the newly insured under Medicaid, it will be critical to understand the extent of variation that exists in HC use by Medicaid patients and what factors may be associated with HC use. While some past studies have shown that HC users tend to have a higher disease burden and be of racial and ethnic minority groups, interpretation is confounded by differential insurance coverage for HC and non-HC users. We find that within a population of Medicaid fee for service

Table 2. Descriptive Statistics.[a]

	Non-HC patients		HC Patients	
Variable	Mean	SE	Mean	SE
Patient				
Dual-Eligible	0.458	<0.001	0.340	0.001
Elg Cash	0.617	<0.001	0.636	0.001
Elg MedNeed	0.134	<0.001	0.159	0.001
Elg Poverty	0.253	<0.001	0.215	0.001
Elg Other	0.132	<0.001	0.150	0.001
Elg Aged	0.227	<0.001	0.172	0.001
Elg Disability	0.448	<0.001	0.414	0.001
Months Eligible	10.383	0.002	10.158	0.005
TANF	0.030	<0.001	0.045	<0.001
Restricted Bfts	0.135	<0.001	0.121	0.001
Age	49.097	0.013	45.806	0.032
Delivery Code	0.068	<0.001	0.071	<0.001
CDPS	1.872	<0.001	1.810	0.001
Female	0.680	<0.001	0.676	0.001
White	0.420	<0.001	0.362	0.001
Black	0.181	<0.001	0.189	0.001
Asian	0.039	<0.001	0.040	<0.001
Hispanic	0.231	<0.001	0.284	0.001
Other race	0.044	<0.001	0.043	<0.001
Unk race	0.086	<0.001	0.082	<0.001
PCSA				
Has HC	0.677	<0.001	0.873	0.001
No. of HCs	3.083	0.003	4.189	0.007
Med HH Income	50026	9	51546	27
HC Med Capacity	53353	58	85635	185
MSA	0.776	<0.001	0.802	0.001

	No. of Non-HC Patients (%)	No. of HC Patients (%)
Alabama	68942 (93)	5513 (7)
California	1076432 (85)	182937 (15)
Colorado	114192 (85)	20789 (15)
Connecticut	71029 (79)	19433 (21)
Florida	366965 (93)	25651 (7)
Iowa	76019 (92)	6908 (8)
Illinois	203761 (87)	29136 (13)
Mississippi	174146 (92)	14469 (8)
Montana	13654 (100)	62 (0)
North Carolina	151521 (95)	7810 (5)
Texas	270068 (94)	18666 (6)
Vermont	25745 (85)	4652 (15)
West Virginia	94289 (82)	21098 (18)
Total observations	2706763 (88)	357124 (12)

Abbreviations: HC, health center; PCSA, primary care service area; HH, household; MSA, metropolitan statistical area; TANF, Temporary Assistance for Needy Families; CDPS, Chronic Illness and Disability Payment System.
[a]HC patient is defined as a Medicaid patient with nonzero primary care visits in the year 2009 who received at least one-half of that primary care at an identified HC. Elg indicates that the patient's Medicaid eligibility category; that is, the patient is eligible for Medicaid based on cash, medical need, poverty, age, disability, or otherwise. Restricted Bfts indicates that the patient received only restricted benefits. Unk race indicates unknown race. HC is a health center. Med HH income is the median household income for the PCSA. HC Med Capacity is the medical capacity of HCs in the PCSA. Number Obs indicates the number of observations for each state by HC patient status.

Table 3. Logit, Patient-, and PCSA-Level Covariates of FQHC Use.[a]

Variable	Point Est (OR)	95% CI	
Patient: Dual-Eligible	0.606	0.599	0.612
Patient: Elg Cash	1.064	1.052	1.077
Patient: Elg MedNeed	1.042	1.029	1.055
Patient: Elg Poverty	1.062	1.048	1.076
Patient: Elg Other	1.026	1.014	1.039
Patient: Elg Disability	0.922	0.915	0.93
Patient: Months Eligible	0.991	0.989	0.992
Patient: TANF	1.217	1.194	1.241
Patient: Restricted Bfts	1.062	1.048	1.077
Patient: Delivery code	0.927	0.912	0.942
Patient: Age	0.998	0.997	0.998
Patient: Female	0.958	0.95	0.966
Patient: Black	1.346	1.331	1.361
Patient: Asian	0.935	0.917	0.954
Patient: Hispanic	1.234	1.221	1.246
Patient: Other race	0.903	0.886	0.921
Patient: Unk race	1.032	1.017	1.047
Patient: CDPS Med Risk	0.934	0.926	0.942
Patient: CDPS High Risk	0.736	0.728	0.744
PCSA: Has HC	2.663	2.632	2.695
PCSA: No. of HCs	1.015	1.014	1.015
PCSA: Log(Med HH Inc)	1.415	1.393	1.438
PCSA: Log(HC Med Cap)	1.009	1.009	1.009
PCSA: MSA	0.607	0.6	0.614
State: Alabama	0.695	0.673	0.717
State: California	1.073	1.057	1.089
State: Colorado	0.919	0.899	0.939
State: Connecticut	1.991	1.948	2.034
State: Florida	0.406	0.398	0.414
State: Iowa	0.65	0.632	0.669
State: Mississippi	0.504	0.492	0.516
State: Montana	0.031	0.024	0.04
State: North Carolina	0.422	0.41	0.433
State: Texas	0.38	0.372	0.388
State: Vermont	1.202	1.16	1.245
State: West Virginia	1.428	1.397	1.459

Abbreviations: FQHC, federally qualified health center; PCSA, primary care service area; MSA, metropolitan statistical area; HH, household; TANF, Temporary Assistance for Needy Families; CDPS, Chronic Illness and Disability Payment System.
[a]Low CDPS risk is the excluded group. Indicators included for male sex and non-exclusive race/ethnicity categories of black, Asian, Hispanic, other, and unknown. White females are the excluded group. In estimation of state fixed effects, Illinois is excluded. Here Elg indicates that the patient's Medicaid eligibility category; that is, the patient is eligible for Medicaid based on cash, medical need, poverty, age, disability, or otherwise. Restricted Bfts indicates that the patient received only restricted benefits. Unk race indicates unknown race. HC is a health center. Med HH income is the median household income for the PCSA. HC Med Capacity is the medical capacity of HCs in the PCSA.

patients in 13 US states, HC use varied significantly by important individual and neighborhood (ie, PCSA) characteristics.

Individual-level findings suggest that individuals with certain characteristics seek care preferentially at HCs. Aspects of program eligibility, patient demographics, and residence in a metropolitan area were all associated with HC use. Full dual-eligibility for Medicare and higher disease burden were associated with lower likelihood of HC use. Since HCs are more likely to be community-based and focused on basic and primary care, it may be that sicker and dual-eligible patients seek out care from primary care providers affiliated with hospitals or specialty care providers.

Black, Hispanic, and patients with TANF preferentially seek care at HCs. Two characteristics of HCs may be relevant to this finding: HCs have a long history in cultural competence and HC boards of directors are comprised of community HC users. Additionally, HCs often provide services such as transportation assistance, translation, and benefits counseling that may appeal to those in greater financial need.

With respect to the supply of HC services, we observe that the presence of at least one HC within a PCSA is an important predictor of HC use, but that either the presence of additional HCs located within the same PCSA or higher HC capacity are not associated with substantially higher use rates among Medicaid patients. These findings may outline the inherent trade-offs between potential economies of scale in HC provision and optimal access.

The availability of private providers for Medicaid patients has been an important concern regarding the expansion of Medicaid due to the ACA[15]; however, this concern may be underaddressed in the literature regarding HC demand. The index of medical underservice used by the Health Resources and Services Administration to designate medically underserved areas currently takes into account the ratio of primary medical care physicians per population, infant mortality rates, population below poverty level, and population aged older than 65 years.[16] Although these parameters capture measures of medical need at large, we wish to reiterate the importance of existing agency efforts to individually assess additional de facto demand parameters relevant to local markets: for example, the higher availability of private practitioners accepting Medicare may result in lower HC demand in areas where the relative proportion of dual-eligible patients in high. We hope this article will facilitate future work at the intersection of these 2 literatures.

This study has several important limitations. First, we identify some factors that may be associated with differential HC use rates; however, the cross-sectional nature of the data limits our discrimatory ability. Second, our study uses data from Medicaid claims in 2009 and the patterns we observe in this period may not generalize to the current health care environment. However, a benefit of our 2009 data year is that it allows the study of a larger dataset and number of states that would be more difficult today, since the growth in idiosyncratic state-specific Medicaid Managed Care has limited the usefulness of State Medicaid claims databases for research purposes. Finally, although we attempt to control for special eligibility by use of indicator variables for eligibility category, it is a fair criticism that the preferences or behaviors of the Medicaid population studied here does not necessarily reflect those of current Medicaid populations.

Conclusion

In conclusion, we identified factors associated with use of HCs for primary care among Medicaid fee-for-service patients in 13 states in 2009. Consistent with previous studies, we found that patients who were black, Hispanic, or had significant financial need preferentially sought primary care at HCs. Our observation of this pattern among a population restricted to Medicaid fee-for-service patients reinforces the important role that HCs play in providing care for minority and vulnerable populations. In contrast to previous literature, we found that among Medicaid patients, those with a higher chronic disease burden were less likely to use HCs.

Prior studies of HC use have been all-payer studies where individual correlates of HC use are not disentangled from Medicaid enrollment. Thus, our study provides important intuition about the types of patients who tend to seek care in HCs, after controlling for the confounder of payer type. We also found that HC presence in a PCSA was associated with higher HC use, but that additional HCs or HC medical capacity within the same PCSA were not associated with meaningfully higher rates of HC use. As policy makers seek to provide points of primary care access for Medicaid patients, examination of primary care environment remains essential to the effective allocation of HC resources. As Medicaid expands selectively, it will be important to recognize changes in access to primary care by geographic region and meet the needs of this growing patient population.

References

1. Rhodes K. Taking the mystery out of 'mystery shopper' studies. *N Engl J Med*. 2011;365:484-486.

2. Social Security Act. Payment to hospitals for inpatient hospital services. Social Security Act Section 1886. Payment to Hospitals for Inpatient Hospital Services. https://www.ssa.gov/OP_Home/ssact/title18/1886.htm. Accessed: July 6, 2016.

3. National Association of Community Health Centers. *Health Centers and Medicaid Fact Sheet*. Bethesda, MD: National Association of Community Health Centers; 2014.

4. Mukamel DB, White LM, Nocon RS, et al. Comparing the cost of caring for Medicare beneficiaries in federally funded health centers to other care settings. *Health Serv Res*. 2016;51: 625-644.

5. Gurewich D, Tyo KR, Zhu J, Shepard DS. Comparative performance of community health centers and other usual sources of primary care. *J Ambul Care Manage*. 2011;34:380-390.

6. Shi L, Lebrun LA, Tsai J, Zhu J. Characteristics of ambulatory care patients and services: a comparison of community health centers and physicians' offices. *J Health Care Poor Underserved*. 2010;21:1169-1183.

7. Ku L, Jones E, Shin P, Byrne FR, Long SK. Safety-net providers after health care reform: lessons from Massachusetts. *Arch Intern Med*. 2011;171:1379-1384.

8. Shi LD, Stevens GD, Politzer RMS. Access to care for U.S. health center patients and patients nationally: how do the most vulnerable populations fare? *Med Care*. 2007;45:206-213.

9. Shi L, Stevens GD. The role of community health centers in delivering primary care to the underserved: experiences of the uninsured and Medicaid insured. *J Ambul Care Manage*. 2007;30:159-170.

10. Rothkopf J, Brookler K, Wadhwa S, Sajovetz M. Medicaid patients seen at federally qualified health centers use hospital services less than those seen by private providers. *Health Aff (Millwood)*. 2011;30:1335-1342.

11. Falik M, Needleman J, Wells BL, Korb JM. Ambulatory care sensitive hospitalizations and emergency visits: experiences of Medicaid patients using federally qualified health centers. *Med Care*. 2001;39:551-561.

12. Falik M, Needleman J, Herbert R, Wells B, Politzer R, Benedict MB. Comparative effectiveness of health centers as regular source of care: application of sentinel ACSC events as performance measures. *J Ambul Care Manage*. 2006;29: 24-35.

13. Nocon RS, Lee SM, Sharma R, et al. Health care use and spending for Medicaid enrollees in federally qualified health centers versus other primary care settings. *Am J Public Health*. 2016;106:1981-1989.

14. Newhouse JP, Williams AP, Bennett BW, Schwartz WB. Does the geographical distribution of physicians reflect market failure? *Bell J Econ*. 1982;13:493-505.

15. Decker SL. Two-thirds of primary care physicians accepted new Medicaid patients in 2011-12: a baseline to measure future acceptance rates. *Health Aff (Millwood)*. 2013;32: 1183-1187.

16. Health Resources and Services Administration. Medically underserved areas/populations. 1995. http://www.hrsa.gov/shortage/mua/. Accessed July 6, 2016.

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