Preventive Service Gains from First Contact Access in the Primary Care Home

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Abstract

Background—The patient-centered medical home (PCMH) concept has recently garnered national attention as a means of improving the quality of primary care. Preventive services are one area where the PCMH is hoped to achieve gains, though there has been limited exploration of PCMH characteristics that can assist with practice redesign.

Purpose—To examine whether first-contact access characteristics of a medical home (e.g., availability of appointments or advice by telephone) confer additional benefit in the receipt of preventive services for individuals already in a longitudinal relationship with a usual primary care physician at a site of care.

Methods—Secondary analysis examining data from 5,507 insured adults with a usual physician who participated in the 2003–2006 round of the Wisconsin Longitudinal Survey. Using logistic

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regression, we calculated the odds of receiving each preventive service, comparing individuals who had first-contact access to those without first-contact access.

Results—Eighteen percent of the sample received care with first-contact access. In multivariable analyses, after adjustment, individuals who had first-contact access had higher odds of having received a prostate exam (OR 1.62; 95% CI 1.20–2.18), a flu shot (OR 1.36; 95% CI 1.01–1.82) and a cholesterol test (OR 1.36; 95% CI 1.01–1.82) in the past year. There was no significant difference in receipt of mammograms (OR 1.23; 95% CI 0.94–1.61).

Conclusions—In the primary care home, first-contact accessibility adds benefit beyond continuity of care with a physician in improving receipt of preventive services. Amid increasing primary care demands and finite resources to translate the PCMH into clinic settings there is need for further studies of the interplay between specific PCMH principles and how they perform in practice.

Keywords

INTRODUCTION

The patient-centered medical home (PCMH) concept has garnered national attention as a means of improving the quality of primary care[1–4] although its definition is continually evolving.[5, 6] Preventive services are one area where the PCMH is hoped to achieve gains.[7] In the context of modern primary care demands and limited primary care resources, providing optimal preventive care to all patients is extremely difficult.[8, 9] It has been estimated that 7.4 hours each day would be required for primary care physicians to deliver all guideline recommended preventive care.[10] Despite enormous investment, efforts to date which aim to improve the delivery of preventive services have not shown sustained improvement.[8, 11, 12] Yet increasing the rate of preventive services delivery has significant potential to improve mortality[13, 14] and the one study published to date found that patients with primary care delivered according to PCMH principles had increased receipt of preventive services.[15]

While numerous demonstrations currently are underway to examine the medical home's efficacy,[16] practices striving for PCMH status are faced with investing in the difficult task of redesigning the care they provide without a clear sense of expected return. While the PCMH concept centers around executing several key primary care functions, it is unclear which medical home characteristics should be given priority in practice redesign, as requirements for PCMH status vary by region and by payer. For example, continuity with a personal provider is a required criterion only in the Center for Medicaid Services' version of the National Center for Quality Assurance (NCQA) medical home guidelines,[17] but not other (NCQA) guidelines.[7] Therefore, there is need for further research to determine what specific aspects of the PCMH provide benefit, and in what areas they have the potential to do so.

Although two characteristics of the PCMH, first-contact access[18, 19] (defined as the availability and accessibility of services,[15] e.g., availability of appointments or advice by telephone) and continuity of care with a physician[20–23] have each independently been associated with improved receipt of preventive care, little is known about the impact of first-contact access on receipt of preventive services among patients with a high degree of continuity of care. Prior studies also have focused more on general access characteristics such as insurance status and having a usual source of care[24–28] rather than characteristics more specific to first-contact access at a particular clinic, such as the availability of

appointments or advice by telephone. In addition, these studies tend not to measure health care access as it is perceived by patients, although this perception is important for developing an understanding of the patient-centered portion of the PCMH. Although measures such as insurance and appointment availability are markers of a patient's potential to access care, perceptions of access also are known to influence the location and pattern of health care service use.[19, 29–32] The only study that has examined the association between PCMH characteristics (including first-contact care and continuity) and preventive care investigated only two characteristics of perceived access in a practice, recruited patients as they were accessing care in a primary care clinic, and did not examine the receipt of individual preventive services.[15] Yet examining these services individually and in a community-based sample is important given that access factors may vary according to the type of preventive service. For example, the access factors influencing the receipt of mammograms, which patients often schedule directly, may be very different from factors influencing receipt of a cholesterol test, which physicians must order.[33]

This study was designed to increase our understanding of whether the PCMH characteristic of first-contact access has a positive influence on the receipt of individual preventive services above and beyond the impact of having a high degree of continuity with a physician. To examine this question, we focus our analysis on a sample of insured older adults who reported at least 2 years of continuity with a primary care physician. Specifically, we examined the additional effect of first-contact access on the receipt of four preventive health measures–cholesterol screening, influenza vaccination, mammograms and prostate screening. We expect that the receipt of cholesterol screening, influenza vaccination and prostate screening would be additionally increased by first-contact access, as these are preventive services received in a primary care office. Conversely, we expect to see no effect of first-contact access on mammograms, which are generally scheduled in other locations.

METHODS

Sample

The sample was defined within the Wisconsin Longitudinal Study (WLS), a cohort study of a one-third random sample (N=10,317) of individuals who graduated from Wisconsin high schools in the spring of 1957, and 8,778 of their randomly-selected siblings. Data were from the 2003–2006 rounds of the combined telephone and mail survey. Among graduate survivors, the response rate for this survey was 80%, and for siblings the response rate was 78%. In order to include only those respondents who had evidence of an established continuity of care relationship with an individual primary care physician, the sample was further restricted. We excluded respondents who reported no visits to a health professional in the past 12 months (7%) or who were uninsured (3%). We included respondents who reported usually seeing the same health professional for at least two years when they went to their usual medical facility, where this health professional was a General/Family Practice or Internal Medicine physician. The final sample size was 5,507, consisting of 69% of the sample who responded to the survey in 2004 to 2006. This study was approved by the Institutional Review Board at the participating university.

Variables/Measures

The primary dependent variables were patient report of preventive services in the last year as assessed by response to yes/no questions that asked "In the last 12 months, have you had (1) a cholesterol test; (2) a flu shot; (3) a mammogram (females); and/or (4) a prostate exam (males)?" Self-report of the preventive services studied generally has been found to have high sensitivity and lower specificity when compared to the medical record.[34, 35] Guidelines in place at the time of the study[36–39] were used to determine the appropriate sample for

receipt of each preventive service. Specifically, we looked at the receipt of cholesterol testing in those with atherosclerotic vascular disease conditions (high blood pressure, coronary heart disease/myocardial infarction, circulation problems, stroke, high cholesterol) and diabetes. We examined the receipt of influenza vaccination in those aged 50 or older. We limited the sample for mammogram screening to women aged 40 or older and prostate screening to men aged 50 or older.

First-contact accessibility was assessed using eight items from the validated access to care subscale of the Group Health Association of America Consumer Satisfaction Survey (CSS)[40] as shown in Table 1. These items were chosen based on their similarity to items used in prior medical home literature.[41] Response categories were excellent, very good, good, fair or poor. Those answering very good or excellent to all eight questions were considered to have highly rated first-contact accessibility.

Covariates included in all models were age, gender, marital status, education, total household income, type of health insurance, self-rated health, and a count of chronic conditions.

Statistical analysis

Data were analyzed using Stata version 11.0 in 2010.[42] Initial analysis included comparison of variable means and percentages between respondents with and without very good to excellent first-contact accessibility using ANOVA and chi-square tests. Differences were considered statistically significant at a value of $p < 0.05$. Using multivariable logistic regression, adjusted odds ratios and 95% confidence intervals were calculated for each preventive service. Following estimation, adjusted average predicted probabilities were calculated. Confidence intervals were calculated using a robust estimate of the variance that allowed for clustering of siblings within families. We also performed a subanalysis comparing unadjusted and adjusted odds ratios and 95% confidence intervals for each preventive service for patients seen by family practice/general practice physicians (N=3632) and internal medicine physicians (N=1875) to assess the differential effect first-contact access may have on preventive care receipt by physician specialty.

RESULTS

Eighteen percent of the sample reported highly rated first-contact accessibility to their primary care clinic in addition to continuity of care with their primary care physician (Table 2). These individuals were older, more likely to be female, had a slightly lower mean number of chronic conditions and slightly higher self-rated health.

In the past 12 months, 83% of those eligible had received a mammogram, 78% had received a prostate exam, 90% had received a cholesterol test and 63% had received an influenza vaccination. In both unadjusted and adjusted analyses, individuals in this insured cohort with a continuity of care relationship with a primary care physician who also reported highly rated first-contact accessibility had higher odds of having received a prostate exam (aOR 1.62; 95% CI 1.20–2.18), and a flu shot (aOR1.36; 95% CI 1.16–1.59) in the past year (Table 3) as compared to those with a continuity relationship alone. The percentage receiving a prostate exam increased from 76% to 84%, and receipt of a flu shot increased from 61% to 68%. In adjusted analyses only, individuals who reported highly rated first-contact accessibility had higher odds of having received a cholesterol test (aOR 1.36; 95% CI 1.01–1.82). This percentage increased from 90% to 92%. There was no significant difference in receipt of mammograms (OR 1.23; 95% CI 0.94–1.61). There was no significant difference in the odds of receiving preventive services between patients seen by family practice/general practice and internal medicine physicians.

DISCUSSION

Our findings lend support to the national movement that is encouraging primary care practice redesign into patient-centered medical homes and highlights first contact access as a characteristic that predicts increases in most preventive services. In our study, the addition of first-contact access for patients who already had continuity of care with a primary care physician was associated with higher receipt of preventive services when compared to having continuity of care alone. Specifically, we found that patients who reported highly rated first-contact access to care had improved receipt of prostate exams, flu shots, and cholesterol tests as compared to those with continuity of care with a primary care physician alone. Rates of receipt of mammograms were not significantly different among those with highly rated first-contact access versus those without this additional PCMH characteristic.

Our study population, which consisted of 69% of the surviving original cohort who responded to the survey in 2003 to 2006, had relatively high rates of preventive service use as compared to the national population at the time of the study. For example, in the prior 12 months, 83% of our sample had received a mammogram, as compared to 77% nationally[43]; 78% had received a prostate exam, as compared to 50% nationally[44]; 90% had received a cholesterol test, as compared to 85–88%[45]; and 63% had received an influenza vaccination, as compared to 50% nationally.[46] Even in this relatively well-educated population with excellent continuity of care and high receipt of preventive services, the addition of first-contact accessibility increased the odds of individuals receiving flu shots, prostate exams and cholesterol screening. Although the increase in odds of preventive services receipt was small in some cases, when translated to national health indicators, these small increases have potentially large payoffs.

Our findings also have implications for the ongoing discussion regarding the relationship between continuity of care with a personal physician and access to care.[47–50] Continuity of care is difficult to achieve in open access models with part-time providers.[51, 52] There has been a shift away from personal continuity[53, 54] and an increase in primary care providers that practice part-time, though this may be offset by other strategies.[55] Our findings imply that provider continuity and access to care jointly benefit receipt of preventive services. This suggests that primary care office models that can balance these two areas and also develop advanced systems that can adapt to the changing demographics of the provider workforce are needed. In addition, further research is needed to explore how patients perceive first-contact access to their continuity physician in regards to receiving individual preventive services, and how this may vary according to different types of preventive services.

Similar to other studies that have examined the associations between receipt of preventive services and continuity of care,[21, 33] mammography receipt did not increase with first-contact access. One explanation is that the effects of first-contact access on preventive services may not extend beyond the point of care. Mammograms are the only service we examined generally not completed in the primary care office. Alternatively, the mammography screening rate in our population was quite high. Given mammogram receipt is dependent on provider and patient characteristics, and the logistics of another imaging site[11, 33] it may be difficult for primary care clinics to further improve this rate.

Despite strengths of this comprehensive data, these findings should be considered in light of several limitations. This sample represents individuals who attended Wisconsin high schools in the 1950s and therefore is limited in geographical and racial/ethnic diversity. However, WLS graduates are generally representative of non-Hispanic white women and men with a high school education, constituting approximately 67% of Americans aged 60 to 64.[56] We also restricted the sample to individuals with insurance and continuity of care in order to test

the additional effect of first-contact access on preventive service receipt. Therefore, our sample is not generalizable to all patients seen in primary care. Receipt of preventive services was measured using self-report, which when compared to the medical record has been found to be overestimated.[57–60] However, there is no reason to believe any estimation differences would be different for those with and without desirable first-contact accessibility. It is possible that individuals who received better preventive care were more likely to perceive access to care more positively. We used clinical preventive service guideline age cutoffs that were in place at the time of data collection, which have changed recently for certain preventive services. In particular, prostate cancer screening is no longer recommended for men over age seventy-five[61] and influenza vaccination is now recommended over the age of six months.[62] Annual prostate exam in the current clinical environment may be considered an example of overutilization. Lastly, influenza vaccination was available in public clinics and drug stores during the years of the study. Therefore, it is difficult to know if individuals received these immunizations in their primary care clinic. However, a principle of the medical home is that such care should be delivered and tracked through the primary care system, which will become increasingly important as accountable care organizations track and measure the delivery of high-quality care.

In conclusion, our findings suggest that first-contact accessibility adds benefit beyond continuity of care with a physician to improve receipt of preventive services in the primary care patient-centered medical home. Amid increasing primary care demands and limited primary care resources, studies examining the impact of specific components of the PCMH may help redesign efforts. There is need for further studies of the interplay between specific PCMH principles and how they perform in practice.

Acknowledgments

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Table 1

Items from the 2004–2006 Wisconsin Longitudinal Survey used to define desirable first-contact accessibility.

Thinking about your own health care, how would you rate...[*]

    The convenience of location of the doctor's office?

    The hours when the doctor's office is open?

    Arrangements for making appointments for medical care by phone?

    The length of time spent waiting at the office to see the doctor?

    The length of time you wait between making an appointment for routine care and the day of your visit?

    The availability of medical information or advice by phone?

    The ease of seeing the doctor of your choice?

    The amount of time you have with doctors and staff during a visit?

[*] Responses on a1–5 scale (poor, fair, good, very good, excellent), with a 4 or 5 needed on all items to qualify.

Table 2

Key characteristics of 2003–2006 respondents overall and by first-contact accessibility status (N=5507)*†‡¶

| | Overall population | | By first-contact accessibility status | | | | | |
| | | | With first- contact accessibility | | Without first- contact accessibility | | p-value |
	N	%	N	%	N	%	
First-contact accessibility status			967	18	4540	82	
Age							0.03
0–59	496	9	71	7	425	9	
60–64	2829	51	479	50	2350	52	
65–69	1677	30	314	32	1363	30	
70+	505	9	103	11	402	9	
Sex							0.02
Male	2567	47	417	43	2150	47	
Female	2940	53	550	57	2390	53	
Marital Status							0.20
Married	4429	80	790	82	3639	80	
Separated or divorced	470	9	70	7	400	9	
Widowed	411	7	79	8	332	7	
Never married	195	4	28	3	167	4	
Educational attainment							0.36
High school or less	2963	54	534	56	2429	54	
Some college	854	16	133	14	721	16	
College	807	15	149	16	658	15	
Post-graduate	831	15	145	15	686	15	
Total household income ($)							0.13
Less than $30,000	1015	18	197	20	818	18	
$30,000–$44,999	935	17	175	18	760	17	
$45,000–$59,999	823	15	155	16	668	15	
$60,000–$74,999	715	13	117	12	598	13	
Greater than $75,000	1781	32	287	30	1494	33	
Missing	238	4	36	4	202	4	

	Overall population		With first- contact accessibility		Without first- contact accessibility		p-value
By first-contact accessibility status	N	%	N	%	N	%	
Health insurance							0.06
Private	3071	56	503	52	2568	57	
Medicare and other private	1886	34	352	36	1534	34	
Medicare or other public	550	10	112	12	438	10	
Mean number of chronic conditions (SD)[§]		4.0 (2.5)		3.8 (2.4)		4.0 (2.5)	<0.01
Mean self-rated health (SD)[//]		3.7 (1.0)		3.9 (1.0)		3.7 (0.9)	<0.01

SD, standard deviation

[*] First-contact accessibility status defined as very good or excellent ratings for all of the following: convenience of doctor's location, hours of doctor's availability, phone appointment arrangements, office wait time, time between making appointment and visit, medical advice and information availability by phone, ease of seeing doctor of choice, and amount of visit time spent with doctors and staff.

[†] Values represent percents unless specified otherwise.

[‡] Sample consists of patients who have reported a continuity relationship with a Family Medicine or Internal Medicine Physician of at least 2 years.

[§] The following 22 chronic conditions were measured in this count: asthma, bronchitis/emphysema, serious back trouble, circulation problems, kidney/bladder problems, ulcer, allergies, multiple sclerosis, high blood pressure, diabetes, cancer, coronary heart disease/ myocardial infarction, stroke, arthritis, pain and stiffness in the joints, mental illness, chronic sinusitis, fibromyalgia, high cholesterol, irritable bowel syndrome, osteoporosis, and prostate problems.

[//] Self-rated health was measured by respondents on a 1-5 scale (poor, fair, good, very good, excellent)

[¶] Due to rounding, percents may not add to 100.

Table 3

Preventive services receipt for those with continuity of care comparing those with (N=967) and without (N=4540) first-contact accessibility, OR (95% CI) [*][†][‡]

	n/N (%)	Unadjusted		Adjusted	
		OR	95% CI	OR	95% CI
Cholesterol test					
With first-contact accessibility	657/714 (92)	1.29	(0.96, 1.73)	**1.36**	**(1.01, 1.82)**
Without first-contact accessibility	3053/3395 (90)	1.00		1.00	
Flu shot					
With first-contact accessibility	646/948 (68)	**1.35**	**(1.16, 1.57)**	**1.36**	**(1.16, 1.59)**
Without first-contact accessibility	2731/4451 (61)	1.00		1.00	
Prostate exam					
With first-contact accessibility	327/391 (84)	**1.58**	**(1.19, 2.11)**	**1.62**	**(1.2, 2.18)**
Without first-contact accessibility	1519/1990 (76)	1.00		1.00	
Mammogram					
With first-contact accessibility	464/542 (86)	1.24	(0.96, 1.62)	1.23	(0.94, 1.61)
Without first-contact accessibility	1943/2349 (83)	1.00		1.00	

[*] Adjusted for age, household income, education, marital status, gender, insurance type, chronic conditions count, and self-rated health.

[†] Bold type indicates significance at p < 0.05.

[‡] Sample consists of patients who have reported a continuity relationship with a Family Medicine or Internal Medicine Physician of at least 2 years.