ORIGINAL RESEARCH

Receipt of Diabetes Preventive Care Among Safety Net Patients Associated with Differing Levels of Insurance Coverage

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Background: Patients receive care in safety net clinics regardless of insurance status; however, receipt of diabetes preventive care might vary among patients with differing levels of insurance continuity.

Methods: In a retrospective cohort study, using electronic health record data from adults with diabetes who were receiving care in 50 safety net clinics in Oregon in 2005 to 2007, we conducted adjusted logistic regressions to model the associations between amount of time with insurance and rates of receipt of lipid screening, influenza vaccination, nephropathy screening (urine microalbumin), and HbA1c (glycohemoglobin) screening.

Results: Of 3384 adults with diabetes, 711 were partially insured (covered 1% to 99% of the 3-year study period), 909 had no coverage, and 1764 were continuously insured. In adjusted models, persons with partial or no coverage during the 3-year study period were less likely to receive most preventive services compared with those with continuous coverage. We found no evidence of a dose-response relationship with increasing duration of coverage, nor of a threshold amount of partial coverage, associated with better receipt of care.

Conclusions: Safety net clinic patients need both access to primary care and continuous insurance. All patients with partial coverage, regardless of the extent of time with insurance, had lower odds of receiving preventive care. (J Am Board Fam Med 2012;25:42–49.)

Keywords: Diabetes, Electronic Medical Records, Health Insurance, Health Policy, Medically Uninsured

Patients in safety net clinic settings receive care regardless of insurance status.[1,2] However, continuity of insurance coverage can make a difference in whether optimal care is received. A recent study found that, among patients with diabetes attending Federally Qualified Health Centers (FQHCs) in Oregon in 2005, those with insurance coverage were more likely to receive recommended preventive care than those without coverage.[3] These analyses also showed that receipt of preventive care

services was lower among those who were insured for part of the year, compared with those with insurance coverage for the whole year. Little is known, however, about whether a threshold of partial coverage exists above which partially covered patients' care receipt is similar to receipt among those continuously insured.

The present analyses sought to determine if amount of time with insurance coverage had a dose-response relationship with the likelihood of receiving diabetes preventive care over a 3-year study period (2005–2007). In this retrospective cohort study, conducted in a population of safety net clinic patients with diabetes, we evaluated receipt of 4 preventive services recommended annually for persons with diabetes. We first compared receipt among persons continuously insured, continuously uninsured, and partially (1%–99%) insured during the study period. We then evaluated care receipt among partially (discontinuously) insured persons, stratified by quintiles of increasing percent of time with coverage, and compared persons in these groups with those with continuous coverage to assess whether a threshold of partial coverage exists below which the odds of receipt of recommended services decreases.

Methods

Data Sources

In 2001, a group of FQHCs in Oregon formed the Oregon Community Health Information Network (OCHIN) to collectively purchase a centrally hosted Epic electronic health record (EHR) system (Epic Systems Corp., Verona, WI). They instituted an enterprise-wide master patient index so that OCHIN now maintains a fully integrated electronic health information exchange system in which each patient has a single medical record available to clinicians across the entire network. OCHIN member clinics collect patients' insurance coverage information at each visit and receive monthly updates of public insurance eligibility and enrollment status for all current patients. We validated OCHIN's service utilization data through comparison with Oregon Medicaid claims data.[4] Reassuringly, we found that, among persons with a Medicaid ID, trackable in both the OCHIN and Medicaid datasets, fewer than 15% of services were missing from the OCHIN data alone.

We linked demographic, insurance coverage, and health services utilization data from OCHIN's EHR to Oregon's Medicaid insurance enrollment data to supplement the coverage data in OCHIN's records. Thus, we had complete insurance data on Medicaid coverage, the primary payer among this patient population. If persons had private insurance coverage, data on that coverage often was known only on clinic visit dates, so duration of private coverage could not always be assessed. To avoid misclassifying patients as having less insurance than they actually had, we excluded any persons ever indicated to have had private coverage during the study period.

Study Population and Insurance Coverage

We included persons with diabetes mellitus who were established patients at any of 50 OCHIN safety net clinics in Oregon and, to ensure a minimum level of continuity of care, limited participants to those with at least 2 diabetes-associated visits during 2004 to 2005 and at least one visit in 2006 and another in 2007. This identified a cohort of 3384 established adult patients with diabetes, among whom we evaluated receipt of service in 2005 to 2007.

Within this population, we measured insurance coverage continuity as the percentage of time covered during 2005 to 2007. Percentage of time covered was quantified by summing the total number of days with coverage, identified from the linked OCHIN-Medicaid data, which included start and end dates for coverage periods. We divided the number of days with coverage by 1094 days (3 years) to obtain a percentage, then categorized the cohort as having (1) continuous coverage for 100% of the study period (n = 1764); (2) no coverage during the study period (n = 909); or (3) partial coverage during the study period (n = 711). We evaluated rates of receipt of preventive care services in each of these groups and stratified the subpopulation with partial coverage into quintiles by percent of the study period with coverage (1%–19%, 20%–39%, 40%–59%, 60%–79%, and 80%–99% covered).

Receipt of Diabetes Preventive Care Services

We assessed receipt of 4 evidence-based preventive services: lipid (low-density lipoprotein [LDL]) screening, influenza vaccination, nephropathy screening (urine microalbumin), and glycohemoglobin (HbA1c) screening. It is recommended that diabetic patients receive each of these services at least annually.[5,6] We identified receipt of these services using procedure codes associated with each service; OCHIN's clinical data managers validated the list of codes. Study

data on service utilization were taken solely from the OCHIN EHR.

Covariates

We included the following covariates potentially associated with access to care: age on January 1, 2005, race/ethnicity, household income as a percent of federal poverty level (FPL), and primary language. As required of all FQHCs, OCHIN clinics strive to collect data on race/ethnicity and household income as a percent of FPL at every visit. We calculated FPL as an average of all household income data collected and recorded during the study period. We created one combined race/ethnicity variable using an algorithm: if a patient ever had been identified as Hispanic or primarily Span-

ish-speaking, we considered him or her Hispanic. Among the non-Hispanic patients, if at any visit a person had been identified as black, Asian/Pacific Islander, or Native American/Alaska native, we considered him or her to be that race/ethnicity; if a patient had always been classified as white, we considered him or her as such. Those without any race/ethnicity data we classified as unknown.

Analyses

First, we described the demographic characteristics of the study population and conducted χ^2 tests of differences in the distribution of sociodemographic covariates among the 3 insurance groups (continuous coverage, partial coverage, no coverage; Table 1). Then we described whether persons in each of the

Table 1. Demographics of Adults with Diabetes in OCHIN Clinics, Overall and Stratified by Insurance Coverage Group (2005–2007)

	Entire Study Population	Continuously Insured	Partially Insured	Continuously Uninsured
Total	3384 (100)	1764 (52.1)	711 (21.0)	909 (26.9)
Age (years) on January 1, 2005*				
19–35	356 (10.5)	83 (4.7)	102 (14.4)	171 (18.8)
36–50	1034 (30.6)	410 (23.2)	241 (33.9)	383 (42.1)
51–65	1363 (40.3)	751 (42.6)	293 (41.2)	319 (35.1)
≥65	631 (18.7)	520 (29.5)	75 (10.6)	36 (4.0)
Sex†				
Female	1942 (57.4)	1051 (59.6)	422 (59.4)	469 (51.6)
Male	1442 (42.6)	713 (40.4)	289 (40.7)	440 (48.4)
Language*				
English	1843 (54.5)	1093 (62.0)	480 (67.5)	270 (29.7)
Spanish	1079 (31.9)	316 (17.9)	177 (24.9)	586 (64.5)
Other	357 (10.6)	297 (16.8)	34 (4.8)	26 (2.9)
Missing	105 (3.1)	58 (3.3)	20 (2.8)	27 (3.0)
Race/ethnicity*				
White	1637 (48.4)	1001 (56.8)	398 (56.0)	238 (26.2)
Hispanic	1201 (35.5)	385 (21.8)	209 (29.4)	607 (66.8)
Other	450 (13.0)	311 (17.6)	82 (11.5)	57 (6.3)
Missing	96 (2.8)	67 (3.8)	22 (3.1)	7 (0.8)
Mean Federal Poverty Level (%)*‡				
0–99	2532 (74.8)	1356 (76.9)	526 (74.0)	650 (71.5)
≥100	712 (21.0)	304 (17.2)	152 (21.4)	256 (28.2)
Missing	140 (4.1)	104 (5.9)	33 (4.6)	3 (0.3)

Demographic and preventive services data from OCHIN safety net clinic networked electronic health record dataset; insurance coverage confirmed through individual links to Medicaid enrollment data (2005–2007). OCHIN originally stood for the Oregon Community Health Information Network; it was renamed just "OCHIN" as clinics in states other than Oregon became OCHIN members.

Values provided as n (%). Demographic data from OCHIN Inc. safety net clinic networked electronic health record dataset; insurance coverage confirmed through individual links to Medicaid enrollment data (2005–2007).

*$P < .0001$ (χ^2) for an association between insurance continuity and demographic characteristics.

†$P < .001$ (χ^2) for an association between insurance continuity and demographic characteristics.

‡Mean federal poverty level (FPL) was calculated as the average over all visits in the study period. Values >1000% were considered missing; this was <2% of the visits, and the 5.7% with missing FPL information include these outliers.

3 insurance groups received each preventive care service ≥1 time or ≥3 times during the study period (2005–2007). We conducted χ^2 tests comparing the percentage of persons in each of these insurance coverage categories who received a given service ≥1 time versus never and ≥3 times versus <3 times (Table 2). We conducted a series of logistic regression models to assess the univariate and multivariate associations between the 3 insurance continuity variables (continuously insured, partially insured, continuously uninsured) and the odds of receiving each of the 4 preventive services ≥3 times during the study period (Table 3).

To determine further whether varying amounts of insurance continuity were associated with lesser or greater likelihood of receiving services, we assessed rates of receipt of services ≥3 times among persons who had insurance coverage for part but not all of the study period—the "partially insured"—stratified by quintiles of percent of time with coverage (Table 2). We then conducted the same series of univariate and multivariate regression analyses, comparing the "partially" insured quintile groups to those with continuous coverage (Table 4).

We used SAS software version 9.2 (SAS, Inc., Cary, NC) for all statistical analyses; α level was set at 0.05 for all multivariable analyses. The study protocol was approved by the institutional review boards of the Kaiser Permanente Center for Health Research and Oregon Health and Science University.

Results

Of 3384 safety net clinic patients with diabetes, 27% had no known insurance coverage in 2005 to 2007, 21% had partial coverage, and 52% had continuous coverage (Table 1). Of those with only partial coverage, the average coverage was for 68% (SD, 27%; range, 1%–99%) of the study period (results not shown). Most study population members were aged 19 to 65 years; there were more women than men; about one-third were of Hispanic origin; almost three fourths were from households below the FPL; and nearly all were from households below 200% of the FPL. There were significant differences between the insurance coverage groups in the distribution of each of the demographic characteristics.

During the 3-year study period, 48% of continuously insured persons received ≥3 LDL screenings, 25% received ≥3 flu vaccinations, 72% received ≥3 HbA1c screenings, and 19% received

Table 2. Receipt of Diabetes Preventive Care Services Among Adults With Diabetes in OCHIN Clinics, by Continuity of Insurance Coverage, 2005–2007

	Study Population (n [%])	Low-Density Lipoprotein Screen (%)		Influenza Vaccination (%)		HbA1c Screen (%)		Microalbumin Screen (%)	
		≥1*	≥3*	≥1*	≥3*	≥1*	≥3*	≥1*	≥3*
Continuously insured	1764 (52.1)	83.1	47.6	75.9	25.3	94.1	72.3	61.2	18.9
Continuously uninsured	909 (26.9)	68.4	27.2	62.4	8.3	91.0	57.5	57.8	14.1
Partially insured	711 (21.0)	64.4	31.7	65.7	14.5	85.0	57.4	51.6	12.7
Percent of the study period with coverage†									
1% to 19%	53 (7.5)	69.8	26.4	60.4	13.2	90.6	64.2	64.2	9.4
20% to 39%	91 (12.8)	60.4	28.6	56.0	8.8	82.4	53.9	46.2	14.3
40% to 59%	65 (9.1)	70.8	27.7	56.9	12.3	90.8	53.9	63.1	18.5
60% to 79%	188 (26.4)	63.8	35.6	69.7	14.9	87.8	59.0	52.1	13.3
80% to 99%	314 (44.2)	63.7	31.9	68.8	16.6	81.9	57.0	48.4	11.2

Demographic and preventive services data from OCHIN safety net clinic networked electronic health record dataset; insurance coverage confirmed through individual links to Medicaid enrollment data (2005–2007). OCHIN originally stood for the Oregon Community Health Information Network; it was renamed just "OCHIN" as clinics in states other than Oregon became OCHIN members.

*χ^2; $P < .0001$, comparing percent of those continuously insured, continuously uninsured, and partially insured who received the service ≥1 times versus never or ≥3 times versus <3 times, as indicated.

†Among the 711 partially insured patients.

HbA1c, glycohemoglobin.

Table 3. Logistic Regression Analyses of Associations Between Insurance Continuity and Receipt of Preventive Services ≥3 Times Among Adults with Diabetes in OCHIN Clinics (n = 3,384)

	≥3 Low-Density Lipoprotein Screens		≥3 Influenza Vaccinations		≥3 HbA1c Screens		≥3 Microalbumin Screens	
	Univariate	Adjusted*	Univariate	Adjusted*	Univariate	Adjusted*	Univariate	Adjusted*
Sex								
Female	1.04 (0.90–1.21)	1.02 (0.88–1.18)	1.13 (0.94–1.36)	1.10 (0.91–1.34)	1.14 (0.98–1.32)	1.12 (0.96–1.30)	1.20 (0.99–1.45)	1.21 (0.99–1.47)
Male	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Age (years)								
19–35	**0.52 (0.39–0.69)**	0.86 (0.63–1.16)	**0.34 (0.22–0.50)**	**0.62 (0.40–0.95)**	**0.74 (0.56–0.98)**	1.19 (0.88–1.62)	0.74 (0.51–1.07)	1.04 (0.70–1.55)
36–50	**0.67 (0.54–0.83)**	0.98 (0.78–1.23)	**0.51 (0.39–0.66)**	0.82 (0.62–1.09)	**0.69 (0.55–0.86)**	1.02 (0.80–1.29)	0.91 (0.69–1.19)	1.16 (0.86–1.55)
51–65	0.86 (0.71–1.06)	1.10 (0.89–1.36)	0.82 (0.65–1.04)	1.13 (0.89–1.45)	0.87 (0.70–1.07)	1.16 (0.92–1.45)	0.88 (0.68–1.14)	1.01 (0.77–1.32)
≥65	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Race/ethnicity								
Hispanic	**0.80 (0.68–0.94)**	1.07 (0.90–1.27)	1.02 (0.83–1.25)	**1.63 (1.31–2.04)**	1.06 (0.91–1.25)	**1.37 (1.15–1.64)**	**0.72 (0.57–0.89)**	**0.75 (0.59–0.95)**
Other	**1.48 (1.20–1.83)**	**1.41 (1.13–1.75)**	**1.63 (1.26–2.10)**	**1.52 (1.17–1.97)**	**1.92 (1.51–2.46)**	**1.87 (1.46–2.40)**	**1.69 (1.32–2.18)**	**1.68 (1.30–2.17)**
White	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Federal poverty level								
0% to 99%	1.07 (0.90–1.27)	0.97 (0.81–1.16)	0.97 (0.78–1.21)	0.84 (0.67–1.05)	1.07 (0.90–1.27)	0.97 (0.81–1.16)	1.02 (0.81–1.28)	0.97 (0.77–1.22)
≥100%	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Insurance coverage								
Partially insured	**0.51 (0.42–0.62)**	**0.53 (0.43–0.64)**	**0.49 (0.38–0.62)**	**0.51 (0.39–0.65)**	**0.50 (0.42–0.61)**	**0.50 (0.41–0.60)**	**0.62 (0.47–0.80)**	**0.64 (0.49–0.84)**
Continuously uninsured	**0.41 (0.35–0.49)**	**0.43 (0.35–0.53)**	**0.27 (0.21–0.35)**	**0.25 (0.19–0.34)**	**0.50 (0.42–0.59)**	**0.46 (0.37–0.56)**	**0.68 (0.55–0.86)**	0.82 (0.63–1.06)
Continuously insured	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)

Demographic and preventive services data from OCHIN safety net clinic networked electronic health record dataset; insurance coverage confirmed through individual links to Medicaid enrollment data (2005–2007). OCHIN originally stood for the Oregon Community Health Information Network; it was renamed just "OCHIN" as clinics in states other than Oregon became OCHIN members.

Values provided as odds ratios (95% CIs). OCHIN originally stood for the Oregon Community Health Information Network; it was renamed just 'OCHIN' as clinics in states other than Oregon became OCHIN members.

Bold indicates statistical significance at p < 0.05.

*Adjusted for all variables shown.

HbA1c, glycohemoglobin.

Table 4. Logistic Regression Analyses of Associations Between Insurance Continuity and Receipt of Preventive Services Among Adults with Diabetes in OCHIN Clinics (n = 711 with partial coverage, n = 1764 with full coverage)

Percent of Time Insured	≥3 Low-Density Lipoprotein Screen		≥3 Influenza Vaccination		≥3 HbA1c Screen		≥3 Microalbumin Screen	
	Univariate	Adjusted*	Univariate	Adjusted*	Univariate	Adjusted*	Univariate	Adjusted*
1% to 19%	**0.40 (0.21–0.74)**	**0.43 (0.23–0.82)**	0.46 (0.20–1.02)	0.51 (0.23–1.16)	0.66 (0.37–1.17)	0.65 (0.36–1.17)	0.44 (0.17–1.11)	0.46 (0.18–1.20)
20% to 39%	**0.44 (0.27–0.71)**	**0.48 (0.30–0.79)**	**0.30 (0.14–0.62)**	**0.32 (0.15–0.68)**	**0.42 (0.27–0.65)**	**0.41 (0.26–0.65)**	0.73 (0.40–1.33)	0.84 (0.45–1.57)
40% to 59%	**0.39 (0.22–0.70)**	**0.40 (0.22–0.71)**	**0.39 (0.18–0.86)**	**0.37 (0.17–0.83)**	**0.41 (0.24–0.68)**	**0.40 (0.24–0.67)**	1.03 (0.54–1.95)	1.18 (0.61–2.27)
60% to 79%	**0.64 (0.46–0.88)**	**0.68 (0.49–0.94)**	**0.51 (0.33–0.79)**	**0.52 (0.34–0.80)**	**0.58 (0.42–0.80)**	**0.59 (0.42–0.82)**	0.65 (0.42–1.02)	0.74 (0.47–1.17)
80% to 99%	**0.51 (0.39–0.67)**	**0.53 (0.40–0.70)**	**0.56 (0.40–0.79)**	**0.58 (0.41–0.82)**	**0.48 (0.37–0.63)**	**0.49 (0.37–0.64)**	**0.51 (0.34–0.76)**	**0.55 (0.36–0.82)**
100%	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)

*Adjusted for sex, age, race/ethnicity, and Federal Poverty Level.
OCHIN originally stood for the Oregon Community Health Information Network; it was renamed just "OCHIN" as clinics in states other than Oregon became OCHIN members.
Bold indicates statistical significance.
HbA1c, glycohemoglobin.

≥3 nephropathy screenings, at an OCHIN clinic (Table 2). Those with partial or no coverage had significantly lower rates of receiving each service ≥1 time or ≥3 times compared with those who were continuously insured.

Among the 711 persons with partial insurance coverage during the study period, 44% had coverage for 80% to 99% of the 3-year study period; 26% had coverage for 60% to 79% of that time, 9% had coverage for 40% to 59% of the time, 12% had coverage for 20% to 39% of the time, and 8% had coverage for 1% to 19% of the study period. In almost all cases, those insured for 1% to 99% of the study period received services less often than those continuously insured, with no pattern of differences in rate of receipt of care seen between quintiles of time covered.

In multivariate logistic regression analyses comparing the odds of receiving each of the diabetes care services ≥3 times, persons with partial insurance coverage had significantly lower odds than those with continuous coverage in all 4 cases. Similarly, the continuously uninsured had lower odds in 3 of the 4 cases, with no significant differences compared with the continuously insured only in receipt of ≥3 microalbumin screenings. Hispanic persons had significantly higher odds than white persons to receive ≥3 influenza vaccinations and ≥3 HbA1c screenings and had significantly lower odds of receiving ≥3 microalbumin screenings. Non-Hispanic, nonwhite persons had significantly higher odds than white persons of receiving ≥3 services in all 4 cases.

When comparing persons with different levels of partial coverage with those with continuous coverage, persons in all 5 quintiles were significantly less likely of receiving ≥3 LDL screenings. Those with 20% to 99% coverage were less likely to receive ≥3 flu shots and ≥3 HgA1c screenings. Only those with 80% to 99% coverage were significantly less likely to receive ≥3 microalbumin screenings. Although screening rates were not significantly lower for all insurance quintiles, almost all point estimates trended in the same direction (lower odds of receiving services). Among persons insured for part of the study period, there was no evidence of a threshold of percent of time covered above which the odds of receiving appropriate care increased, nor was there evidence of a dose-response relationship between percent of time covered and receipt of care.

Discussion

Among Oregonians with diabetes receiving primary care in 50 OCHIN member safety net clinics between 2005 and 2007, having continuous insurance coverage was associated with higher odds of receiving recommended preventive care services compared with having partial or no coverage. Our results further confirm that, even though these FQHCs provide care to vulnerable persons regardless of their ability to pay, having continuous health insurance is necessary to achieve optimal care.[3,7–10] The importance of continuous health insurance is underscored by our finding that there was no trend in higher levels of care receipt as insurance coverage increased from <0% to >100%; all quintiles were equally vulnerable to missing services compared with the continuously insured.

These findings are of particular relevance to health care reform because they highlight that public insurance coverage must be continuous to ensure consistent and timely receipt of evidence-based preventive services. Policies that make it difficult to obtain coverage or those that lead to high rates of discontinuous coverage contribute to disrupted care, even for established safety net patients with coverage gaps of short duration. During coverage gaps, it is likely that patients delay getting preventive care until securing insurance coverage again. This has important implications for primary care practice: if patients intend to wait to get recommended services, providers and care teams should discuss the implications of that decision or help patients gain timely access to coverage or reduced-rate services.

Limitations

The OCHIN database allows us an unprecedented view into care received by patients of community health centers; however, our results should be considered in the context of some limitations. Because we were unable to determine the duration of non-Medicaid coverage, we excluded all patients with any evidence of private coverage; the greatest percentage of those excluded for having private coverage was among persons who would have been included in the 1% to 19% coverage quintile. There may have been some additional patients with other non-Medicaid coverage who were classified as having less coverage than they actually had, which might be one reason why those in the 1% to 19% coverage group seemed to be doing marginally better than those with higher levels of coverage. The smaller number of persons in this group also could explain why there was no significant difference in the odds of receipt of care; we note that the odds ratio point estimates for this quintile trended in the same direction as the others.

We used the most common codes for identifying the preventive services received and may have missed a small percentage of services because we did not use a more extensive list. Though directly comparing these rates with other populations was not feasible,[2,9,11–14] our rates of service receipt are comparable to available estimates from nationally representative data.[11] To ensure that we were not missing a significant number of services received elsewhere, we validated OCHIN's service utilization data[4] and found that among persons with a Medicaid ID, fewer than 15% of services were missing from the OCHIN data alone. We expect that even fewer services were missing among the uninsured because persons without Medicaid coverage have limited options as to where they can access care. These limitations notwithstanding, we believe OCHIN's dataset far surpasses what has been previously available for safety net clinic populations; this study would not have been possible using claims data, which misses services utilized during periods of without insurance coverage. Furthermore, because a major goal of patient-centered medical homes is to provide comprehensive services at one site, the outcome of importance is whether services were documented and accessible to providers at the primary clinic.[15–17]

Conclusion

Our results suggest that if we are to remove barriers to receipt of guideline-based preventive care, persons in vulnerable populations need both access to primary care *and* continuous insurance coverage. These results have important implications for health care reform implementation and for primary care practitioners whose patients may delay receipt of recommended preventive care during insurance coverage gaps.

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