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Insurance Continuity and Receipt of Diabetes Services in the Safety Net

Research Design and Methods

- Data source:** Secondary analyses of data on 4,240 adult FQHC patients with diabetes; used EHR data networked across 50 Oregon safety net clinics, linked to state Medicaid claims data.
- Primary predictor:** Insurance continuity, as percentage of time covered in 2005-2007:
 - Continuous coverage** 100% of the time (n=2,148, or 51% of the study population);
 - Partial coverage** 60-99% of the study period (n=721, or 17% of the population);
 - Partial coverage** 1-59% of the study period (n=394, or 9% of the population);
 - No coverage** in the study period (n=977, or 23% of the population). Coverage data from linked EHR / Medicaid claims data.
- Outcome variables:** Receipt of 4 diabetes preventive care services (LDL, nephropathy, and HgA1c screening; flu vaccination) in 2005-2007; and, among 1,115 'partially insured' persons, demographic factors associated with likelihood of receiving services while insured. Utilization data from safety net EHR only.
- Co-variables included:** Age, race / ethnicity, household income as a percent of federal poverty level (FPL), primary language.
- Analytic strategy:** Multivariate logistic regression of associations between insurance coverage continuity and receipt of preventive services, adjusted for co-variables. Among the 'partially insured,' logistic regression of factors associated with receipt of all services during a period of insurance. SAS version 9.2. used for all statistical analyses.

Results and Conclusions

- The continuously covered had the highest rates of service receipt, compared to the partially insured or uninsured (Figure 1). Compared to the continuously insured, the uninsured and those partially insured had significantly lower odds of receiving ≥ 3 HgA1c screens, ≥ 3 LDL screens, and ≥ 3 flu shots in the 3-year study period (Table 1)
- The continuously uninsured often fared just as well as the partially insured in receipt of services, indicating the importance of FQHCs in providing care to the uninsured. This uninsured group likely includes persons highly motivated to obtain diabetes care, who do not qualify for coverage. The partially insured group likely includes people who qualify for coverage, but have not been able to maintain such coverage due to instability in their lives; discontinuous insurance may thus compound their vulnerability.
- Of the 1,115 persons partially insured during the study period, 94% received ≥ 1 service of interest. Of these, about half received 100% of their services while insured. Age ≥ 65 , white race, greater poverty were associated with higher odds of receiving all services while insured (Table 2).

Background

- Low-income and minority groups are less likely to receive routine diabetes-related care, and thus more likely to experience related health complications.¹⁻³
- Having insurance and having a usual source of care (USC) are each associated with optimal receipt of preventive services for persons with diabetes.^{4,5} Yet little is known about the impact of having insurance on receipt of preventive care among patients whose USC is a Federally Qualified Health Center (FQHC), where care is provided regardless of insurance status. This question is critical as the US implements health care reform, but such research requires data tools beyond claims data, which have no information on the uninsured.
- We used linked safety net electronic health record (EHR) data to compare the impact of continuous health insurance coverage versus no coverage or partial coverage on receipt of diabetes preventive services.

Table 1: Association between insurance continuity, covariates, and receipt of each diabetes preventive service in 2005-2007

Insurance Continuity (2005-2007)	Odds ratio (95% confidence interval)* associated with receipt of diabetic services, adjusted for age, gender, race/ethnicity, and household income as % FPL								
	LDL Screens in 2005-2007		Flu Shots in 2005-2007		Nephropathy Screens in 2005-2007		HbA1c Screens in 2005-2007		
	≥ 1	≥ 3	≥ 1	≥ 3	≥ 1	≥ 3	≥ 1	≥ 3	
Full Coverage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Partial (60-99%)	0.36 (0.29, 0.44)	0.51 (0.42, 0.62)	0.78 (0.64, 0.96)	0.51 (0.39, 0.66)	0.65 (0.54, 0.78)	0.59 (0.44, 0.79)	0.39 (0.30, 0.53)	0.49 (0.41, 0.60)	
Partial (1-59%)	0.44 (0.35, 0.57)	0.53 (0.41, 0.68)	0.48 (0.37, 0.61)	0.49 (0.34, 0.68)	0.99 (0.79, 1.26)	0.97 (0.71, 1.33)	0.52 (0.36, 0.75)	0.55 (0.44, 0.70)	
No Coverage	0.51 (0.42, 0.63)	0.53 (0.44, 0.64)	0.51 (0.42, 0.62)	0.31 (0.23, 0.40)	1.09 (0.91, 1.31)	0.96 (0.75, 1.23)	0.70 (0.50, 0.96)	0.56 (0.46, 0.67)	

Figure 1: Percent receiving each of the diabetes preventive care services at least once in 2005-2007

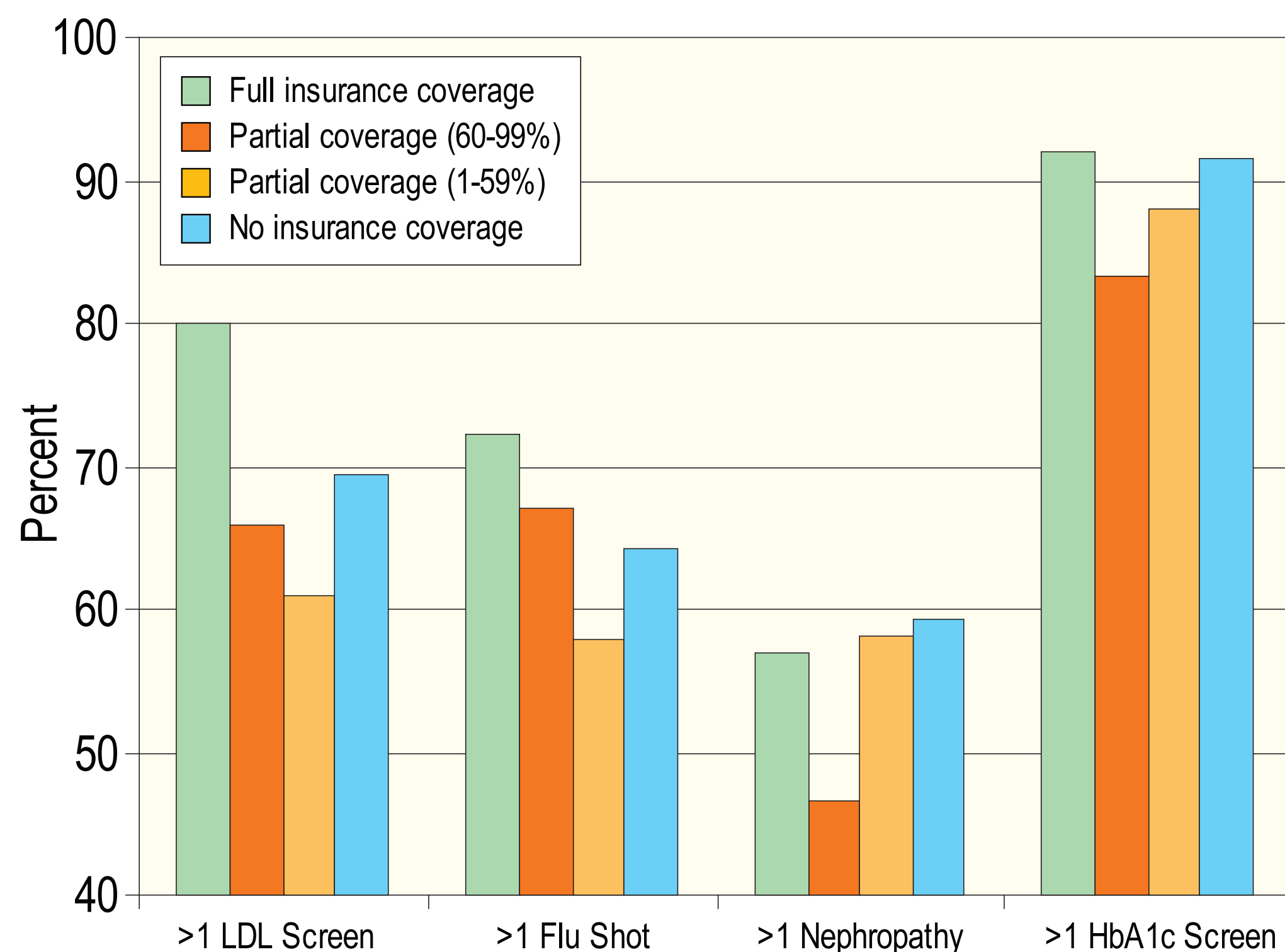


Table 2: Multivariate logistic regression of factors associated with receiving all preventive services during a period of insurance, among the partially insured

Independent variables	Adjusted odds ratio, 95% CI associated with having received all services while insured
Gender	Male 1.00 (reference)
	Female 0.98 (0.74, 1.28)
Age	19-35 0.41 (0.22, 0.75)
	36-50 0.41 (0.24, 0.70)
	51-65 0.51 (0.30, 0.86)
	65 and + 1.00 (reference)
Race / Ethnicity	Hispanic 0.55 (0.42, 0.73)
	Other 0.61 (0.39, 0.97)
Federal Poverty Level	White 1.00 (reference)
	0-99% FPL 1.38 (1.03, 1.85)
Level	$\geq 100\%$ FPL 1.00 (reference)

- Even patients in the safety net require continuous coverage to improve the likelihood of receiving preventive services. Among the partially insured, the majority of services were received during an insured period; persons with unstable coverage may delay getting care until they have coverage. Improving access to care for persons with diabetes must include expanding insurance coverage and ensuring access to primary care services.
- These analyses would not have been possible using claims data, and set a precedent for using safety net clinic EHR data for research on the impact of health insurance reforms.

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