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Insurance coverage and utilization at a sexually transmitted disease clinic in a Medicaid expansion state

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Abstract

Background—In Rhode Island, the Patient Protection and Affordable Care Act (ACA) has led to over 95% of the state's population being insured. We evaluated insurance coverage and barriers to insurance use among patients presenting for services at the Rhode Island STD Clinic.

Methods—We analyzed factors associated with insurance coverage and utilization among patients presenting for STD services between July and December 2015.

Results—A total of 692 patients had insurance information available; of those, 40% were uninsured. Patients without insurance were more likely than those with insurance to be non-white (50% among uninsured, compared to 40% among insured; $p = 0.014$) and Hispanic or Latino/a (25%, compared to 16%; $p = 0.006$), and less likely to be MSM (27%, compared to 39%; $p = 0.001$). Of those with health insurance, 26% obtained coverage as a result of the ACA, and 56% of those were previously uninsured. Among uninsured individuals, barriers to obtaining health insurance included cost and unemployment. Among those with insurance, 43% reported willingness to use insurance for STD services. Barriers to insurance use included concerns about anonymity and out-of-pocket costs.

Conclusions—Despite expanded insurance access, many individuals presenting to the Rhode Island STD Clinic were uninsured. Among those who were insured, significant barriers still existed to using insurance. STD clinics continue to play an important role in providing safety-net STD services in states with low uninsured rates. Both public and private insurers are needed to address financial barriers and optimize payment structures for services.

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Keywords

Affordable Care Act; sexually transmitted diseases; insurance

INTRODUCTION

Sexually transmitted diseases (STDs), including HIV, syphilis, gonorrhea, and chlamydia, pose a significant public health burden in the United States (US) [1], contributing to over $15.6 billion in healthcare expenditures annually [2]. A critical component of addressing STDs is ensuring access to healthcare for testing and treatment services. The Patient Protection and Affordable Care Act (ACA), signed into law in 2010, presented an opportunity for previously uninsured individuals to obtain insurance and healthcare access [3]. Insurance exchanges began health insurance enrollment nationally in 2013, facilitating health insurance access to many who were previously uninsured. Expansion of state Medicaid programs under the ACA further increased health insurance coverage, although not all states have participated equally in the expansion [4].

Implementation of the ACA has raised the possibility of reimbursement for preventive healthcare services in settings where these services have traditionally been provided at no cost to patients. Public STD clinics, which provide safety-net services for STD testing and treatment among high-risk populations, are one such setting [5]. Historically, these clinics have been supported by state and local health departments and often provide services free of charge. Given limited public health resources along with Medicaid expansion, reimbursement of STD services through Medicaid and private insurers offers the opportunity to improve the financial sustainability of these services. However, little is known about the overall impact of the ACA on insurance coverage and acceptability of insurance utilization for STD care in states that have expanded Medicaid. Several potential factors in addition to insurance coverage may limit insurance utilization. These include the desire for anonymity, which patients may seek at public STD clinics [5–7]. Out-of-pocket expenses such as copays and deductibles may also present barriers [5,7,8].

In Rhode Island, the ACA with Medicaid expansion has resulted in one of the highest proportions of insurance coverage in the country, with over 95% of the state's population insured as of 2015 [9]. The Rhode Island STD Clinic is the only publicly-funded STD clinic in the state and is a collaboration between the Rhode Island Department of Health and The Miriam Hospital, a major Brown University teaching affiliate. Insured patients are encouraged to use their insurance to cover the cost of laboratory services. The clinic provides services free of charge for those who are uninsured or unwilling to use their insurance. Increasing patient volume, limited financial resources, and Medicaid expansion have resulted in a movement to explore a more comprehensive payment-based system where third-party payers, both public and private, are billed for clinical services. The goal of the present study was to characterize insurance coverage and barriers to utilization among patients presenting for STD services in a Medicaid expansion state.

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MATERIALS AND METHODS

Study Site

The study site was the Rhode Island STD Clinic, located in Providence, Rhode Island. The clinic serves as a safety-net provider of STD care for the entire state with 2,153 total visits in 2015. At the time of the study, the clinic billed third-party payers for laboratory services with consent from patients to do so. Medical provider time and treatment services were not billed for any patient encounters.

Data Collection

We reviewed insurance status and type among patients presenting for STD services between July and December 2015. All patients completed a demographic and behavioral questionnaire at intake based on standard Centers for Disease Control and Prevention (CDC) surveillance questions. Demographics reviewed included age, gender, race, and ethnicity. Behaviors reviewed included the number of sexual partners in the past year by gender and sexual behavior (anal, oral, and vaginal sex), condom use, and substance use. Using a separate questionnaire administered at intake, we also reviewed insurance information, including patients' insurance type, length of time with their current insurance plan, and whether they obtained insurance coverage as a result of the ACA ("Did you obtain insurance through the Affordable Care Act [i.e., Obamacare or HealthSource RI]?"). Patients were also asked whether they were willing to allow the STD Clinic to use their insurance for services and to identify barriers to billing their insurance using non-mutually exclusive, categorical response options. Choices were based on reported barriers to using insurance identified in prior research [10–12]. Review of demographic, behavioral, and insurance data was approved by The Miriam Hospital Institutional Review Board.

Data Analysis

We calculated frequencies for each demographic and behavioral variable and tested the distribution of variables across groups using Chi-square and Fisher's exact tests. Bivariate and multivariable Poisson regressions with robust standard errors were used to calculate the relative risk of being uninsured and declining to use insurance if insured, adjusting for demographic characteristics. We selected the Poisson regression model in order to calculate relative risk, which is a more accurate measure of risk than the odds ratio for outcomes with greater than approximately 10% prevalence, at which point the odds ratio overestimates the relative risk [13]. The robust standard error is used to adjust for the overestimated variance of binary data in a Poisson model [14]. To test the hypothesis that certain demographic characteristics were associated with insurance status, we conducted bivariate and multivariable Poisson regression analyses with robust standard error using demographic variables selected *a priori*, based on prior studies of disparities in health insurance coverage and access [10,15]. Significance was defined at two-tailed $\alpha=0.05$. All statistical analyses were performed in Stata/SE 13.1 (StataCorp, College Station, TX).

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RESULTS

A total of 692 surveys were collected over the course of the five-month study period, representing 53% of all clinic visits during that time. Of those surveyed (n=692), 74% were men, 54% were 29 years of age or younger, 44% identified as non-white, and 20% identified as Hispanic or Latino/a (Table 1). Twenty-four percent of survey respondents identified as women who had sex with men only, 1% women who had sex with women only, 2% women who had sex with both women and men, 39% men who had sex with women only, 31% men who have sex with men (MSM) only, and 3% men who have sex with both men and women. The latter two groups together were considered MSM for the purposes of this analysis. Compared to non-respondents, those who responded to the survey were more likely to be white (56% compared to 50% among non-respondents; $p = 0.028$) and non-Hispanic (80% compared to 74% among non-respondents; $p = 0.007$), and to have had an anonymous sexual partner in the past 12 months (43% compared to 36% among non-respondents; $p = 0.008$).

Insurance Coverage

Forty percent of patients reported being uninsured. Patients without health insurance were more likely than those with insurance to be non-white (50% compared to 40% among insured; $p = 0.014$) and Hispanic or Latino/a (25% compared to 16% among insured; $p = 0.006$), and less likely to be MSM (27% compared to 39% among insured; $p = 0.001$; Table 1). The most commonly endorsed barriers (non-mutually exclusive) to obtaining health insurance coverage among those without insurance were cost (36%), followed by being unemployed (29%), having no time to enroll (19%), and waiting for benefits from a new job to begin (17%; Figure 1).

Of insured patients, 24% reported receiving public insurance coverage (i.e., through Medicaid, Medicare, or both). Twenty-six percent of insured respondents obtained coverage as a result of the ACA, and 56% of those were uninsured prior to enrolling in coverage through the ACA. Half of insured respondents reported having copayments for medical visits, though 37% of those reporting a copay did not know the amount; 18% of those with insurance were unsure whether their plan required copayments. Of the 29% of insured patients who reported having a deductible for their plan, 53% were unaware of the deductible amount. Forty-percent of insured individuals were unsure whether their health insurance had a deductible.

Age was significantly associated with uninsured status in both unadjusted and adjusted models (Table 2). Survey respondents 20–29 years of age (adjusted incidence risk ratio [aIRR] = 2.67; 95% confidence interval [CI]: 1.27, 5.60; $p = 0.009$), those 30–39 years of age (aIRR = 2.93; 95% CI: 1.38–6.22; $p = 0.005$), and those age 40 and older (aIRR = 2.74; 95% CI: 1.28–5.86; $p = 0.009$) all had close to three times the risk of being uninsured compared to those younger than 20 years of age when adjusting for other demographic characteristics. Race and ethnicity were significantly associated with insurance coverage in bivariate models, as non-white (incidence risk ratio [IRR] = 1.26; 95% CI: 1.05–1.52; $p = 0.014$) and Hispanic or Latino/a patients had greater risk of being uninsured compared to white and non-Hispanic or Latino/a individuals (IRR = 1.35; 95% CI: 1.10, 1.65; $p = 0.004$), respectively. However, these associations did not maintain significance in the adjusted

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multivariable model. MSM had lower risk of being uninsured compared to all other sexual risk behavior groups (aIRR = 0.697; 95% CI: 0.551–0.880; $p = 0.016$).

Compared to non-MSM, MSM patients were disproportionately older (56% were 30 years of age or older compared to 41% among non-MSM; $p < 0.001$), white (70% compared to 49%; $p < 0.001$) and non-Hispanic or Latino/a (85% compared to 78%; $p = 0.021$). To evaluate possible effects of age, race, and ethnicity on insurance status among MSM, we conducted a second set of Poisson regression analyses limited to MSM. However, none of the significant associations between demographic characteristics and insurance status remained when analyses were repeated among MSM patients only (Table 2).

Insurance Use

Fifty-percent of insured patients used their insurance to pay for STD laboratory services. Age distribution differed significantly between those who did and did not use insurance (Table 1). Other demographic characteristics did not differ significantly between those who did and did not use insurance. Concern about anonymity (46%) was a prominent barrier to insurance use for STD care, as was preventing parents (35%) or partners (10%) from receiving billing statements in the mail (Figure 2). Furthermore, a total of 31% of insured patients identified cost sharing, in the form of a copay, deductible, or both, as a barrier to insurance use for STD care.

In the Poisson regression analysis, older patients were more likely to use insurance, as those 20–29 years (aIRR = 0.759; 95% CI: 0.589, 0.979; $p = 0.034$) and 30–39 years (aIRR = 0.468; 95% CI: 0.318, 0.690; $p < 0.001$) of age had significantly lower risk of not using their insurance compared to those aged 20 years and younger. No other demographic factors were associated with not using insurance (Table 3). No demographic variables were significantly associated with using insurance among MSM clinic patients only.

DISCUSSION

The ACA has resulted in significantly improved insurance coverage throughout the US, and specifically in states that expanded Medicaid. Our study presented two novel and important findings regarding STD services and the role of health insurance in a post-ACA setting. First, many surveyed individuals presenting to the Rhode Island STD Clinic were still uninsured, despite a low proportion of uninsured individuals statewide. Second, even with the high prevalence of insurance coverage in Rhode Island, significant barriers such as cost sharing and the desire for anonymity may prevent some patients from seeking STD testing and treatment elsewhere, suggesting that public STD clinics will continue to play an important role in providing accessible safety-net services to these populations [16,17].

In our study, a greater proportion of individuals presenting to the Rhode Island STD Clinic were uninsured (40%) compared to the overall state population (4.5%) [9]. This disparity likely reflects the nature of safety-net STD services, which have historically served marginalized populations such as those without access to health insurance, including, as demonstrated in our clinic, racial and ethnic minority groups. Patients without insurance were more likely to be non-white and Hispanic or Latino/a, further supporting prior findings

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of disparities in insurance coverage and healthcare access across racial and ethnic groups [4,9]. MSM were more likely to be insured than other sexual behavior groups, which also reflects findings in prior research [10]. Importantly, MSM in this sample were disproportionately white and non-Hispanic compared to other groups. As race and ethnicity were significantly associated with insurance status, these differences may account for some of the difference in insurance status between MSM and non-MSM.

Even among those who were insured, 57% indicated that they were unwilling to use their insurance for STD care. This aligns with findings from other urban STD clinic settings, where 35–66% of patients were unwilling to provide insurance information for their care [6,18–20]. Among insured patients, the stigmatized nature of sexual health and STD care and the desire of patients to remain anonymous present significant, non-financial barriers to testing. Destigmatizing STDs and working with insurance carriers to ensure that STD testing remains confidential should be a priority in the movement toward payment-based STD services. Privacy and anonymity were significant concerns in preventing the use of insurance for STD care among patients in our sample.

Explanation of benefits (EOB) statements are one source of concern among patients. EOB statements are generated by insurance companies to describe use of services, and may compromise the confidentiality of individuals who share insurance coverage with others (e.g., a parent or partner) who may receive these statements in the mail [21]. In our study, participants younger than 20 years of age had significantly lower risk of being uninsured but significantly higher risk of not using insurance compared to older patients. It is likely that the majority of clinic patients younger than 20 years of age were covered by their parents' or guardians' insurance and that privacy was a major concern [20]. Similarly findings have been reported elsewhere, as in another STD clinic study where 47% of patients with private insurance, including 67% of privately insured adolescents, expressed concern over having EOB statements mailed to their homes [6]. In the absence of detailed EOB statements, insurance reporting may still include total costs incurred by testing, which may compromise confidentiality even if the reason for those costs is not cited.

Another major barrier to insurance utilization to pay for STD care in our study was cost sharing (i.e., copays and deductibles). Thirty-one percent of those with insurance identified cost sharing as a barrier to using their insurance for STD care. Many patients did not know the amount of their copays or deductibles. This finding echoes data from prior studies indicating that cost sharing, coupled with lack of knowledge about health insurance plans (e.g., the belief that STD care services are not covered by insurance), poses a significant obstacle to insurance use for STD testing [5,7]. Payment structures for STD clinics vary across the US. In prior studies, utilization of STD services has decreased dramatically when public STD clinics implemented fees for STD care for those who did not have or chose not to use their insurance [8,12]. Addressing the financial burden of STD services among patients is critical to reducing barriers for testing and treatment. Partnerships and commitments across the public and private sector, including departments of health, public and private payers, and clinical institutions, are needed to effectively address this issue.

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Limitations

The present study was subject to several limitations. Incomplete patient data precluded analysis of some patients who received STD services at the clinic. Patients who participated in the survey were more likely to be white and less likely to be Hispanic/Latino compared to those who did not participate. Given prior studies reporting similar findings [11,22], a higher proportion of non-white and Hispanic/Latino individuals in the study sample would likely have amplified disparities and barriers already observed in the study. Additional socioeconomic indicators that may contribute to access to insurance were not assessed. The study also relied on patient self-report for all measures. Self-report is subject to recall and social desirability biases, and data collected through self-report are limited by respondents' knowledge. In particular, low health insurance literacy may have led patients to report inaccurate information regarding their own insurance coverage. For instance, it is possible that some participants receiving Medicaid selected the carriers administering those programs, which also carry private plans, as their insurance provider, resulting in an underestimate of those receiving public health insurance. The results of this study may not be generalizable to other safety-net clinics or Medicaid-expansion states with different demographics. Nonetheless, this study produced novel insight into the health insurance landscape subsequent to ACA implementation with Medicaid expansion in the context of safety-net STD care in Rhode Island.

Conclusions

Implementation of the ACA has led to significant improvements in healthcare access, particularly in states that have adopted Medicaid expansion [4]. This study is among the first to evaluate provision of safety-net STD services in a Medicaid-expansion state after implementation of the ACA. These findings demonstrate persistent barriers to obtaining insurance coverage and to using insurance to pay for STD services, in spite of the high statewide prevalence of insurance coverage. These findings support the need for public STD clinics and can inform ongoing efforts to implement sustainable methods of billing system in these settings. Priorities should include identifying means of ensuring patient confidentiality and addressing cost sharing by alleviating out-of-pocket costs for patients for STD testing. Further study and evaluation of effective payment models are needed to help guide the implementation of effective billing practices. Provision of STD services should rely on partnerships between public health organizations and public and private third-party payers to address these barriers and optimize payment structures for STD services.

References

1. Centers for Disease Control and Prevention. Sexually transmitted disease surveillance 2014. Atlanta, GA: U.S. Department of Health and Human Services; 2015.
2. Owusu-Edusei K, Chesson HW, Gift TL, Tao G, Mahajan R, Ocfemia MCB, et al. The estimated direct medical cost of selected sexually transmitted infections in the United States, 2008. Sex Transm Dis. 2013 Mar; 40(3):197–201. [PubMed: 23403600]
3. Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 et seq. 2010.
4. Sommers BD, Buchmueller T, Decker SL, Carey C, Kronick R. The Affordable Care Act has led to significant gains in health insurance and access to care for young adults. Health Aff (Millwood). 2013 Jan 1; 32(1):165–74. [PubMed: 23255048]

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5. Cramer R, Leichliter JS, Gift TL. Are safety net sexually transmitted disease clinical and preventive services still needed in a changing health care system? Sex Transm Dis. 2014 Oct; 41(10):628–30. [PubMed: 25211261]
6. Washburn K, Goodwin C, Pathela P, Blank S. Insurance and billing concerns among patients seeking free and confidential sexually transmitted disease care: New York City sexually transmitted disease clinics 2012. Sex Transm Dis. 2014 Jul; 41(7):463–6. [PubMed: 24922109]
7. Mettenbrink C, Al-Tayyib A, Eggert J, Thrun M. Assessing the changing landscape of sexual health clinical service after the implementation of the Affordable Care Act. Sex Transm Dis. 2015 Dec; 42(12):725–30. [PubMed: 26562704]
8. Rietmeijer CA, Alfonsi GA, Douglas JM, Lloyd LV, Richardson DB, Judson FN. Trends in clinic visits and diagnosed Chlamydia trachomatis and Neisseria gonorrhoeae infections after the introduction of a copayment in a sexually transmitted infection clinic. Sex Transm Dis. 2005 Apr; 32(4):243–6. [PubMed: 15788924]
9. Cohen, RA., Martinez, ME., Zammitti, EP. Health insurance coverage: early release of estimates from the National Health Interview Survey, 2015. Atlanta, GA: National Center for Health Statistics; 2016 May.
10. Stephens SC, Cohen SE, Philip SS, Bernstein KT. Insurance among patients seeking care at a municipal sexually transmitted disease clinic: implications for health care reform in the United States. Sex Transm Dis. 2014 Apr; 41(4):227–32. [PubMed: 24622632]
11. Buchmueller TC, Levinson ZM, Levy HG, Wolfe BL. Effect of the Affordable Care Act on Racial and Ethnic Disparities in Health Insurance Coverage. Am J Public Health. 2016 Aug; 106(8): 1416–21. [PubMed: 27196653]
12. Drainoni M-L, Sullivan M, Sequeira S, Bacic J, Hsu K. Health reform and shifts in funding for sexually transmitted infection services. Sex Transm Dis. 2014 Jul; 41(7):455–60. [PubMed: 24922107]
13. Wilber ST, Fu R. Risk ratios and odds ratios for common events in cross-sectional and cohort studies. Acad Emerg Med. 2010; 17(6):649–51. [PubMed: 20624147]
14. Zou G. A modified Poisson regression approach to prospective studies with binary data. Am J Epidemiol. 2004 Apr 1; 159(7):702–6. [PubMed: 15033648]
15. Han X, Nguyen BT, Drope J, Jemal A. Health-related outcomes among the poor: Medicaid expansion vs. non-expansion states. PloS One. 2015; 10(12):e0144429. [PubMed: 26720311]
16. Mehtani NJ, Schumacher CM, Johnsen LE, Khaldun JS, Chaulk CP, Ghanem KG, et al. Continued importance of sexually transmitted disease clinics in the era of the Affordable Care Act. Am J Prev Med. 2016 Sep; 51(3):365–267.
17. Thrun M, Shlay JC. Sexually transmitted disease clinics in the era of the Affordable Care Act: is it time to tear down the walls? Sex Transm Dis. 2014 Jul; 41(7):461–2. [PubMed: 24922108]
18. Hoover KW, Parsell BW, Leichliter JS, Habel MA, Tao G, Pearson WS, et al. Continuing need for sexually transmitted disease clinics after the Affordable Care Act. Am J Public Health. 2015 Oct 8; 105(S5):S690–5. [PubMed: 26447908]
19. Moverman, S., Hsu, K., Robbins, G., Crochiere, D., Ross, A., Felsenstein, D. A universal health insurance mandate does not equate to universal coverage for STI clinic patients. National STD Prevention Conference; 2012 Mar 14; Minneapolis, MN.
20. Pearson WS, Cramer R, Tao G, Leichliter JS, Gift TL, Hoover KW. Willingness to use health insurance at a sexually transmitted disease clinic: a survey of patients at 21 US clinics. Am J Public Health. 2016 Aug; 106(8):1511–3. [PubMed: 27310349]
21. Sedlander E, Brindis CD, Bausch SH, Tebb KP. Options for assuring access to confidential care for adolescents and young adults in an explanation of benefits environment. J Adolesc Health Off Publ Soc Adolesc Med. 2015 Jan; 56(1):7–9.
22. Clark CR, Ommerborn MJ, Coull AB, Pham DQ, Haas JS. Income inequities and Medicaid expansion are related to racial and ethnic disparities in delayed or forgone care due to cost. Med Care. 2016 Jun; 54(6):555–61. [PubMed: 26974677]

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Summary

At a publicly-funded STD clinic in a Medicaid expansion state, significant challenges to billing insurance for services still exist, including patient concerns about anonymity and cost-sharing via copays and deductibles.

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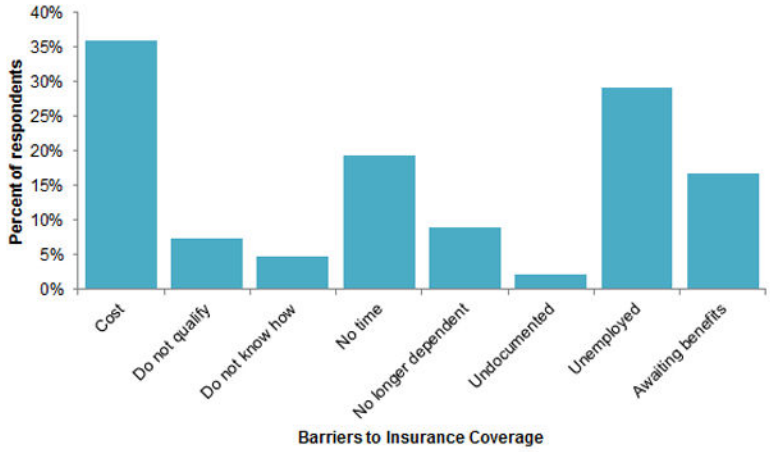

Figure 1.

Frequency of reasons for lack of health insurance coverage endorsed by a subset of survey participants (n = 234). Reasons are not mutually exclusive.

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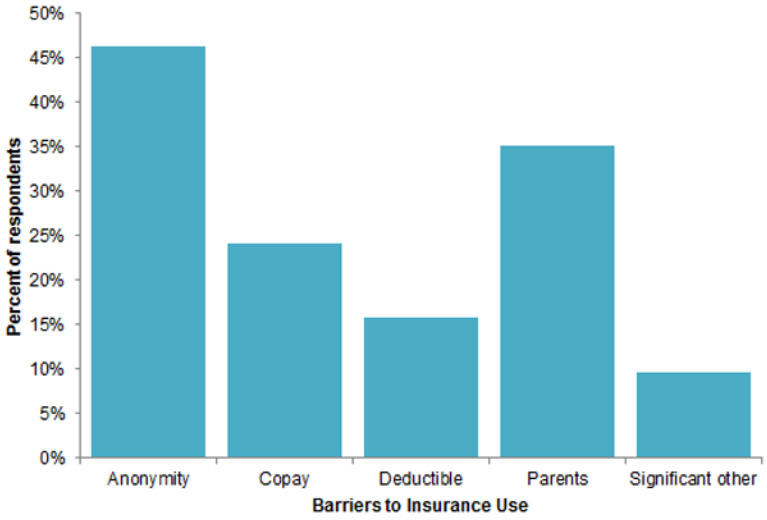

Figure 2.

Frequency of barriers to insurance use endorsed by a subset of survey participants (n = 145). Reasons are not mutually exclusive.

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Table 1

Characteristics of patients at a publicly-funded STD clinic by insurance status and insurance use, July to December 2015

	Insurance coverage status				Insurance use, among insured			
	Uninsured (n=276)	**Insured (n=417)**	**Total (n=692)**	**χ^2 *p*-value**	**Did not use (n=209)**	**Used (n=208)**	**Total (n=417)**	**χ^2 *p*-value**
	N (%)	***N (%)***	***N (%)***		***N (%)***	***N (%)***	***N (%)***	
Age								
Younger than 20 years	6 (2.2)	34 (8.2)	40 (5.8)	**0.008**	24 (11.5)	10 (4.8)	34 (8.2)	< **0.001**
20–29 years	139 (50.6)	194 (46.5)	333 (48.1)		104 (49.8)	90 (43.3)	194 (46.5)	
30–39 years	74 (26.9)	97 (23.3)	171 (24.7)		31 (14.8)	66 (31.7)	97 (23.3)	
40 years or older	56 (20.4)	92 (22.1)	148 (21.4)		50 (23.9)	42 (20.2)	92 (22.1)	
Gender								
Male	198 (72.0)	312 (74.8)	510 (74.7)	0.410	149 (71.3)	163 (78.4)	312 (74.8)	0.096
Female	77 (28.0)	105 (25.2)	182 (26.3)		60 (28.7)	45 (21.6)	105 (25.2)	
Race								
White	135 (50.2)	248 (59.8)	343 (56.0)	**0.014**	128 (61.8)	120 (57.7)	248 (59.8)	0.389
Non-white	134 (49.8)	167 (40.2)	301 (44.0)		128 (61.8)	88 (42.3)	167 (40.2)	
Ethnicity								
Non-Hispanic or Latino/a	203 (75.2)	248 (83.7)	551 (80.3)	**0.006**	174 (83.7)	174 (83.7)	348 (83.7)	1.00
Hispanic or Latino/a	67 (24.8)	68 (16.4)	135 (19.7)		34 (16.4)	34 (16.4)	68 (16.4)	
Sexual behavior								
Non-MSM	201 (73.1)	252 (60.6)	453 (65.6)	**0.001**	133 (63.9)	119 (57.2)	252 (60.6)	0.160
MSM	74 (26.9)	164 (39.4)	238 (34.4)		75 (36.1)	89 (42.8)	164 (39.4)	
Number of sex partners, past 12 months								
0 partners	4 (1.45)	9 (2.16)	13 (1.88)	0.205	4 (1.91)	5 (2.40)	9 (2.16)	0.300
1–4 partners	188 (68.4)	258 (61.9)	446 (64.5)		137 (65.6)	121 (58.2)	258 (81.9)	
5 or more partners	83 (30.2)	150 (36.0)	233 (33.7)		68 (32.5)	82 (39.4)	150 (36.0)	

MSM – gay, bisexual, and other men who have sex with men; STD – sexually transmitted disease

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Table 2

Relative risk of uninsured status among STD clinic patients (n=683), unadjusted and adjusted for demographic variables

	Uninsured (%)	Unadjusted IRR	95% CI	*p*-value	Adjusted IRR	95% CI	*p*-value
Age							
Younger than 20 years	15.0	1.00	-	-	1.00	-	-
20–29 years	41.7	2.78	(1.32, 5.89)	**0.007**	2.67	(1.27, 5.60)	**0.009**
30–39 years	43.3	2.88	(1.35, 6.16)	**0.006**	2.93	(1.38, 6.22)	**0.005**
40 years or older	37.8	2.52	(1.17, 5.42)	**0.018**	2.74	(1.28, 5.86)	**0.009**
Sex							
Male	38.8	1.00	-	-	1.00	-	-
Female	43.3	1.09	(0.891, 1.33)	0.404	0.98	(0.785, 1.21)	0.832
Race							
White	35.3	1.00	-	-	1.00	-	-
Non-white	44.5	1.26	(1.05, 1.52)	**0.014**	1.10	(0.885, 1.56)	0.399
Ethnicity							
Non-Hispanic or Latino/a	36.8	1.00	-	-	1.00	-	-
Hispanic or Latino/a	49.6	1.35	(1.10, 1.65)	**0.004**	1.25	(0.997, 1.58)	0.053
Sexual risk category							
Non-MSM	44.4	1.00	-	-	1.00	-	-
MSM	31.1	0.701	(0.565, 0.869)	**0.001**	0.697	(0.551, 0.880)	**0.016**

MSM – gay, bisexual, and other men who have sex with men; STD – sexually transmitted disease

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Table 3

Relative risk of insurance non-use among insured STD clinic patients (n = 417), unadjusted and adjusted for demographic variables

	Did not use insurance (%)	Unadjusted IRR	95% CI	*p*-value	Adjusted IRR	95% CI	*p*-value
Age							
Younger than 20 years	70.6	1.00	-	-	1.00	-	-
20–29 years	53.6	0.759	(0.589, 0.979)	**0.034**	0.792	(0.609, 1.03)	0.084
30–39 years	32.0	0.453	(0.315, 0.651)	**<0.001**	0.468	(0.318, 0.690)	**< 0.001**
40 years or older	54.4	0.770	(0.578, 1.03)	0.074	0.79	(0.576, 1.08)	0.136
Sex							
Male	47.8	1.00	-	-	1.00	-	-
Female	57.1	1.20	(0.977, 1.47)	0.082	1.08	(0.848, 1.38)	0.525
Race							
White	51.6	1.00	-	-	1.00	-	-
Non-white	47.3	0.917	(0.750, 1.12)	0.395	0.890	(0.710, 1.12)	0.314
Ethnicity							
Non-Hispanic/Latino	50.0	1.00	-	-	1.00	-	-
Hispanic/Latino	50.0	1.00	(0.771, 1.30)	1.00	0.996	(0.745, 1.33)	0.980
Sexual risk category							
Non-MSM	52.8	1.00	-	-	1.00	-	-
MSM	45.7	0.866	(0.707, 1.06)	0.168	0.927	(0.736, 1.17)	0.522

MSM – gay, bisexual, and other men who have sex with men; STD – sexually transmitted disease