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Healthcare Provider Contact and Pre-exposure Prophylaxis in Baltimore Men Who Have Sex With Men

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Abstract

Introduction—Pre-exposure prophylaxis (PrEP) safely and effectively prevents HIV in populations at high risk, including men who have sex with men (MSM). PrEP scale-up depends upon primary care providers and community-based organizations (CBOs) sharing PrEP information. This study aimed to determine whether healthcare provider or CBO contact was associated with PrEP awareness among Baltimore MSM.

Methods—This study used 2014 Baltimore MSM National HIV Behavioral Surveillance data, which included data on health care, HIV and sexually transmitted infection testing, and receipt of condoms from CBOs. In 2015, associations were estimated between healthcare contacts and PrEP awareness through logistic regression models controlling for age, race, and education and clustering by venue. Comparative analyses were conducted with HIV testing as outcome.

Results—There were 401 HIV-negative participants, of whom 168 (42%) were aware of PrEP. Visiting a healthcare provider in the past 12 months, receiving an HIV test from a provider, and having a sexually transmitted infection test in the past 12 months were not significantly associated with PrEP awareness. PrEP awareness was associated with being out to a healthcare provider (OR = 2.97, 95% CI=1.78, 4.96, $p<0.001$); being tested for HIV (OR=1.50, 95% CI = 1.06, 2.13, $p = 0.023$); and receiving condoms from an HIV/AIDS CBO (OR = 2.59, 95% CI = 1.43, 4.64, $p = 0.001$). By contrast, HIV testing was significantly associated with most forms of healthcare contact.

Conclusions—PrEP awareness is not associated with most forms of healthcare contact, highlighting the need for guidelines and trainings to support provider discussion of PrEP with MSM.

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INTRODUCTION

Clinical trials have shown that oral pre-exposure prophylaxis (PrEP) with tenofovir disoproxil fumarate and emtricitabine is a safe and effective approach to reducing HIV transmission.[1–4] Men who have sex with men (MSM) have the highest HIV prevalence in the U.S., making up 66% of new HIV infections in 2014.[5] In 2011, the estimated HIV prevalence among MSM was 18%.[6] In the multicountry Chemoprophylaxis for HIV Prevention in Men (iPrEx) study, Grant and colleagues[1] found that PrEP reduced HIV incidence by 92% among MSM who had the drug detected in their blood. Observational studies also show that PrEP is effective outside of clinical trial settings. PrEP could have a large impact on the HIV epidemic in the U.S., where there are more than 44,000 new cases of HIV every year.[5,7]

The Centers for Disease Control and Prevention (CDC) recommends PrEP for individuals who are part of key populations at high risk for HIV transmission, including MSM who have unprotected anal intercourse.[8] Despite widespread enthusiasm for PrEP in the HIV treatment and control community[9] and interest in PrEP use among MSM once they learn about it,[10,11] PrEP rollout has been slow since its U.S. Food and Drug Administration approval in July 2012.[12,13] Even following its approval, the majority of U.S. MSM report that they have not heard of PrEP.[14,15] This study investigated whether contact with providers or community-based organizations (CBOs) was associated with PrEP awareness among MSM from Baltimore, MD.

Because PrEP must be prescribed by a healthcare provider, PrEP scale-up largely depends upon healthcare providers sharing PrEP information and implementing CDC PrEP guidelines[8] with individuals at high risk of HIV transmission.[16] Prior studies indicate that PrEP awareness is high among HIV specialists,[17] but HIV care providers rarely interact with HIV-negative patients who are eligible for PrEP. HIV-negative men are more likely to interact with primary care providers (PCPs) than with HIV care providers. CDC recently found that one third of PCPs and nurses remain unaware of PrEP.[18] In a survey of California and New York providers, Blumenthal et al.[19] found that providers not specializing in HIV had lower PrEP knowledge, and that physician knowledge was associated with likelihood of prescribing PrEP in the future.

Some providers who are familiar with PrEP are reluctant to prescribe it; Blumenthal and colleagues[19] found that the most common provider concerns were drug toxicity, drug resistance, adherence, and the potential for increased sexual risk behavior. Clinical trials indicate that PrEP has a low risk of drug toxicity but that adherence can be a challenge.[1–3] Although MSM participating in clinical trials did not report engaging in more risky sexual behavior or have increases in sexually transmitted infections (STIs),[3,10,11] implementation evidence suggests decreased condom use in a subset of MSM using PrEP.[20]

Low knowledge of PrEP among PCPs is just one important barrier to provider–patient communication about PrEP. For PCPs to inform MSM about PrEP, they must have a mechanism for identifying patient eligibility such as discussing sexual behavior with patients. Many healthcare providers avoid taking sexual histories owing to discomfort.

[16,21,22] In a study of internal medicine visits in Colorado, Loeb et al.[23] found that just 25% of patients' charts documented any elements of sexual history. MSM may also be reluctant to discuss sexual behavior with providers because of fear of stigma. In a recent survey of more than 4,700 MSM using the social networking site Grindr, 17% of men who were interested in PrEP but not using it cited anxiety about discussing PrEP with their healthcare provider as a main PrEP barrier.[24]

Those CBOs working with populations at high risk of HIV transmission could also help inform individuals about PrEP. CBOs have played an integral role in promoting HIV prevention since the early years of the U.S. epidemic, and have likely played a role in increasing condom use among MSM in the past.[25–28] CBOs commonly distribute condoms and provide health information, and could include information on PrEP.

This study aimed to assess the extent to which different forms of healthcare provider and CBO contact were associated with MSM PrEP awareness. As a point of comparison and a validity check, it also investigated the relationship between healthcare provider and CBO contact with HIV testing. The U.S. Preventive Services Task Force recommends at least annual HIV testing for MSM.[29] HIV testing and discussion of PrEP both involve communication with healthcare providers about potential HIV risk. The authors hypothesized that healthcare provider and CBO contacts would be significantly associated with both PrEP awareness and HIV testing.

METHODS

Study Sample

Data were from the 2014 MSM wave of National HIV Behavioral Surveillance (NHBS) in Baltimore.[30,31] The HIV prevalence in Baltimore is among the highest in the country, and an estimated 31% of MSM in Baltimore are infected with HIV.[32] The NHBS is a repeated, cross-sectional HIV survey conducted in 20 cities in the U.S. Annual NHBS cycles rotate between MSM, injection drug users, and high-risk heterosexuals. Data from the MSM wave is collected through venue-based sampling, with men recruited from venues where ≥50% of individuals are MSM. MSM were eligible to participate if they were aged ≥18 years, lived in the participating area, were born male and identified as male, ever had oral or anal sex with a man, were able to complete the interview in English or Spanish, and had not previously participated in the MSM cycle of the NHBS. In this analysis, the authors further restricted eligibility criteria to MSM who had been sexually active within the past year and who were not living with HIV.

For the NHBS, trained interviewers administered a comprehensive questionnaire and provided voluntary HIV testing and counseling. MSM received compensation for their participation.

Measures

Exposures were measured according to the following forms of healthcare and CBO contacts:

1. seeing a healthcare provider within the past 12 months;

2. having a usual source of care;
3. being out to a healthcare provider;
4. receiving an HIV test from their healthcare provider;
5. getting tested for HIV;
6. getting tested for an STI;
7. testing positive for an STI;
8. participating in individual HIV prevention counseling;
9. participating in group HIV prevention counseling;
10. receiving free condoms from an HIV CBO; and
11. receiving free condoms from a lesbian, gay, bisexual, and transgender (LGBT) CBO.

The main outcome measure was based on the following question sequence: Before today, have you ever heard of people who do not have HIV taking anti-HIV medicines, to keep from getting HIV? In the past 12 months, have you taken anti-HIV medicines before sex because you thought it would keep you from getting HIV?

Statistical Analysis

Associations were estimated between healthcare provider contact and PrEP awareness using logistic regression controlling for age, race, education, and income and SEs were clustered based on recruitment venue. The analysis was stratified by all MSM in the sample and by the subset of men who had disclosed that they were MSM to a healthcare provider. This was done in order to account for healthcare providers potentially not discussing PrEP because of lack of awareness of patients' sexual behavior. Stata, version 12, was used to conduct all analyses. To assess the validity of the study approach and to compare PrEP outcomes to another HIV prevention outcome, the authors also evaluated the relationship between healthcare provider and CBO contact on HIV testing in the past year. Statistical analysis was conducted in 2015.

This study was approved by the Johns Hopkins Bloomberg School of Public Health IRB #H. 34.03.07.02.A1.

RESULTS

The study included 417 participants, of whom 61% identified as non-Hispanic black, 24% as non-Hispanic white, 5% as Hispanic, and 10% as multiracial (Table 1). Mean participant age was 34 years. About 60% of participants graduated high school or obtained further education. Slightly more than half of participants had household income <$25,000. Most participants had a usual source of health care, with 42% visiting a doctor, 34% a clinic, and 23% an emergency department; 82% of participants had visited a healthcare provider within the past 12 months, and 62% of those individuals received an HIV test from their healthcare provider. Seventy-one percent of participants disclosed that they were MSM to a healthcare

provider. About two thirds of participants were tested for HIV within the past 12 months, and 46% of participants were tested for STIs. Two thirds of participants received free condoms from a CBO, health clinic, bar, or other source. About 20% of participants had an individual HIV counseling session and 8% of participants had a group HIV prevention counseling session. Most participants were not aware of PrEP, with 41% of all participants aware of PrEP and 2% of participants taking PrEP. Once participants learned about PrEP, about 60% of participants expressed willingness to take PrEP for HIV prevention.

Table 2 depicts the relationship of participant characteristics and healthcare provider and CBO contact with PrEP awareness. There were disparities in PrEP awareness by race and by educational attainment. Non-Hispanic black MSM were significantly less likely to be aware of PrEP relative to non-Hispanic white MSM (AOR=0.40, 95% CI = 0.23, 0.69, $p = 0.001$). MSM with college or greater educational attainment were significantly more likely to be aware of PrEP than MSM who had a level of educational attainment of eighth grade or less (AOR = 4.31, 95% CI=1.51, 12.32, $p=0.006$). Men with household incomes of $60,000 or more annually were significantly more likely to be aware of PrEP than men with household incomes under $10,000 per year (AOR = 3.09, 95% CI = 1.85, 5.17, $p < 0.001$). PrEP awareness was not significantly associated with age.

Awareness of PrEP was positively associated with being out to a healthcare provider (AOR = 2.97, 95% CI = 1.78, 4.96, $p<0.001$); being tested for HIV (AOR = 1.50, 95% CI = 1.06, 2.13, $p=0.023$); and receiving free condoms from an HIV/AIDS CBO (AOR = 2.59, 95% CI = 1.43, 4.64, $p = 0.001$) among sexually active, HIV-negative MSM. PrEP awareness was not associated with visiting a healthcare provider in the past 12 months, having a doctor or clinician as a usual care provider, receiving an HIV test from a provider visited in the past 12 months, having an STI test in the past 12 months, having a positive STI test in the past 12 months, health insurance, participation in individual and group HIV prevention counseling, and receiving free condoms from an LGBT CBO. Among the subset of sexually active, HIV-negative men who were out to a healthcare provider, no forms of provider contact were associated with PrEP awareness. Among these men, receiving free condoms from an HIV/AIDS-focused CBO was significantly associated with greater PrEP awareness (AOR = 2.34, 95% CI = 1.08, 5.10, $p = 0.031$).

Table 3 shows associations between contact with health-care providers and CBOs with HIV testing as a validity check and a point of comparison for PrEP as an approach to addressing HIV. Nearly all forms of healthcare and CBO contact were significantly or marginally positively associated with the odds of being tested for HIV in the past year. The exceptions were that having the emergency department as a usual source of care (AOR=1.40, 95% CI = 0.81, 2.42, $p = 0.222$ and receiving free condoms from an LGBT organization (AOR=0.86, 95% CI = 0.45, 1.64, $p=0.642$) were not significantly associated with HIV testing.

DISCUSSION

This study documented that PrEP awareness was significantly greater among those who reported recent HIV testing and being out to a healthcare provider. However, STI testing, healthcare visits within the past year, health-care provider recommendation of an HIV test,

and other forms of healthcare provider contact were not significantly associated with PrEP awareness among MSM in Baltimore. By contrast, HIV testing was significantly associated with most forms of healthcare provider contact. These findings suggest that healthcare providers are promoting HIV testing among MSM, but are not promoting PrEP. The findings also show that lack of PrEP awareness persists among the subset of MSM who disclosed that they were MSM to a healthcare provider. These findings support that lack of discussion of PrEP by healthcare providers is one reason that only a quarter of MSM nationwide report PrEP awareness.[14] The majority of MSM in this study expressed willingness to take PrEP to prevent HIV once made aware of it. Improving PCP PrEP knowledge and ability to discuss PrEP with patients who are at risk for HIV will be an important component of efforts to scale up PrEP.

A lack of awareness or detailed knowledge of PrEP among many PCPs may explain why healthcare providers are not making MSM patients aware of PrEP.[14,17,18] Efforts to improve PCP readiness to prescribe PrEP could include efforts by HIV specialists to inform PCPs about PrEP through conferences and meetings, PrEP guidelines for PCPs, publications on PrEP in journals that target PCPs, and interventions to improve PrEP awareness among healthcare providers and patients. Guidelines from the U.S. Preventive Services Task Force would also support PCP provision of PrEP.[33]

The findings that STI testing and positive STI results were not associated with increased PrEP awareness are particularly concerning. STI testing is most likely among individuals who have been sexually active and potentially exposed to STIs, including HIV.[34] Baseline data from the PrEP Demonstration Project indicated high PrEP interest and uptake of PrEP among MSM attending STI clinics in Miami, Washington, DC, and San Francisco.[35] Efforts to scale up PrEP implementation should also target STI testing centers.

It is encouraging that receiving free condoms from an HIV/AIDS CBO was associated with PrEP awareness and with HIV testing, suggesting that these organizations may be playing a positive role in PrEP scale up in the MSM community. The present findings show that only a small proportion of Baltimore MSM received free condoms from LGBT organizations and that receiving free condoms from LGBT CBOs was not associated with PrEP awareness or with HIV testing. This suggests a potential distinction in Baltimore between MSM HIV prevention activities and other LGBT services and programming that may deserve additional exploration for potential synergies. For example, LGBT CBOs could play a greater role in promoting PrEP as an important HIV prevention option and help inform culturally appropriate local PrEP social marketing.[36,37] Condom distribution is an opportunity to integrate information on PrEP and HIV testing.

The authors also found disparities in PrEP awareness by race, educational attainment, and household income. Non-Hispanic black MSM in this study were significantly less likely to be aware of PrEP than non-Hispanic white MSM. This is particularly concerning given that African American MSM have a disproportionate burden of HIV.[5] MSM with eighth grade or lower educational attainment were significantly less likely to be aware of PrEP than MSM with college or graduate education. Efforts to increase PrEP awareness should target black MSM, MSM with lower educational attainment, and low-income MSM.

Limitations

Limitations of this study include restricted information on healthcare visits and limited ability to control for confounding variables. The NHBS data do not indicate the nature of contact with healthcare providers, making it difficult to assess the nature of the visit and whether contacts were with PCPs or other types of providers. The main outcome is self-reported PrEP awareness, which is subject to limitations in recall, although conclusions would not be expected to differ substantially as recall bias should not differ across exposure groups.

Another limitation is that mechanisms of provider HIV testing and PrEP discussion may differ. Though HIV testing and discussion of PrEP are likely predicated on similar provider awareness of potential HIV exposure, there are differences in counseling requirements. CDC does not require counseling as part of HIV testing[38]; by contrast, prescribing PrEP entails detailed counseling as well as an expectation of continuous follow-up.[8]

The authors could not control for all patient characteristics that may affect both healthcare provider contact and PrEP awareness, such as health-seeking behavior. Men with underlying conditions may also be more likely to visit providers for reasons unrelated to sexual health, in which case providers would be less likely to discuss PrEP. Some of these limitations were addressed by comparing the relationship between healthcare provider contact and PrEP awareness to the relationship between healthcare provider contact and HIV testing. One would expect underlying patient health and healthcare-seeking characteristics to affect HIV testing and PrEP awareness in similar manners. One would also not expect to see a relationship between healthcare provider contact and HIV testing if most healthcare provider contacts were not relevant to HIV prevention. The external validity of this study is also limited to MSM who attend venues where more than 50% of individuals are MSM, which may miss those MSM who do not spend time at predominantly MSM venues.

CONCLUSIONS

This study provides new evidence that contact with healthcare providers is not associated with PrEP awareness among MSM in Baltimore, MD. These findings provide important insight into PrEP awareness in Baltimore, which represents essential baseline data as the city begins a large-scale initiative to increase PrEP awareness and utilization. Findings highlight the need to support healthcare providers' PrEP knowledge and ability to discuss PrEP with key populations at risk of HIV as well as to address racial disparities in PrEP awareness. Policymakers can also improve PrEP implementation by encouraging the U.S. Preventive Services Task Force and other professional groups to issue PrEP recommendations.

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Table 1

Descriptive Statistics

Characteristic	*n* (%) (N=401)	SE
Race		
Non-Hispanic white	102 (25.4)	2.2
Non-Hispanic black	242 (60.4)	2.4
Hispanic	18 (4.5)	1.0
Multiracial	39 (9.7)	1.5
Age		
18–24	100 (24.9)	2.2
25–29	93 (23.2)	2.1
30–34	66 (16.5)	1.8
35–44	64 (16.0)	1.8
45–54	60 (15.0)	1.8
55–70	18 (4.5)	1.0
Education		
Grade 8 or lower	24 (6.0)	1.2
Grades 9–11	134 (33.4)	2.4
Grade 12/GED	105 (26.2)	2.2
Some college or greater	138 (34.4)	2.4
Income		
Below $10,000	85 (21.2)	2.1
$10,000–24,999	94 (23.4)	2.2
$25,000–39,999	77 (19.2)	2.0
$40,000–59,999	61 (15.2)	1.8
$60,000 or above	84 (20.9)	2.1
Usual source of health care		
Clinic	113 (28.2)	2.2
Doctor	138 (34.4)	2.4
ER	72 (18.0)	1.9
None	74 (18.5)	1.9
Out to a healthcare provider	285 (71.3)	2.3
Visited provider past 12 months	327 (81.6)	1.9
Received HIV test from provider during visit in past 12 months (*n*=339)	202 (61.8)	2.7
STI testing past 12 months	189 (47.3)	2.5
Positive STI test past 12 months	39 (9.7)	1.5
Received free condoms		
No free condoms	138 (65.6)	2.4
HIV/AIDS CBO	73 (18.2)	1.9

HIV testing past 12 months	260 (64.8)	2.3

Characteristic	***n* (%) (N=401)**	**SE**
LGBT health CBO	60 (15.0)	1.8
Health center/clinic	134 (33.4)	2.4
Bar	129 (32.2)	2.3
Other	44 (11.0)	1.5
Discussed HIV in a group	33 (8.2)	1.4
Discussed HIV one-on-one	76 (19.0)	2.0
Aware of PrEP	168 (41.9)	2.5
Ever taken PrEP	9 (2.2)	1.7
Willing to take PrEP once aware (n=370)	219 (54.6)	2.6

CBO, community-based organization; ER, emergency room; GED, General Educational Development test; LGBT, lesbian, gay, bisexual, and transgender; PrEP, pre-exposure prophylaxis; STI, sexually transmitted infection.

Table 2

Association Between Patient Characteristics and Healthcare or Community-Based Organization Contacts With PrEP Awareness

	All HIV-negative MSM sexually active within the past 12 months		MSM who are out to a healthcare provider	
Characteristic	**% aware of PrEP**	**AOR (95% CI) (N=401)**	**% aware of PrEP**	**AOR (95% CI) (*n*=285)**
Age	41.4	0.99 (0.97, 1.02)	50.2	1.0 (0.97, 1.02)
Race category				
Non-Hispanic white	61.8	ref	69.3	ref
Non-Hispanic black	30.6	**0.40*** (0.23, 0.69)**	38.4	**0.44*** (0.25, 0.75)**
Hispanic	50.0	0.48 (0.17, 1.36)	53.8	0.44 (0.14, 1.39)
Multiracial	56.4	0.93 (0.45, 1.91)	63.3	0.91 (0.35, 2.35)
Educational attainment				
Grade 8 or lower	20.8	ref	14.3	ref
Grades 9–11	23.9	1.04 (0.45, 3.30)	29.1	2.02 (0.38, 10.89)
Grade 12 or GED	42.9	2.26 (0.86, 7.50)	50.6	4.32 (0.66, 28.39)
Some college or greater	62.3	**4.31*** (1.51, 12.32)**	68.1	8.23 (1.15, 58.89)
Income				
Below $10,000	23.8	ref	28.6	ref
$10,000–24,999	32.6	1.50 (0.80, 2.81)	44.2	1.76 (0.84, 3.68)
$25,000–39,999	42.3	1.69 (0.74, 3.86)	53.7	2.00 (0.87, 4.61)
$40,000–59,999	46.4	1.38 (0.72, 2.63)	51.1	1.18 (0.51, 2.70)
$60,000 or above	65.0	**3.09*** (1.85, 5.17)**	65.2	**2.39**** (1.17, 4.86)
Usual source of health care				
No usual source	36.5	ref	55.0	ref
Clinic	45.1	1.68 (0.88, 3.18)	58.4	1.54 (0.69, 3.45)
Doctor	46.4	1.36 (0.72, 2.58)	48.3	0.85 (0.42, 1.75)
ER	33.3	1.84 (0.89, 3.79)	41.5	1.31 (0.55, 3.11)
Visited a healthcare provider in past 12 months				
No	36.5	ref	53.8	ref
Yes	43.1	1.37 (0.78, 2.41)	49.6	0.68 (0.27, 1.70)

Characteristic	All HIV-negative MSM sexually active within the past 12 months		MSM who are out to a healthcare provider	
	% aware of PrEP	AOR (95% CI) (N=401)	% aware of PrEP	AOR (95% CI) (*n*=285)
Receive HIV test from a healthcare provider during visit in the past 12 months (N=327)				
No	44.0	ref	51.2	ref
Yes	42.5	1.30 (0.76, 2.22)	48.8	1.34 (0.76, 2.37)
Out to a healthcare provider				
No	21.7	ref	—	—
Yes	50.2	**2.97*** (1.78, 4.96)**	—	—
Tested for HIV in the past 12 months				
No	36.2	—	45.2	ref
Yes	45.0	**1.50**** (1.06, 2.13)	52.2	1.47 (0.84, 2.57)
STI test in past 12 months				
No	41.0	—	52.9	ref
Yes	41.8	0.90 (0.58, 1.41)	47.3	0.75 (0.48, 1.16)
Positive STI test in past 12 months				
No test	40.9	—	49.4	ref
Positive test	51.3	1.43 (0.64, 3.20)	56.3	1.25 (0.50, 3.13)
HIV prevention counseling one-on-one in past 12 months (other than post-test counseling)				
No	42.5	ref	50.2	ref
Yes	39.5	0.97 (0.55, 1.74)	50.0	1.13 (0.52, 2.44)
HIV prevention counseling in a group				
No	41.6	ref	49.2	ref
Yes	45.5	1.42 (0.58, 3.49)	60.9	2.01 (0.64, 6.27)
Received free condoms from CBO				
No	41.3	ref	53.3	ref
Free condoms from HIV/AIDS CBO	54.8	**2.58*** (1.44, 4.64)**	58.2	**2.34** (1.08, 5.10)**
Free condoms from LGBT CBO	50.0	0.60 (0.32, 1.12)	51.1	0.54 (0.24, 1.22)
Free condoms from clinic	41.0	1.03 (0.59, 1.79)	46.9	0.81 (0.45, 1.47)
Free condoms from bar	49.6	1.34 (0.78, 2.31)	56.3	1.33 (0.73, 2.43)
Free condoms from other	43.2	1.12 (0.66, 1.93)	45.5	0.81 (0.45, 1.47)

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Note: All estimates are adjusted for educational attainment category, race category, and age in years. SEs are clustered by venue. Boldface indicates statistical significance (** $p<0.05$; *** $p<0.01$).

CBO, community-based organization; ER, emergency room; GED, General Educational Development test; LGBT, lesbian, gay, bisexual, and transgender; MSM, men who have sex with men; PrEP, pre-exposure prophylaxis; STI, sexually transmitted infection.

Table 3

Association Between Contacts With Healthcare Providers or CBOs and HIV Testing

Characteristic	% tested for HIV in the past 12 months	AOR (95% CI) (N=401)
Age	64.8	**0.96*** (0.94, 0.98)**
Race category		
Non-Hispanic white	58.8	ref
Non-Hispanic black	67.8	1.71 (0.93, 3.14)
Hispanic	83.3	3.09 (0.82, 11.75)
Multiracial	53.8	0.74 (0.31, 1.77)
Educational attainment		
Grade 8 or lower	58.3	ref
Grade 9–11	59.7	0.83 (0.36, 1.92)
Grade 12 or GED	65.7	1.17 (0.48, 2.86)
Some college or greater	70.3	1.65 (0.71, 3.80)
Usual source of health care		
No usual source	59.5	ref
Clinic	69.0	**2.11** (1.13, 3.94)**
Doctor	68.1	1.63 (0.95, 2.78)
ER	58.3	1.40 (0.81, 2.42)
Visited a healthcare provider in past 12 months		
No	39.2	ref
Yes	70.4	**4.36*** (2.68, 7.01)**
Out to a healthcare provider		
No	51.3	ref
Yes	70.3	**2.16*** (1.34, 3.42)**
HIV prevention counseling one-on-one in past 12 months (other than post-test counseling)		
No	61.7	ref
Yes	77.6	**2.08** (1.10, 3.93)**
HIV prevention counseling in a group		
No	63.1	ref
Yes	81.8	**2.73** (1.10, 6.80)**
Received free condoms from CBO		
No free condoms	51.4	ref
Free condoms from HIV/AIDS CBO	79.7	**2.03** (1.13, 3.65)**
Free condoms from LGBT CBO	72.1	0.86 (0.45, 1.64)
Free condoms from clinic	74.8	**1.84** (1.05, 3.20)**
Free condoms from bar	72.3	**1.53** (1.02, 2.29)**
Free condoms from other	68.2	0.95 (0.48, 1.88)

Note: All estimates are adjusted for educational attainment category, race category, and age in years. Authors excluded STI testing as inclusive of HIV testing. SEs are clustered by venue. Boldface indicates statistical significance (**$p<0.05$; ***$p<0.01$).

CBO, community-based organization; ER, emergency room; GED, General Educational Development test; LGBT, lesbian, gay, bisexual, and transgender; STI, sexually transmitted infection.