

Health Care–Seeking Behaviors and Perceptions of Provider-Initiated Discussion of Pre-exposure Prophylaxis Among PrEP-Naïve HIV-Negative Men Who Have Sex With Men in Atlanta, Georgia

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Background. Given high rates of HIV among men who have sex with men (MSM) in the United States, there is a need to more effectively leverage the health care system to bolster promotion of pre-exposure prophylaxis (PrEP) to at-risk MSM.

Methods. Using data collected from a 2018 venue-based cross-sectional survey, we examined factors associated with health care-seeking behaviors, discussing PrEP with a provider, and barriers to PrEP uptake among MSM. Associations between outcomes and respondents' sociodemographic characteristics and sexual behaviors were assessed using log binomial regression.

Results. Of 478 MSM, 247 (51%) were PrEP-naïve and HIV-negative. Although 85% of PrEP-naïve MSM reported visiting a health care provider in the past year, only 31% recalled having any provider discuss PrEP. The most frequently cited reasons for not taking PrEP were low perception of personal risk of acquiring HIV (37%) and not knowing enough about PrEP (35%). Those who saw a provider in the last year were less likely than those who did not to cite lack of knowledge as a barrier to use (prevalence rate, 0.66, 95% confidence interval, 0.45–0.96).

Conclusions. Despite the majority of PrEP-naïve MSM interfacing with the health care system, recollection of discussing PrEP with providers was limited. Increased efforts to equip providers with the tools to discuss PrEP and address pressing concerns with at-risk individuals may help improve PrEP uptake among priority populations.

Keywords. HIV; pre-exposure prophylaxis; MSM; primary care; PrEP promotion.

Despite decreases in the rate of HIV diagnoses in the United States over the past decade, the HIV burden remains high in select subgroups. In 2017, there were 11.8 HIV diagnoses per 100 000 persons in the United States. Male-to-male sexual contact accounted for 70% of HIV diagnoses among adolescents and adults [1]. Given high rates of HIV infection among men who have sex with men (MSM), there is a need to increase access to and utilization of HIV preventive measures. One such measure is HIV pre-exposure prophylaxis (PrEP). Since 2012, Tenofovir/emtricitabine (TDF/FTC) for HIV PrEP has emerged as an important tool for HIV prevention [2], as it lowers the risk of becoming HIV-infected if taken as prescribed [3–5]. Despite its effectiveness and increasing PrEP awareness among MSM

at risk for HIV, actual use has remained suboptimal. Among at-risk MSM in urban US areas, only about one-third indicated use of PrEP in 2017 [6]. A modeling study by Jenness et al. suggests that adequate PrEP coverage among black MSM in the United States could decrease HIV incidence by as much as 23% over 10 years [7]. To achieve significant declines in HIV incidence on account of PrEP, barriers to PrEP uptake among the populations most affected by HIV will need to be addressed.

An important step toward improving PrEP uptake is ensuring that every effort is made to leverage existing interactions between health care providers and at-risk individuals to provide HIV risk education and offer PrEP. In the United States, all licensed prescribers, including nonspecialists such as primary care providers (PCPs), can offer patients PrEP [8]. PCPs often have initial contact with individuals at increased risk of HIV, positioning them well to ensure that these patients receive HIV risk evaluation, education, and PrEP where indicated [9]. However, PCP awareness of and comfort prescribing PrEP remain limited [10]. In a 2017 study, only 39% of MSM who had visited a health care provider in the prior 12 months were taking PrEP, despite report of high-risk behaviors [6]. Although a myriad of factors including PrEP cost, structural barriers to health care access, and inaccurate risk perception all contribute

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to low rates of PrEP uptake, low occurrence of PrEP discussions at clinical encounters may be a critical factor that needs to be addressed to increase PrEP use.

This study characterizes the health-seeking behaviors and PrEP perceptions of PrEP-naïve MSM in Atlanta, Georgia, with particular emphasis on demographic differences in provider types seen and reasons cited for avoiding or considering PrEP. By identifying factors associated with reportedly not discussing PrEP with a provider, these findings can help refine provider-focused components of HIV prevention programs that are occurring or being planned for implementation in the United States.

METHODS

Using data collected from a 2018 cross-sectional survey administered by the Fulton County Board of Health (FCBOH) in Atlanta, Georgia, to ascertain the state of PrEP awareness and use among high-risk populations, this analysis examines factors associated with health care-seeking behaviors and having discussed PrEP with a provider among PrEP-naïve HIV-negative MSM.

Data Collection

As part of a larger study by the FCBOH, a 43-question survey was administered to attendees of the 2018 Black Gay Pride and Atlanta Pride festivals. Trained staff dispersed throughout the festivals' venues approached eventgoers and asked about interest in participating in the survey; eligibility criteria included being 18 years of age or older and a Georgia resident. Verbal informed consent was received from all participants. Data collected included demographics, HIV risk behaviors, health-seeking behaviors, and PrEP use and awareness. Respondents received a \$5 grocery store gift card upon survey completion. Transgender women who have sex with men (TWSM) and cisgender males who reported having sex with a male in the past 12 months were classified as MSM. Those who reported having an HIV-negative status and never using PrEP (PrEP-naïve) were included in this analysis.

The FCBOH Pride Survey and analysis were approved by the Georgia Department of Public Health Institutional Review Board (IRB) and Emory University IRB.

Outcomes and Correlates of Interest

The main outcomes of interest were (1) type of health care accessed in the past year, (2) recollection of having any PrEP-related discussion with a provider during a clinical encounter in the past year, and (3) reasons for not taking PrEP or being more likely to take PrEP.

Data on the type of health care accessed in the past year were collected using the survey question "Where have you gone to see a doctor or nurse for a medical issue in the past 12 months?" Responses included "I have not gone to

any," "Primary care office (doctor, PA, etc.)," "Emergency room (hospital)," "Service organization (AID Atlanta, etc.)," "Student health services," "County health department/clinic," "Urgent care clinic (not emergency)," and "Other." During analysis, these responses were dichotomized as "Did not see any health care provider in the past year" (participants who responded "I have not gone to any") vs "Saw a health care provider in the past year" (participants who reported going to any of these locations for medical care). Respondents who saw a health care provider in the past year were further grouped into 3 categories, "Primary care office only," "Primary care office and another location," and "Non-primary care location," to streamline analyses by the possible types of health care accessed by respondents.

Recollection of PrEP discussion with a provider among the study sample was ascertained by the survey question "If you have never taken PrEP, has any medical provider discussed PrEP with you in the past year?" Available responses were "Yes," "No," "I have not seen a doctor in the past year," and "N/A (I am HIV-positive/have used PrEP)." Reasons cited for not taking PrEP and reasons cited for being more likely to use PrEP were collected using a check-all-that-apply format with the questions "If you have never taken PrEP, what are the reasons why you are not taking PrEP?" and "If you have never taken PrEP, what will make you more likely to use PrEP?" (see the Supplementary Data for the full survey).

Demographic characteristics including race, age, education, income, and health insurance status were assessed as correlates of study outcomes. Participants at increased risk of acquiring HIV were identified using the criteria for PrEP recommendation included in the Centers for Disease Control and Prevention's (CDC's) clinical practice guidelines for PrEP (2017 update). HIV-uninfected MSM/TWSM who reported having 1 or more HIV-positive sex partners, a bacterial STI within the past 6 months, or inconsistent condom use during sex with casual partners were categorized as being at increased risk of HIV infection [11, 12].

Statistical Analysis

Differences in the type of health care accessed in the previous year were assessed across measured demographic characteristics using chi-square or Fisher exact tests. Prevalence ratios calculated from crude and adjusted log binomial regression models were used to assess associations between medical locations visited in the past year and HIV risk with provider discussion of PrEP. Associations between HIV risk, health care-seeking behaviors, reasons for not taking PrEP, and reasons for being more likely to take PrEP were also assessed using bivariate log binomial models. Statistical significance was defined as a *P* value <.05 (2-sided tests). All analyses were performed using SAS 9.4 (SAS Institute Inc., Cary, NC, USA).

RESULTS

Of 782 adults who completed the survey, 478 were MSM (61%). After excluding HIV-positive participants ($n = 97$), those unsure of their HIV status ($n = 31$), and previous PrEP-users ($n = 107$), 247 HIV-negative PrEP-naïve MSM were included in the study cohort.

The median age (range) was 28 (18–70) years. Over half identified as black/African American (56%), and the majority (72%) resided within the 29-county Atlanta Metropolitan Statistical Area (MSA). Most reported having at least a college education (76%), being currently employed (91%), and earning less than \$60,000 in the past year (79%). Over 75% reported having health insurance; 74% had private/commercial health insurance, and 26% had government-subsidized health insurance (Medicaid/Medicare/Veterans Affairs). There was no significant difference in possession of health insurance between black MSM and non-black MSM ($P = .91$). A minority reported having any drug use (injection or noninjection; 9%) or being diagnosed with a bacterial STI (3%) within the past 6 months. Most participants reported inconsistent condom use (57%) (Table 1).

Accessing Health Care Services

Of the 247 MSM, 211 (85%) reported seeing a health care provider for a medical issue in the past 12 months. There was no statistically significant difference in characteristics of respondents who reported having an encounter with a health care provider and those who did not, except in the possession of health insurance (health insurance possession among those reporting a health care encounter: 83%; health insurance possession among those reporting no health care encounter: 53%; $P < .01$) (Table 1).

Of those who reported seeing a health care provider in the past year, 75% reported accessing medical care at a primary care office (PCO) alone or in addition to another type of medical care service. Twenty-five percent reported accessing medical care at non-primary care types of medical care services only (hospitals, urgent care centers, service organizations, student health centers, etc.). Emergency rooms (ERs) and urgent care clinics were the 2 most commonly reported medical service types accessed after primary care clinics, with just over 10% of the PrEP-naïve MSM reporting visits with providers at these 2 medical service types in the past year. Type of medical service accessed differed significantly by education, insurance possession, and employment status (Table 2). MSM who reported having a college education, being employed, and having health insurance were more likely to report visiting only a PCO compared with those without these characteristics.

Discussion of PrEP During Encounters With Health Care Providers

Among MSM who reported seeing a health care provider in the past 12 months, only 64 (31%) recalled having any discussion about PrEP with a health care provider in the past year.

Adjusted analysis showed that the prevalence of PrEP discussion during health care encounters with clinicians was slightly (4%) higher among those who reported visiting a PCO only compared with those who reported only visiting non-PCO locations, but this was not statistically significant (adjusted prevalence rate [aPR], 1.04; 95% confidence interval [CI], 0.61–1.78). The prevalence of PrEP discussion was also higher among those who reported visiting a PCO in addition to another medical service type compared with those who reported only accessing medical care at a non-PCO, but this was also not statistically significant (aPR, 1.66; 95% CI, 0.85–3.23). PrEP-naïve MSM at increased risk of HIV infection per CDC guidelines had a lower prevalence of PrEP discussion during clinical encounters than those with lower risk (aPR, 0.75; 95% CI, 0.50–1.12) (Table 3).

Reasons for Nonuse of PrEP

The 2 most frequently cited reasons for never taking PrEP were not knowing enough about PrEP and having a low HIV risk perception, with at least 35% of participants citing each of these reasons as barriers. These 2 reasons were cited substantially more often than the other frequently cited reasons (concern about side effects [15%], financial costs of taking PrEP [13%]). In bivariate analyses, individuals at increased risk for HIV were less likely to report low risk perception as a reason for not taking PrEP (PR, 0.58; 95% CI, 0.41–0.80). The prevalence of citing poor PrEP knowledge as a reason for not using PrEP was significantly lower among participants who saw a provider in the previous year (PR, 0.66; 95% CI, 0.45–0.96) and, more specifically, lower among participants who visited a PCO only compared with those who did not see a provider at all (PR, 0.63; 95% CI, 0.42–0.95) (Table 4).

More education on PrEP (44%) and a change in HIV risk (35%) were the most frequently cited reasons for being more likely to take PrEP. Participants who saw a health care provider in the past year were significantly less likely to cite more education or knowledge as a reason for being more likely to take PrEP compared with those who did not see a provider (PR, 0.67; 95% CI, 0.50–0.92). Conversely, participants who reported not having a provider discuss PrEP were more likely to indicate that having more education or knowledge of PrEP would make them more likely to take PrEP (PR, 1.40; 95% CI, 0.94–2.08) compared with those who reported PrEP discussions with providers. Participants who only visited a PCO or non-PCO were significantly less likely than individuals who did not see a provider to indicate a need for more knowledge of PrEP as contributing to their decision to consider taking PrEP (PR, 0.71; 95% CI, 0.51–0.98; PR, 0.63; 95% CI, 0.41–0.97) (Table 4).

DISCUSSION

Our study identified important health-seeking behaviors among PrEP-naïve, HIV-negative MSM residing in Atlanta. Although >80% of PrEP-naïve HIV-negative MSM in our sample reported

Table 1. Characteristics of PrEP-Naïve HIV-Negative MSM by Health-Seeking Behavior, Fulton County Board of Health Pride Survey, Atlanta, Georgia, 2018

	Total Sample (n = 247)		Saw Provider in Past 12 Months				PValue ^a
	No. ^b	(%)	Yes (n = 211)		No (n = 36)		
			No.	(%)	No.	(%)	
Age, y							
18–29	142	(57.7)	119	(56.7)	23	(63.9)	.42
30+	104	(42.3)	91	(43.3)	13	(36.1)	
Race							
Black	138	(55.9)	117	(55.5)	21	(58.3)	.75
Nonblack	109	(44.1)	94	(44.6)	15	(41.7)	
Place of residence							
Atlanta MSA ^c	178	(72.1)	151	(71.6)	27	(75.0)	.67
Not Atlanta MSA	69	(27.9)	60	(28.4)	9	(25.0)	
Education							
No college	58	(24.0)	50	(24.0)	8	(23.5)	.95
College	184	(76.0)	158	(76.0)	26	(76.5)	
Employed							
Yes	225	(91.1)	193	(91.5)	32	(88.9)	.54
No	22	(8.9)	18	(8.5)	4	(11.1)	
Gross income							
<\$60K	194	(78.5)	163	(77.3)	31	(86.1)	.23
>\$60K	53	(21.5)	48	(22.8)	5	(13.9)	
Insurance							
Yes	191	(78.9)	173	(83.2)	18	(52.9)	<.01
No	51	(21.1)	35	(16.8)	16	(47.1)	
Drug use^d							
Yes	21	(8.5)	15	(7.1)	6	(16.7)	.10
No	226	(91.5)	196	(92.9)	30	(83.3)	
History of STI^e							
Yes	8	(3.3)	8	(3.8)	0	(0.0)	.61
No	237	(96.7)	202	(96.2)	35	(100.0)	
HIV-positive partner in past 6 mo							
No HIV-positive partner	212	(86.5)	181	(86.2)	31	(88.6)	1.00
At least 1 HIV-positive partner	33	(13.5)	29	(13.8)	4	(11.4)	
Condom use^f							
Inconsistent	128	(56.9)	112	(58.0)	16	(50.0)	.40
Consistent	97	(43.1)	81	(42.0)	16	(50.0)	

Abbreviations: MSA, Metropolitan Statistical Area; MSM, men who have sex with men; PrEP, pre-exposure prophylaxis; STI, sexually transmitted infection.

^aChi-square tests used for all *P* values except where expected cell count was too small, Fisher exact test used instead; missing values excluded from statistical tests.

^bValues may not sum to column totals due to missing values.

^cAtlanta 29-county Metropolitan Statistical Area.

^dReported at least 1 type of drug use (injection or noninjection) in the past 6 months.

^eBased on the question “In the past 6 months, were you diagnosed with any sexually transmitted infection (STI)? If yes, was it any of the following?” Possible responses included “Syphilis,” “Gonorrhea in the butt or rectum,” “Gonorrhea elsewhere (throat, urethra etc.),” and “Chlamydia.”

^fDefined as inconsistent (report of never or sometimes using condoms during vaginal and/or anal sex in the past 6 months) or consistent (report of always using condoms during vaginal and/or anal sex during the past 6 months or never using condoms but in a committed relationship), excluding those who reported no sex in the past 6 months.

having at least 1 encounter with a health care provider in the past year, less than one-third recalled having discussions on PrEP with a provider within that time frame. This suggests that opportunities to educate and improve PrEP awareness and use among at-risk individuals are being missed during health care encounters.

Most of the study participants reported accessing medical care at PCOs. Although our data could not distinguish between the specific specialties encompassed within this category of

“primary care offices” (eg, family practitioners, internists, etc.), this finding signals a need for increased PrEP promotion efforts among PCPs in localities with high HIV burden to help increase PrEP use among at-risk individuals. Though our study only provides an estimate of PrEP discussion during health care encounters from the patient perspective, our finding on the prevalence of PrEP discussions occurring during health care visits is commensurate with the results of a 2017 survey among PCP and midlevel practitioners in Massachusetts, which found that only

Table 2. Characteristics of PrEP-Naïve HIV-Negative MSM who Saw a Clinician in the Past 12 Months, by Provider Location, Fulton County Board of Health Pride Survey, Atlanta, Georgia, 2018

	Medical Location(s) Visited in the Past 12 Months			PValue ^b
	PCP Office Only (n = 134), No. (%) ^a	PCP Office + Other (n = 21), No. (%)	Other Only (n = 52), No. (%)	
Age, y				
18–29	70 (59.3)	15 (12.7)	33 (28.0)	.09
30+	64 (72.7)	5 (5.7)	19 (21.6)	
Race				
Black	76 (67.3)	7 (6.2)	30 (26.6)	.12
Nonblack	58 (61.7)	14 (14.9)	22 (23.4)	
Place of residence				
Atlanta MSA	95 (63.8)	18 (12.1)	36 (24.2)	.33
Not Atlanta MSA	39 (67.2)	3 (5.2)	16 (27.6)	
Education				
No college	26 (53.1)	4 (8.2)	19 (38.8)	.04
College	106 (68.4)	17 (11.0)	32 (20.7)	
Employed				
Yes	128 (67.7)	16 (8.5)	45 (23.8)	<.01
No	6 (33.3)	5 (27.8)	7 (38.9)	
Gross income				
<\$60K	96 (60.4)	17 (10.7)	46 (28.9)	.05
>\$60K	38 (79.2)	4 (8.3)	6 (12.5)	
Insurance				
Yes	115 (68.1)	21 (12.4)	33 (19.5)	<.01
No	16 (45.7)	0 (0.0)	19 (54.3)	
Drug use^c				
Yes	9 (60.0)	2 (13.3)	4 (26.7)	.77
No	125 (65.1)	19 (9.9)	48 (25.0)	
History of STI^d				
Yes	7 (87.5)	0 (0.0)	1 (12.5)	.53
No	127 (64.1)	21 (10.6)	50 (25.3)	

Abbreviations: MSA, Metropolitan Statistical Area; MSM, men who have sex with men; PCP, primary care provider; PrEP, pre-exposure prophylaxis; STI, sexually transmitted infection.

^aValues may not sum to column totals due to missing values.

^bChi-square tests used for all *P* values except where expected cell count was too small, Fisher exact test used instead; missing values excluded from statistical tests.

^cReported at least 1 type of drug use (injection or noninjection) in the past 6 months.

^dBased on the question “In the past 6 months, were you diagnosed with any sexually transmitted infection (STI)?”

40% of providers who had cared for MSM had a PrEP discussion with at least a few patients within the prior 12 months [13].

Many PCPs have expressed interest in more education and tools to better understand PrEP [14]; however, rates of PrEP prescription among PCPs are still low even with available lectures and guidelines [15]. Designation of multidisciplinary PrEP workgroups made up of clinic staff or identification of PrEP champions within clinics can increase provider comfort with discussion of PrEP and help ensure that patients at increased risk receive accurate and consistent information [16].

These measures have been shown to relieve some of the burden on individual providers when workgroup members assist with paperwork, risk assessment, and adherence counseling [16]. Similarly, physicians may benefit from partnerships with community-based organizations offering services such as resources for medication adherence and provider trainings on sexual and gender minority health [17]. In addition, the use of validated screening tools incorporated into electronic health records systems at these clinics may help providers quickly identify clients at increased risk of acquiring HIV and may also help integrate PrEP discussions into regular clinic encounters [18–20]. Furthermore, electronic tablets and mobile applications can be used to capture sensitive information that patients may not feel comfortable sharing with providers but that is crucial for accurate assessment of HIV risk [21].

Missed opportunities for PrEP discussion during health care encounters with at-risk individuals also highlight a potential outreach need to clinicians, especially in the Southern United States. The majority of available research on PCP engagement in PrEP promotion has occurred in the Northeastern United States [9, 14, 22]. Characterizing the needs of PCPs practicing in the US South, where HIV diagnoses are high and stigma and discrimination are historically pervasive, could result in more culturally sensitive approaches to provider training and provider-to-patient engagement about PrEP in the US South [1, 23, 24]. If this needs assessment could also include providers practicing in urgent care centers, service organizations, or county health departments, then interventions could also be tailored to providers serving patients with low income or no health insurance who do not have access to primary care services. PrEP delivery must also be expanded beyond individual providers to ensure that those who do not regularly see a physician still have access to this medication. Allowing pharmacists to dispense PrEP without a prescription and incorporating PrEP resources into sexual health clinics broaden the availability of PrEP and may help reach individuals who would otherwise be missed [25, 26]. Pharmacist-run PrEP clinics are another opportunity to increase access to PrEP, as pharmacists are well positioned to offer adherence counseling and assist with adverse effects [27].

Prevalence of provider PrEP discussion was lower among participants classified as risk-based PrEP-eligible, although this association was nonsignificant (aPR, 0.75; 95% CI, 0.50–1.12). A 2014 survey of >300 US HIV care providers found that 78% were “very likely” to prescribe PrEP to MSM who have an HIV-positive partner. This percentage was significantly higher than that of other categorizations, including high-risk heterosexuals (47%) and IV drug users (45%) [28], suggesting that clinician perception of risk plays an important role in the types of patients they ultimately inform about PrEP. This discrepancy in provider discussion of PrEP may be explained by incongruences in providers’ perceptions of patient risk vs the patients’

Table 3. Characteristics and Discussion of PrEP Among PrEP-Naïve HIV-Negative MSM who Saw a Clinician in the Past 12 Months, Fulton County Board of Health Pride Survey, Atlanta, Georgia, Fall 2018

	Yes (n = 64), No. (%)	Provider Discussed PrEP			
		Crude PR		PR Adjusted for Age and Race	
		PR	(95% CI)	PR	(95% CI)
Medical location					
Primary care office only	37 (61.7)	1.01	(0.59–1.72)	1.04	(0.61–1.78)
Primary care office and another location	10 (16.7)	1.69	(0.89–3.20)	1.66	(0.85–3.23)
Non-primary care location	13 (21.7)	Ref		Ref	
Risk-based PrEP-eligible^a					
Yes	33 (51.6)	0.75	(0.50–1.12)	0.75	(0.50–1.12)
No	31 (48.4)	Ref		Ref	

Abbreviations: CI, confidence interval; MSM, men who have sex with men; PCP, primary care provider; PR, prevalence rate; PrEP, pre-exposure prophylaxis.

^aDefined using HIV Incidence Risk Index for MSM (HIRI-MSM) and the criteria for PrEP for Gay and Bisexual men in the Centers for Disease Control and Prevention's clinical practice guidelines (2017 update).

perceptions of their own HIV risk. Although the aforementioned provider study used an online survey to assess provider likelihood of prescribing PrEP to theoretical patients, our study surveyed individuals to assess provider behavior during recollection of actual clinical encounters. There may be meaningful variations in provider intentions regarding PrEP promotion and what gets relayed to and heard by actual patients.

Although our data suggest gaps in either clinician perception of risk among their patients or targeting of PrEP discussion to

high-risk individuals, we found that participants tended to appropriately classify their own risk statuses: Respondents classified as risk-based PrEP-eligible were less likely to report low risk perception as a reason for not taking PrEP. Understanding this, it is important to identify barriers that may hinder these patients from self-advocating for PrEP with their clinicians and to encourage providers to more accurately screen for risk status. A 2019 study found that young MSM who saw advertisements for a citywide campaign promoting PrEP in Chicago

Table 4. Factors Associated With Reasons for Not Taking PrEP and Being More Likely to Take PrEP Among PrEP-Naïve, HIV-Negative MSM, Fulton County Board of Health Pride Survey, Atlanta, Georgia, Fall 2018

	Reasons for Not Taking PrEP						Reasons for Being More Likely to Take PrEP					
	Low Risk Perception (n = 90)			Don't Know Enough About PrEP (N = 87)			More Education/ Knowledge of PrEP (n = 109)			Change in HIV Risk (n = 86)		
	No. ^a (%)	PR	(95% CI)	No. (%)	PR	95% CI	No. (%)	PR	95% CI	No. (%)	PR	95% CI
Saw provider in last 12 mo												
Yes	74 (82.2)	0.79	(0.53–1.19)	69 (79.3)	0.66	(0.45–0.96)	87 (79.8)	0.67	(0.50–0.92)	73 (84.9)	0.96	(0.60–1.54)
No	16 (17.8)	Ref		18 (20.7)	Ref		22 (20.2)	Ref		13 (15.1)	Ref	
Medical location												
Primary care office only	47 (52.8)	0.79	(0.51–1.22)	42 (48.8)	0.63	(0.42–0.95)	58 (54.2)	0.71	(0.51–0.98)	44 (51.2)	0.91	(0.55–1.50)
Primary care office and another location	11 (12.4)	1.18	(0.68–2.04)	6 (7.0)	0.57	(0.27–1.21)	7 (6.5)	0.55	(0.28–1.05)	15 (17.4)	1.98	(1.19–3.30)
Non-primary care office location	15 (16.9)	0.66	(0.38–1.16)	20 (23.3)	0.78	(0.49–1.26)	20 (18.7)	0.63	(0.41–0.97)	14 (16.3)	0.75	(0.40–1.39)
No provider	16 (18.0)	Ref		18 (20.9)	Ref		22 (20.6)	Ref		13 (15.1)	Ref	
Risk-based PrEP-eligible												
Yes	40 (44.4)	0.58	(0.41–0.80)	48 (55.2)	0.89	(0.63–1.24)	67 (61.5)	1.14	(0.85–1.53)	47 (54.7)	0.86	(0.61–1.21)
No	50 (55.6)	Ref		39 (44.8)	Ref		42 (38.5)	Ref		39 (45.4)	Ref	
Provider discussed PrEP												
Yes	23 (32.4)	Ref		20 (30.3)	Ref		21 (25.0)	Ref		24 (33.8)	Ref	
No	48 (67.6)	0.97	(0.65–1.45)	46 (69.7)	1.07	(0.70–1.66)	63 (75.0)	1.40	(0.94–2.08)	47 (66.2)	0.91	(0.62–1.35)

Abbreviations: CI, confidence interval; MSM, men who have sex with men; PCP, primary care provider; PR, prevalence rate; PrEP, pre-exposure prophylaxis.

^aValues may not sum to column totals due to missing values.

^bDefined using HIV Incidence Risk Index for MSM (HIRI-MSM) and the criteria for PrEP for Gay and Bisexual men in the Centers for Disease Control and Prevention's clinical practice guidelines (2017 update).

were more likely to have discussions with a provider compared with those who did not know about the campaign [29]. These demand-side patient advocacy efforts should go hand-in-hand with improving PCPs' ability to discuss HIV risk with patients and adeptly promote PrEP.

Honing in on specific reasons for not taking PrEP, it is apparent that inadequate knowledge regarding PrEP may be a key barrier to uptake among PrEP-naïve MSM. Lack of knowledge has also been reported as a barrier to PrEP prescription among PCPs in the Southern United States [30]. Respondents who visited a clinician in the past 12 months were less likely to cite poor PrEP knowledge as a reason for not using it and less likely to indicate a need for more PrEP education. Additionally, citing more PrEP education as a possible facilitator for uptake was higher among participants who reported no prior provider PrEP discussions. Taken together, participants who reported having PrEP discussions with providers seemed more confident in their PrEP knowledge, whereas those who did not have a discussion of PrEP with a provider felt that more education may increase their likelihood of PrEP uptake.

Findings from this study should be understood in the context of certain limitations. Our venue-based recruitment likely reduced the representativeness of our study sample to all PrEP-naïve MSM at risk for HIV in Atlanta. However, given the high prevalence of HIV among all MSM respondents (20%), our sample likely included high-risk individuals. With that said, reporting of STIs was low; <5% of participants reported any infection within the past 6 months. As history of STI was included in our classification of HIV risk status, we likely underestimated the number of high-risk individuals within our sample. Furthermore, participation in commercial sex work was not an activity assessed in our questionnaire, and having this data would have further aided in risk-classifying our participants.

Because we did not collect information on reasons for medical provider visits, we could have stimulated recollection of clinical visits where provider discussion of PrEP was not pertinent or warranted, thus contributing to the low proportion of respondents who recalled discussions of PrEP with their medical providers. Provider types within the "PCO" category (eg, family practitioner, internist) were also not identified, limiting our ability to draw conclusions regarding PrEP promotion among these specific provider types. Finally, our analysis was limited to individuals who had reported never taking PrEP before. As the number of individuals who initiate PrEP and then discontinue use increases, it will be important for future studies to ascertain whether providers discuss PrEP again with previous PrEP users and identify barriers to reinitiation.

Overall, this survey offers useful insights into the health care-seeking behaviors and perceptions of PrEP among PrEP-naïve MSM living in or near an HIV hotspot in the Southern United

States. Understanding how high-risk individuals interface with the health care system will guide prevention programming, including work with providers themselves. Greater efforts on the part of health care providers must be made to leverage existing health care interactions occurring among HIV-negative MSM to ensure that routine assessment of HIV risk and discussions about PrEP are being conducted with at-risk individuals.

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References

- Centers for Disease Control and Prevention. HIV surveillance report, 2017; vol. 29. Available at: <http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html>. Published November 2018. Accessed 20 February 2019.
- Food and Drug Administration. FDA approves first drug for reducing the risk of sexually acquired HIV infection [press release]. July 16, 2012. Available at: <https://aidsinfo.nih.gov/news/1254/fda-approves-first-drug-for-reducing-the-risk-of-sexually-acquired-hiv-infection>. Accessed 19 March 2020.
- Grant RM, Lama JR, Anderson PL, et al; iPrEx Study Team. Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *N Engl J Med* 2010; 363:2587–99.
- Baeten JM, Donnell D, Ndase P, et al; Partners PrEP Study Team. Antiretroviral prophylaxis for HIV prevention in heterosexual men and women. *N Engl J Med* 2012; 367:399–410.
- Thigpen MC, Kebaabetswe PM, Paxton LA, et al; TDF2 Study Group. Antiretroviral preexposure prophylaxis for heterosexual HIV transmission in Botswana. *N Engl J Med* 2012; 367:423–34.
- Finlayson T, Cha S, Xia M, et al; National HIV Behavioral Surveillance Study Group. Changes in HIV preexposure prophylaxis awareness and use among men who have sex with men - 20 urban areas, 2014 and 2017. *MMWR Morb Mortal Wkly Rep* 2019; 68:597–603.
- Jenness SM, Maloney KM, Smith DK, et al. Addressing gaps in HIV preexposure prophylaxis care to reduce racial disparities in HIV incidence in the United States. *Am J Epidemiol* 2019; 188:743–52.
- Centers for Disease Control and Prevention. Prescribe PrEP pre-exposure prophylaxis FAQs. Available at: <https://www.cdc.gov/stophivtogether/library/prescribe-hiv-prevention/brochures/cdc-lsht-php-brochure-prep-faq.pdf>. Accessed 20 February 2019.
- Krakower D, Ware N, Mitty JA, et al. HIV providers' perceived barriers and facilitators to implementing pre-exposure prophylaxis in care settings: a qualitative study. *AIDS Behav* 2014; 18:1712–21.
- Petroll AE, Walsh JL, Owczarzak JL, et al. PrEP awareness, familiarity, comfort, and prescribing experience among US primary care providers and HIV specialists. *AIDS Behav* 2017; 21:1256–67.
- US Public Health Service. Preexposure prophylaxis for the prevention of HIV infection in the United States—2017 update: a clinical practice guideline. Available at: <https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf>. Accessed 20 February 2019.
- Smith DK, Pals SL, Herbst JH, et al. Development of a clinical screening index predictive of incident HIV infection among men who have sex with men in the United States. *J Acquir Immune Defic Syndr* 2012; 60:421–7.
- Walker D, Friderici J, Skiest D. Primary care providers have limited knowledge about STI screening and HIV PrEP in men who have sex with men. *Open Forum Infect Dis* 2017; 4(Suppl 1):S667.

14. Krakower DS, Ware NC, Maloney KM, et al. Differing experiences with pre-exposure prophylaxis in Boston among lesbian, gay, bisexual, and transgender specialists and generalists in primary care: implications for scale-up. *AIDS Patient Care STDS* **2017**; 31:297–304.
15. Mayer KH, Chan PA, R Patel R, et al. Evolving models and ongoing challenges for HIV preexposure prophylaxis implementation in the United States. *J Acquir Immune Defic Syndr* **2018**; 77:119–27.
16. Calabrese SK, Magnus M, Mayer KH, et al. Putting PrEP into practice: lessons learned from early-adopting U.S. providers' firsthand experiences providing HIV pre-exposure prophylaxis and associated care. *PLoS One* **2016**; 11:e0157324.
17. Silapaswan A, Krakower D, Mayer KH. Pre-exposure prophylaxis: a narrative review of provider behavior and interventions to increase PrEP implementation in primary care. *J Gen Intern Med* **2017**; 32:192–8.
18. Smith DK, Pals SL, Herbst JH, et al. Development of a clinical screening index predictive of incident HIV infection among men who have sex with men in the United States. *J Acquir Immune Defic Syndr* **2012**; 60:421–7.
19. Menza TW, Hughes JP, Celum CL, Golden MR. Prediction of HIV acquisition among men who have sex with men. *Sex Transm Dis* **2009**; 36:547–55.
20. Hoenigl M, Weibel N, Mehta SR, et al. Development and validation of the San Diego early test score to predict acute and early HIV infection risk in men who have sex with men. *Clin Infect Dis* **2015**; 61:468–75.
21. Jones J, Stephenson R, Smith DK, et al. Acceptability and willingness among men who have sex with men (MSM) to use a tablet-based HIV risk assessment in a clinical setting. *Springerplus* **2014**; 3:708.
22. Krakower D, Maloney KM, Powell VE, et al. Patterns and clinical consequences of discontinuing HIV preexposure prophylaxis during primary care. *J Int AIDS Soc* **2019**; 22:e25250.
23. Baunach D, Burgess EO. HIV/AIDS prejudice in the American Deep South. *Sociol Spectr* **2013**; 33:175–95.
24. Stringer KL, Turan B, McCormick L, et al. HIV-related stigma among healthcare providers in the Deep South. *AIDS Behav* **2016**; 20:115–25.
25. Kazi DS, Katz IT, Jha AK. PrEParing to end the HIV epidemic - California's route as a road map for the United States. *N Engl J Med* **2019**; 381:2489–91.
26. Pathela P, Jamison K, Blank S, et al. The HIV pre-exposure prophylaxis (PrEP) cascade at NYC sexual health clinics: navigation is the key to uptake. *J Acquir Immune Defic Syndr* **2020**; 83:357–64.
27. Bruno C, Saberi P. Pharmacists as providers of HIV pre-exposure prophylaxis. *Int J Clin Pharm* **2012**; 34:803–6.
28. Adams LM, Balderson BH. HIV providers' likelihood to prescribe pre-exposure prophylaxis (PrEP) for HIV prevention differs by patient type: a short report. *AIDS Care* **2016**; 28:1154–8.
29. Phillips G, Lindeman PT, Raman AB, et al. Influence of PrEP4Love campaign on PrEP uptake among YMSM in Chicago. Poster presented at: Conference on Retroviruses and Opportunistic Infections; 4–7 March 2019; Seattle, WA.
30. Clement ME, Seidelman J, Wu J, et al. An educational initiative in response to identified PrEP prescribing needs among PCPs in the Southern U.S. *AIDS Care* **2018**; 30:650–5.