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HIV Positivity, Linkage to Medical Care, Interview for Partner Services, and Pre-exposure Prophylaxis Awareness and Referral among Men Who Have Sex with Men Tested in Non-healthcare Settings in the United States, 2019

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Abstract

Objectives.—Gay, bisexual, and other men who have sex with men (MSM) are disproportionately affected by HIV. This study reports data on HIV testing program outcomes among MSM tested for HIV in non-healthcare settings in the United States.

Methods.—We analyzed CDC’s National HIV Prevention Program Monitoring and Evaluation data collected in 2019. Descriptive and multivariate robust Poisson regression analyses were conducted to summarize the patterns of HIV testing program outcomes (i.e., positivity, linkage to HIV medical care within 30 days of diagnosis, interview for partner services (PS), and PrEP awareness and referral) by demographic characteristics, HIV prevalence, and testing site type.

Results.—A total of 123,251 HIV tests were conducted among MSM; of these, 1,773 (1.4%) were newly diagnosed with HIV. Among MSM newly diagnosed with HIV, 75% were linked to HIV medical care and 80% were interviewed for PS. Among MSM who tested HIV-negative, 63% were aware of PrEP and 47% of those who were eligible for PrEP were referred to PrEP providers. Referral or linkage to services varied by demographic characteristics or other factors.

Conclusions.—Linkage to HIV medical care and interview for PS among MSM newly diagnosed with HIV in non-healthcare settings were below national or funding program targets. The majority of MSM with risk factors for HIV infection were not referred to PrEP providers. Expanded efforts to address barriers to equitable access to services may help improve HIV-related outcomes among MSM and contribute to ending the HIV epidemic in the United States.

Keywords

HIV testing; Linkage to Medical Care; Interview for Partner Services; Pre-exposure Prophylaxis Awareness and Referral; Men Who Have Sex with Men; Non-healthcare Settings

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INTRODUCTION

The United States Department of Health and Human Services has launched the *Ending the HIV Epidemic in the U.S.* (EHE) initiative to reduce new HIV infections in the US by 90% by 2030.¹ The initiative focuses on leveraging scientific advances in HIV prevention, care, treatment, and investing resources in communities with high levels of HIV transmission. Gay, bisexual, and other men who have sex with men (hereafter MSM) are disproportionately affected by HIV in the US.^{2,3} MSM make up an estimated 2% of the US population⁴, but adolescent and adult MSM accounted for 69% (24,084 MSM and 1,468 MSM who also inject drugs, total 25,552) of the 36,801 new HIV diagnoses during 2019.²

To help achieve the goals of the EHE initiative, the current National HIV/AIDS Strategy recommends incorporating a status-neutral approach to HIV testing⁵, an approach that originated in and continues to be successfully used in New York City.⁶ In this approach, HIV testing is the critical first step in engaging people in HIV prevention and care. People who test negative are provided resources and services to reduce HIV exposure, including referral to pre-exposure prophylaxis (PrEP) prescribing clinicians to prevent the acquisition of HIV. PrEP is a biomedical, antiretroviral medication intervention used to prevent the acquisition of HIV infection.⁷ When used as prescribed, PrEP medicine reduces the chances of acquiring HIV from sex by about 99% and injection drug use by at least 74%.⁷ People who test positive are linked to HIV medical care for antiretroviral therapy and other services to attain viral suppression. When antiretroviral therapy is used as prescribed and viral suppression is achieved and maintained effectively, no risk exists of an HIV-positive person sexually transmitting HIV to a negative partner.^{8,9} The intended outcome of a status-neutral approach, with HIV testing as a key entry point, is a reduction in the transmission of HIV, thereby moving the nation toward achieving the goals of the EHE initiative.

CDC has been supporting HIV testing programs in non-healthcare settings (e.g., HIV counseling and testing sites) to expand availability and accessibility of testing to persons who are disproportionately affected by HIV and those who may not have access to healthcare services.¹⁰ Non-healthcare settings are important venues for expanding HIV testing because they are often easier to access. Monitoring non-healthcare HIV testing program outcomes among MSM is very important to identify the successes and challenges of the status-neutral approach to HIV prevention. We analyzed data for MSM tested in non-healthcare settings in the United States in 2019 by age, race/ethnicity, HIV testing site type, and HIV prevalence in the jurisdiction. HIV testing program outcomes examined include the number of HIV tests, HIV positivity, linkage to HIV medical care within 30 days of diagnosis and interview for partner services (PS) among MSM newly diagnosed with HIV, PrEP awareness among MSM testing HIV-negative and PrEP referral among HIV-negative MSM determined to be eligible for a PrEP referral.

METHODS

Data source

The Centers for Disease Control and Prevention's (CDC) National HIV Prevention Program Monitoring & Evaluation (NHM&E) system is a repository for HIV testing data reported

by CDC-funded health departments and community-based organizations (CBOs). HIV test-level data reporting requirements include client demographics, behavioral risk factors associated with HIV infection, and HIV testing outcomes.

We analyzed de-identified NHM&E HIV test-level data for 60 jurisdictions (i.e., 50 states, the District of Columbia, Puerto Rico, the US Virgin Islands, and 7 Metropolitan Statistical Areas [Baltimore City, Chicago, Houston, Los Angeles, New York City, Philadelphia, and San Francisco]) and 30 CBOs for HIV tests conducted among MSM in non-healthcare settings from January 1, 2019, through December 31, 2019. Non-healthcare settings are locations in which HIV prevention services are provided, but neither medical diagnostic nor treatment services are provided. We used data collected in non-healthcare settings because both demographic characteristics and behavioral risk factors, including the variables for defining MSM, are required from all persons tested in non-healthcare settings but only for persons who tested positive for HIV in healthcare settings. We defined MSM as males who reported sex with men within five years before testing.

The collection and reporting of NHM&E data are considered a non-research routine program evaluation activity by CDC; therefore, institutional review board approval was not required. The Office of Management and Budget approved this activity (OMB 0920–0696, expiration 10/31/2024).

Measures

HIV Testing, Referral, and Linkage to Services

HIV test.: An HIV test is defined as a sequence of one or more HIV tests conducted to determine a person's HIV status.¹¹

New HIV Diagnosis.: A new HIV diagnosis is defined as a person who tested HIV-positive during the current test and is not found to be previously reported in the health department's HIV surveillance system, or there is no indication of a previous diagnosis by either client's self-report or review of other data sources (e.g., self-created database by local agency).

HIV positivity.: HIV positivity is calculated as the percentage of persons with newly diagnosed HIV among all tests.

Linkage to HIV medical care within 30 days.: HIV medical care includes medical services for HIV infection, including evaluating immune system function and screening, treatment, and prevention of opportunistic infections. Linkage to HIV medical care within 30 days of a new diagnosis is defined as a documented affirmative response to the question "Did the client attend an HIV medical care appointment after this positive test?" and the provided date for when the client attended their first medical care appointment was within 30 days of an initial HIV positive test.¹²

Interview for HIV PS.: HIV PS is a strategy used by health departments to assist persons with diagnosed HIV and their sex and needle-sharing partners with access to HIV prevention and care services. Interview for PS was defined as a documented affirmative response to the question "Was the client interviewed for PS?" among persons with newly diagnosed HIV.

PrEP awareness.: PrEP awareness was defined as a documented affirmative response to the question “Has the client ever heard of PrEP?” among MSM testing HIV-negative.

Referral to a PrEP provider.: PrEP referral was defined as a documented affirmative response to the question “Was the client given a referral to a PrEP provider?” among MSM who tested HIV-negative and determined to be eligible for a referral to a PrEP provider.

Demographic Characteristics and Other Factors

Demographic Characteristics.: Age (in years) was categorized as 13–24, 25–34, 35–44, 45–54, and 55 or older. Race/ethnicity was classified as non-Hispanic White (White) MSM, non-Hispanic Black or African American (Black) MSM, Hispanic/Latino MSM, and MSM of another race (including non-Hispanic Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, and more than one race reported).

Test Site Type.: HIV testing site types in non-healthcare settings were categorized as HIV counseling and testing sites (i.e., settings where provide HIV prevention counseling and testing services), community settings (e.g., colleges, bars and clubs, parks and other public spaces, and commercial establishments such as hair salons or retail stores), correctional facilities, health department field visits (i.e., PS), and other non-healthcare settings (e.g., nonclinical outreach).

HIV prevalence in the jurisdiction.: HIV prevalence was categorized based on the number of persons with diagnosed or undiagnosed HIV infection (PWH) in a jurisdiction in 2019.¹³ The categories were high (≥ 20,000 PWH), medium (1,000–19,999 PWH), and low (<1,000 PWH).

Analysis

We conducted descriptive analysis to determine the pattern of HIV testing, HIV positivity, linkage to HIV medical care within 30 days of diagnosis and interview for PS among MSM newly diagnosed with HIV, PrEP awareness among all MSM testing HIV-negative and PrEP referral among HIV-negative MSM determined to be eligible for a PrEP referral, by demographic characteristics, HIV prevalence in the jurisdiction, and HIV testing site type.

Multivariate robust Poisson regression was used to assess the association between outcomes (e.g., HIV positivity, linkage to HIV medical care within 30 days and interviewed for HIV PS among MSM with newly diagnosed HIV, PrEP awareness among MSM testing HIV negative, and PrEP referral among MSM testing negative who were eligible for a referral) and characteristics (e.g., age, race/ethnicity, testing site type, and HIV prevalence in the jurisdiction). Adjusted prevalence ratio (aPR) and the 95% confidence interval (CI) were estimated using linear regression with a log-link function. The significance of association between outcome and characteristics was determined by whether the 95% CI for aPR included the value 1.0. Data were analyzed using SAS version 9.4 (SAS Institute Inc. Cary, NC).

RESULTS

HIV tests

A total of 548,568 tests were conducted in non-healthcare settings in 2019, of which 123,251 tests (22.5%) were among MSM. The highest percentage of tests were conducted among MSM aged 25–34 years (39.4%), White MSM (36.7%), MSM tested in HIV counseling and testing sites (60.1%), and MSM tested in high HIV prevalence jurisdictions (71.6%) (Table 1).

HIV positivity

A total of 1,773 (1.4%) MSM were newly diagnosed with HIV infection in non-healthcare settings during 2019. The highest HIV positivity was among MSM aged 25–34 years (1.7%), Black MSM (2.4%), MSM tested in health department field visits (3.4%), and MSM tested in high HIV prevalence jurisdictions (1.7%) (Table 1). Findings indicated that compared with MSM aged 25–34 years (1.7%), those aged 13–24 years (1.5%, aPR=0.87, 95% CI=0.78, 0.97), 45–54 years (1.0%, aPR=0.73, 95% CI=0.61, 0.89), and 55 years or older (0.5%, aPR=0.39, 95% CI=0.29, 0.52) were less likely to be newly diagnosed with HIV infection. Black MSM (2.4%, aPR=2.86, 95% CI=2.51, 3.26) and Hispanic/Latino MSM (1.7%, aPR=2.09, 95% CI=1.83, 2.39) were more likely to be newly diagnosed with HIV infection than White MSM (0.7%). Tests conducted in HIV counseling and testing sites (1.5%, aPR=1.32, 95% CI=1.19, 1.48), in correctional facilities (3.0%, aPR=2.47, 95% CI=1.83, 3.33), in health departments field visits (3.4%, aPR=3.10, 95% CI=2.38, 4.05), and in other non-healthcare testing sites (2.1%, aPR=2.07, 95% CI=1.68, 2.54) were more likely to yield new HIV diagnoses among MSM compared with tests conducted in community settings (1.1%). Tests conducted in high prevalence jurisdictions were more likely to yield new diagnoses among MSM (1.7%, aPR=1.79, 95% CI=1.58, 2.04) than tests conducted in medium prevalence jurisdictions (0.7%) (Table 1).

Linkage to HIV medical care within 30 days

In 2019, among 1,353 newly diagnosed MSM with linkage to HIV medical care information, 1,012 (74.8%) were linked to HIV medical care within 30 days of diagnosis. Compared with MSM who were tested in community settings (71.9%), those who were tested in HIV counseling and testing sites were more likely (78.9%, aPR=1.09, 95% CI=1.02, 1.18), and those who received testing in other non-healthcare testing sites were less likely (58.0%, aPR=0.81, 95% CI=0.68, 0.96) to be linked to HIV medical care within 30 days of diagnosis (Table 2).

Interview for HIV PS

During 2019, among 1,160 newly diagnosed MSM who had valid response to the PS interview question, 929 (80.1%) were interviewed for PS. Compared with MSM aged 25–34 years (82.9%), those aged 35–44 years (70.6%, aPR=0.85, 95% CI=0.76, 0.94), aged 45–54 years (69.9%, aPR=0.83, 95% CI=0.72, 0.96), and aged 55 years or older (65.8%, aPR=0.79, 95% CI=0.63, 0.99) were less likely to be interviewed for PS. Compared with White MSM (85.0%), Black MSM (79.1%, aPR=0.89, 95% CI=0.82, 0.96) and Hispanic/

Latino MSM (77.4%, aPR=0.92, 95% CI=0.84, 0.99) were less likely to be interviewed for PS. Interview for PS among MSM were more likely in correctional facilities (91.4%, aPR=1.18, 95% CI=1.04, 1.33), health department field visits (96.5%, aPR=1.23, 95% CI=1.13, 1.34) compared to those in community settings (76.8%) (Table 2).

PrEP awareness

Among 101,480 MSM who tested HIV-negative and had valid response to PrEP awareness question, 63,726 (62.8%) were aware of PrEP. PrEP awareness was lower among MSM aged 13–24 years (63.8%, aPR=0.97, 95% CI=0.96, 0.98), 35–44 years (61.4%, aPR=0.92, 95% CI=0.91, 0.93), 45–54 years (59.7%, aPR=0.87, 95% CI=0.85, 0.89), and 55 years or older (55.8%, aPR=0.78, 95% CI=0.77, 0.80) than it was among MSM aged 25–34 years (65.2%). PrEP awareness was lower among Black MSM (63.3%, aPR=0.91, 95% CI=0.90, 0.92) and Hispanic/Latino MSM (55.2%, aPR=0.80, 95% CI=0.79, 0.81) compared to White MSM (67.4%). PrEP awareness was also lower among MSM who were tested in HIV counseling and testing sites (58.0%, aPR=0.77, 95% CI=0.76, 0.78), correctional facilities (25.5%, aPR=0.34, 95% CI=0.31, 0.38), health department field visits (18.4%, aPR=0.26, 95% CI=0.24, 0.29), and other non-healthcare testing sites (69.2%, aPR=0.93, 95% CI=0.91, 0.96) than it was among those tested in community settings (73.5%). PrEP awareness was lower among MSM tested in high prevalence jurisdictions (60.7%, aPR=0.89, 95% CI=0.88, 0.90) compared to those tested in medium prevalence jurisdictions (68.3%) (Table 3).

Referral to a PrEP provider

Among 61,034 MSM eligible for a PrEP referral for whom valid response was collected about their PrEP referral, 28,755 (47.1%) were referred to a PrEP provider. Compared with MSM aged 25–34 years (48%), those 45–54 years (43.7%, aPR=0.91, 95% CI=0.88, 0.94) and 55 years and older (40.9%, aPR=0.85, 95% CI=0.82, 0.88) were less likely to be referred to a PrEP provider. Black MSM (50.6%, aPR=1.09, 95% CI=1.07, 1.11) were more likely and Hispanic/Latino MSM (40.9%, aPR=0.87, 95% CI=0.85, 0.89) and MSM of another race(s) (44.2%, aPR=0.91, 95% CI=0.88, 0.94) were less likely to be referred to a PrEP provider than White MSM (49.2%). Referral to a PrEP provider among eligible MSM were more likely in HIV counseling and testing sites (52.9%, aPR=1.42, 95% CI=1.39, 1.45), correctional facilities (49.6%, aPR=1.36, 95% CI=1.25, 1.48), health department field visits (87.0%, aPR=2.32, 95% CI=2.21, 2.43), and other non-healthcare testing sites (54.4%, aPR=1.59, 95% CI=1.52, 1.66) compared with community settings (35.9%). Referral to a PrEP provider among eligible MSM were more likely in low prevalence jurisdictions (73.2%, aPR=1.30, 95% CI=1.24, 1.35) and less likely in high prevalence jurisdictions (42.5%, aPR=0.77, 95% CI=0.75, 0.78) compared with medium prevalence jurisdictions (57.3%) (Table 3).

DISCUSSION

The current National HIV/AIDS Strategy recommends incorporating a status-neutral approach to HIV services, with HIV testing serving as an entry point to comprehensive services regardless of the positive or negative result of the test.⁵ This is important because persons who know their HIV status can take steps to keep themselves healthy and prevent

acquisition or transmission of HIV infection. In our analysis, a total of 123,251 HIV tests were conducted among MSM in non-healthcare settings resulting in 1,773 new HIV diagnoses. HIV positivity among MSM (1.4%) was more than twice the positivity for all persons (0.6%) tested in CDC-funded non-healthcare settings.¹¹ HIV positivity among Black MSM (2.4%) and Hispanic/Latino MSM (1.7%) was higher than among White MSM (0.7%), consistent with surveillance-based reports that show racial/ethnic disparities in HIV prevalence.²

Among MSM with newly diagnosed HIV, 74.8% were linked to HIV medical care within 30 days of diagnosis, which is lower than the 85% national target set by the National HIV/AIDS Strategy for 2020, and the current national goal of 95%⁵ by 2025. It is also lower than the percentage for persons linked to HIV medical care (82.1%) within 30 days based on 2019 surveillance data for MSM in the United States.¹⁴ Linkage to HIV medical care was higher among MSM tested in HIV counseling and testing sites than those tested in community testing sites. While it is unclear why linkage differs in these two sites, it may be that community sites do not have established partnerships with HIV medical care providers. Active collaborations between community HIV testing agencies and clinical providers that provide HIV medical care could narrow this difference.¹⁵

HIV PS have been shown to be an effective strategy in identifying undiagnosed HIV infections¹⁶ and are recommended for all persons who are newly diagnosed with HIV infection.¹⁷ Among MSM with newly diagnosed HIV, 80.1% were interviewed for PS, which is like the 81% interview for PS among newly diagnosed persons in CDC-funded HIV testing programs in the United States.¹¹ However, our results indicate that increases are needed to meet the CDC-funded HIV testing program (PS18–1802) target of interviewing for PS at least 85% of persons with newly diagnosed HIV infection.¹² In addition, older age groups as compared with those 25–34 years, and Black and Hispanic/Latino MSM as compared with White MSM were less likely to be interviewed for HIV PS. Black and Hispanic/Latino MSM had higher positivity than White MSM, and a lower interview rate indicates a missed opportunity to prevent further transmission of HIV infection among MSM.

All sexually active adult and adolescent patients should receive information about PrEP.⁷ Designing and implementing effective interventions to increase PrEP awareness and knowledge is crucial in increasing PrEP coverage among MSM.^{18–21} In our analysis, among MSM testing HIV-negative, 62.8% were aware of PrEP at the time of the HIV test. This finding is like a nationally representative survey showing that 63.1% of MSM in the US were aware of PrEP²⁰. Our results revealed significant differences in PrEP awareness by age and racial and ethnic groups, which are consistent with prior studies that indicate PrEP awareness was higher among younger MSM²², and lower among Black and Hispanic/Latino MSM compared to White MSM.^{19,23,24} Our finding is among few studies to demonstrate significant ethnic and racial disparities in PrEP awareness among MSM.^{19,23} Prior research indicates that income, health literacy, medical mistrust, experiences of provider discrimination may be related to racial and ethnic disparities in PrEP awareness.^{23,25} PrEP awareness was lower among MSM who were tested in HIV counseling and testing sites, correctional facilities, health department field visits, and other

non-healthcare settings than those tested in community settings. While it is unclear why PrEP awareness differs in these testing sites, social and media campaigns (e.g., CDC's *Let's Stop HIV Together* campaign) are having a positive impact for increasing PrEP awareness²⁴. Posters and other materials from this campaign can be adopted to reach all testing sites. PrEP awareness was lower among MSM tested in high prevalence jurisdictions than those tested in medium prevalence jurisdictions. High HIV prevalence jurisdictions are disproportionately affected by HIV¹³ and could benefit from more comprehensive PrEP services. Individual, social, and structural barriers, including lack of health insurance, PrEP- and HIV-related stigma, and lower HIV risk perception contribute to lower PrEP awareness.^{26,27} Routinizing PrEP education and referrals and implementing culturally and linguistically relevant strategies might improve PrEP awareness and optimal and equitable use of PrEP among MSM communities.^{26,28} Interventions have shown to be effective in increasing PrEP awareness among MSM, including social media campaigns, social marketing strategies, community education materials, peer networks, support groups, and culturally and linguistically competent staffing of services.^{26–28}

Among HIV-negative MSM eligible for a PrEP referral, 47.1% were referred to a PrEP provider. Although there were some differences by age and racial/ethnic group, in general, the percentage of persons eligible for a PrEP referral remained between 40–50%. However, PrEP referral was particularly high among MSM tested during health department field visits (87%). This may be in part because HIV testing during field visits is often associated with health department staff conducting individual PS where there is an opportunity for PrEP-related discussions and referral options. In contrast, only 36% of MSM tested in a community setting and eligible for a PrEP referral was referred to a PrEP provider, perhaps because community outreach events do not allow sufficient time to discuss PrEP and make referrals to PrEP providers. Improved integration and collaboration between community HIV testing agencies and clinical providers that offer PrEP services could increase this percentage.^{29,30} Although there was an increase in the number of PrEP providers during 2014–2019³¹, expanding the number of providers and access to them may be helpful to meet CDC's updated PrEP guidelines⁷ that recommend prescribing PrEP to anyone who has an HIV-negative test and requests it.

Limitations

The findings in this analysis are subject to at least three limitations. First, data are reported to CDC at a test level. Thus, the number of tests reported might include persons who have tested more than once in CDC-funded sites. Second, because of client privacy protections, non-healthcare settings are not always able to determine if an HIV-positive client was linked to HIV medical care, thereby underestimating linkage. Third, site type categories might not be standardized or consistently reported across recipients.

Conclusion

MSM are disproportionately affected by HIV. MSM account for approximately two-thirds of new HIV infections in the United States.^{13,32} Monitoring HIV testing and linkage to care and prevention services among MSM is important to improve prevention programs and service. Linkage to care and interview for partner service among MSM newly diagnosed

with HIV in non-healthcare settings were below national or funding program targets. In addition, only about one-half of MSM with risk factors for HIV infection were referred to PrEP providers. Demographic and other differences in HIV testing program outcomes indicate the inequitable distribution of services for some population groups. Ensuring equitable linkage to care, partner services, and PrEP for all MSM seeking an HIV test and building collaborative partnerships between clinical providers and agencies conducting HIV testing in non-healthcare settings can lead to the successful implementation of a status-neutral approach to help reduce new infections among MSM and end the HIV epidemic in the United States.

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Table 1.

Number and Percentage of HIV Tests and New HIV Diagnoses among MSM in Non-healthcare Settings, by Selected Characteristics- the United States, 2019

Characteristics	Total Tests		New HIV Diagnoses		
	No.	Col %	No.	Positivity	aPR (95% CI)
Age at test (years.)					
25–34	48,567	39.4	827	1.7	Referent
13–24	32,924	26.7	497	1.5	0.87 (0.78, 0.97)
35–44	18,781	15.2	268	1.4	0.92 (0.80, 1.05)
45–54	11,449	9.3	120	1.0	0.73 (0.61, 0.89)
55+	10,666	8.7	52	0.5	0.39 (0.29, 0.52)
Race/Ethnicity					
White	45,218	36.7	333	0.7	Referent
Black or African American	30,354	24.6	716	2.4	2.86 (2.51, 3.26)
Hispanic or Latino	36,362	29.5	631	1.7	2.09 (1.83, 2.39)
Other ^a	9,538	7.7	74	0.8	1.01 (0.79, 1.30)
Non-healthcare testing site types					
Community settings – various ^b	40,373	32.8	464	1.1	Referent
HIV counseling and testing sites	74,042	60.1	1,088	1.5	1.32 (1.19, 1.48)
Correctional facilities	1,562	1.3	47	3.0	2.47 (1.83, 3.33)
Health department field visit	1,841	1.5	62	3.4	3.10 (2.38, 4.05)
Other non-healthcare	5,433	4.4	112	2.1	2.07 (1.68, 2.54)
HIV Prevalence^c					
High	88,239	71.6	1,472	1.7	1.79 (1.58, 2.02)
Medium	33,648	27.3	289	0.9	Referent
Low	1,364	1.1	12	0.9	1.55 (0.87, 2.75)
Total	123,251	100.0	1,773	1.4	

Note. HIV= human immunodeficiency virus, MSM =Men who has sex with men, aPR = Adjusted Prevalence Ratio, and CI = confidence interval.

For Age at test, the number of records missing or invalid is as follows: 864 (0.7%) in the column under “Total Tests”, 9 (0.5%) in the column under “New HIV Diagnoses”.

For Race/Ethnicity, the number of records missing or invalid is as follows: 1,179 (1.4%) in the column under “Total tests”, 19 (1.1%) in the column under “New HIV Diagnoses”.

^aRace/ethnicity category “Other” include American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, and more than one race selected.

^bCommunity settings include school/educational facility; community setting - church/mosque/synagogue/temple; community setting – commercial facility; community setting - bar/club/adult entertainment; community setting - public area; community setting - individual residence, community setting – shelter, transitional housing, community setting – syringe services program, community settings - other

^cJurisdictions are grouped based on the number of persons living with diagnosed or undiagnosed HIV infection in 2019.

Table 2.

Linkage to HIV Medical Care within 30 Days, Interviewed for HIV PS in Non-healthcare Setting among MSM who Were Newly Diagnosed with HIV Infection, by Selected Characteristics - the United States, 2019

Characteristics	New HIV Diagnoses		Linkage to HIV Medical Care within 30 Days			Interview for Partner Service (PS)				
	No.	Col %	New HIV diagnosis with valid data on linkage to HIV medical care	Linked	%	aPR (95% CI)	New HIV diagnosis with valid data on interview for PS	Interviewed	%	aPR (95% CI)
Age at test (years.)										
25-34	827	46.6	650	496	76.3	Referent	537	445	82.9	Referent
13-24	497	28.0	393	284	72.3	0.95 (0.89, 1.03)	319	271	85.0	1.05 (0.98, 1.11)
35-44	268	15.1	193	145	75.1	0.99 (0.90, 1.08)	180	127	70.6	0.85 (0.76, 0.94)
45-54	120	6.8	69	51	73.9	0.98 (0.84, 1.13)	83	58	69.9	0.83 (0.72, 0.96)
55+	52	2.9	41	30	73.2	0.95 (0.79, 1.15)	38	25	65.8	0.79 (0.62, 0.99)
Race/Ethnicity										
White	333	18.8	278	211	75.9	Referent	247	210	85.0	Referent
Black or African American	716	40.4	579	429	74.1	0.98 (0.90, 1.07)	473	374	79.1	0.89 (0.82, 0.96)
Hispanic or Latino	631	35.6	426	329	77.2	0.99 (0.91, 1.08)	376	291	77.4	0.92 (0.84, 0.99)
Other ^a	74	4.2	55	37	67.3	0.87 (0.71, 1.06)	48	42	87.5	1.03 (0.91, 1.16)
Non-healthcare testing site types										
Community settings – various ^b	464	26.2	363	261	71.9	Referent	254	195	76.8	Referent
HIV counseling and testing sites	1,088	61.4	802	633	78.9	1.09 (1.02, 1.18)	741	583	78.7	1.02 (0.95, 1.10)
Correctional facilities	47	2.7	44	34	77.3	1.05 (0.88, 1.25)	35	32	91.4	1.18 (1.04, 1.33)
Health department field visit	62	3.5	44	26	59.1	0.78 (0.60, 1.03)	57	55	96.5	1.23 (1.13, 1.34)
Other Non-healthcare	112	6.3	100	58	58.0	0.81 (0.68, 0.96)	73	64	87.7	1.11 (0.99, 1.25)
HIV Prevalence^c										
High	1,472	83.0	1,096	830	75.7	1.05 (0.96, 1.14)	892	706	79.1	0.97 (0.91, 1.04)
Medium	289	16.3	245	173	70.6	Referent	256	212	82.8	Referent
Low	12	0.7	12	9	75.0	0.99 (0.70, 1.40)	12	11	91.7	1.11 (0.95, 1.31)
Total	1,773	100.0	1,353	1,012	74.8		1,160	929	80.1	

Note. HIV= human immunodeficiency virus, MSM =Men who has sex with men, aPR = Adjusted Prevalence Ratio, and CI = confidence interval.

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For Age at test, the number of records missing or invalid is as follows: 9 (0.5%) in the column under “New HIV Diagnoses”, 7 (0.5%) in the column under “Linkage to HIV Medical Care within 30 Days (New HIV diagnosis with valid data on linkage to HIV medical care)”, 6 (0.6%) in the column under “Linkage to HIV Medical Care within 30 Days (Linked)”, 3 (0.3%) in the column under “Interviewed for PS (New HIV diagnosis with valid data on Interviewed for PS)”, 3 (0.3%) in the column under “Interviewed for PS (Interviewed)”.

For Race/Ethnicity, the number of records missing or invalid is as follows: 19 (1.1%) in the column under “New HIV Diagnoses”, 15 (1.1%) in the column under “Linkage to HIV Medical Care within 30 Days (New HIV diagnosis with valid data on linkage to HIV medical care)”, 6 (0.6%) in the column under “Linkage to HIV Medical Care within 30 Days (Linked)”, 16 (1.4%) in the column under “Interview for PS (New HIV diagnosis with valid data on Interview for PS)”, 12 (1.3%) in the column under “Interview for PS (Interviewed)”.

^aRace/ethnicity category “Other” include American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, and more than one race selected.

^bCommunity settings include school/educational facility; community setting - church/mosque/synagogue/temple; community setting - commercial facility; community setting - bar/club/adult entertainment; community setting - public area; community setting - individual residence, community setting - shelter, transitional housing, community setting - syringe services program, community settings - other

^cJurisdictions are grouped based on the number of persons living with diagnosed or undiagnosed HIV infection in 2019.

Table 3.

PrEP Awareness and Referral to PrEP Providers among HIV-negative MSM in Non-healthcare Settings, by Selected Characteristics - the United States, 2019

Characteristics	PrEP Awareness among HIV-negative MSM Who Report not Being on PrEP at the Time of the Test				Referral to PrEP Providers among HIV-negative MSM Who Were Eligible for PrEP			
	Total HIV-negative tests	Aware of PrEP	%	aPR (95% CI)	Eligible for a PrEP referral	Referred to a PrEP provider	%	aPR (95% CI)
Age at test (years.)								
25–34	39,354	25,678	65.2	Referent	24,513	11,766	48.0	Referent
13–24	28,048	17,908	63.8	0.97 (0.96, 0.98)	17,761	8,639	48.6	1.02 (1.00, 1.04)
35–44	15,016	9,221	61.4	0.92 (0.91, 0.93)	8,645	4,030	46.6	0.98 (0.96, 1.01)
45–54	9,267	5,531	59.7	0.87 (0.85, 0.89)	5,145	2,250	43.7	0.91 (0.88, 0.94)
55+	9,028	5,040	55.8	0.78 (0.77, 0.80)	4,744	1,942	40.9	0.85 (0.82, 0.88)
Race/Ethnicity								
White	35,920	24,200	67.4	Referent	23,866	11,753	49.2	Referent
Black or African American	24,784	15,682	63.3	0.91 (0.90, 0.92)	16,868	8,528	50.6	1.09 (1.07, 1.11)
Hispanic or Latino	31,333	17,285	55.2	0.80 (0.79, 0.81)	14,815	6,052	40.9	0.87 (0.85, 0.89)
Other ^a	7,969	5,624	70.6	0.98 (0.97, 1.00)	4,682	2,069	44.2	0.91 (0.88, 0.94)
Non-healthcare testing site types								
Community settings – various ^b	35,666	26,229	73.5	Referent	21,724	7,808	35.9	Referent
HIV counseling and testing sites	60,324	35,005	58.0	0.77 (0.76, 0.78)	36,078	19,082	52.9	1.42 (1.39, 1.45)
Correctional facilities	1,270	324	25.5	0.34 (0.31, 0.38)	593	294	49.6	1.36 (1.25, 1.48)
Health department field visit	1,482	272	18.4	0.26 (0.24, 0.29)	414	360	87.0	2.32 (2.21, 2.43)
Other non-healthcare	2,738	1,896	69.2	0.93 (0.91, 0.96)	2,225	1,211	54.4	1.59 (1.52, 1.66)
HIV Prevalence^c								
High	74,424	45,191	60.7	0.89 (0.88, 0.90)	42,982	18,277	42.5	0.77 (0.75, 0.78)
Medium	26,222	17,910	68.3	Referent	17,169	9,832	57.3	Referent
Low	834	625	74.9	1.05 (1.01, 1.10)	883	646	73.2	1.30 (1.24, 1.35)
Total	101,480	63,726	62.8		61,034	28,755	47.1	

Note. HIV= human immunodeficiency virus, MSM =Men who has sex with men, aPR = Adjusted Prevalence Ratio, CI = confidence interval and PrEP = pre-exposure prophylaxis.

For Age at test, the number of records missing or invalid is as follows: in the column under “PrEP awareness among HIV-negative MSM who report not being on PrEP at the time of the test”, 767 (0.8%) for “Total HIV-negative tests” and 348 (0.5%) for “Aware of PrEP.” In the column under “Referral to PrEP providers among HIV-negative MSM who were eligible for PrEP”, 226 (0.4%) for “Eligible for a PrEP referral” and 128 (0.4%) for “Referred to a PrEP provider”.

For Race/Ethnicity, the number of records missing or invalid is as follows: in the column under “PrEP awareness among HIV-negative MSM who report not being on PrEP at the time of the test”, 1,474 (1.5%) for “Total HIV-negative tests” and 935 (1.5%) for “Aware of PrEP”. In the column under “Referral to PrEP providers among HIV-negative MSM who were eligible for PrEP”, 803 (1.3%) for “Eligible for a PrEP referral” and 353 (1.2%) for “Referred to a PrEP provider”.

^aRace/ethnicity category “Other” include American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, and more than one race selected.

^bCommunity settings include school/educational facility; community setting - church/mosque/synagogue/temple; community setting – commercial facility; community setting - bar/club/adult entertainment; community setting - public area; community setting - individual residence, community setting – shelter, transitional housing, community setting – syringe services program, community settings – other

^cJurisdictions are grouped based on the number of persons living with diagnosed or undiagnosed HIV infection in 2019.

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