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HIV Infection, Risk, Prevention, and Testing Behaviors Among Heterosexually Active Adults at Increased Risk for HIV Infection

National HIV Behavioral Surveillance 23 U.S. Cities, 2019

National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention
Division of HIV/AIDS Prevention

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Commentary

Lowering the annual number of new HIV infections is a major HIV prevention goal [1]. This goal can be achieved by implementing 3 important strategies for reducing HIV infections: (1) intensifying HIV prevention efforts in communities where HIV is most heavily concentrated, including blacks or African Americans (hereafter referred to as blacks); Hispanic or Latino persons; gay, bisexual, and other men who have sex with men (hereafter referred to as MSM); and persons who inject drugs (PWID); (2) expanding efforts to prevent HIV infection by using a combination of effective, evidence-based, scalable approaches (including preexposure prophylaxis [PrEP]); and (3) educating the general public about the threat of HIV infection and how to prevent it, which can help address HIV stigma. State and local health departments, as well as federal agencies, are expected to monitor progress toward HIV prevention goals [1].

The Centers for Disease Control and Prevention's (CDC's) National HIV Behavioral Surveillance (NHBS) serves as a key component of a high-impact prevention approach to reducing the spread of HIV in the United States [2] by providing data for monitoring behaviors among populations at risk of acquiring or transmitting HIV infection, and identifying the populations for whom scientifically proven, cost-effective, scalable interventions are most appropriate. Monitoring key indicators among members of high-risk populations is critical to achieving the goals of the Ending the HIV Epidemic: A Plan for America initiative [3], which aims to reduce new HIV infections by 90% by 2030 by implementing evidence-based strategies for specific populations in geographic areas most affected by HIV. NHBS also helps state and local health departments in areas with high HIV prevalence to monitor risk behaviors, HIV testing, use of prevention programs, and HIV prevalence in 3 populations at high risk for HIV infection: MSM, PWID, and heterosexually active men and women at increased risk for HIV infection [4, 5]. See technical notes for the definition of "increased risk for HIV infection."

This report summarizes findings from the fifth NHBS data collection among heterosexually active adults at increased risk for HIV infection, which was conducted in 2019; previous years of data on this population (2007, 2010, 2013, 2016) have been published [6, 7, 8, 9]. The report provides descriptive, unweighted data that can be used to describe HIV infection among heterosexually active men and women at increased risk for HIV infection and the percentages reporting specific risk behaviors, HIV testing, and participation in prevention programs. Monitoring these outcomes is useful for assessing risk behaviors and the use of prevention efforts over time and for identifying new HIV prevention opportunities for this population.

Report Changes

CDC routinely assesses NHBS reports to ensure the content and methods best meet the information needs of the nation. The following reporting changes were made from the previous NHBS report on heterosexually active adults at increased risk for HIV infection [9]:

- This 2019 report includes 23 metropolitan statistical areas (MSAs). In 2016, only 17 MSAs collected NHBS data among this population.
- This report uses the term "heterosexually active" instead of "heterosexual" to highlight its focus on recent sexual behavior rather than sexual identity. Consistent with previous reports [6, 7, 8, 9], men who have ever had sex with another man are excluded from this analysis.
- Report inclusion criteria now includes participants classified as low-income (see Appendix) instead of participants classified as low socioeconomic status, defined as achieving no more than high school education or having income at or below the federal poverty level, calculated by the Health and Human Services (HHS) poverty guidelines. This change was made to account for substantial differences in cost of living across cities. Additionally, fewer participants were expected to meet the educational criterion due to an increasing number of people continuing education beyond high school [10].
- PrEP awareness and PrEP use are included in the HIV prevention table (Table 9).
- Physical and sexual violence in the past 12 months are included (Table 12)

- Report of a visit to a health care provider about HIV is now within 1 month after diagnosis (changed from within 3 months after diagnosis) to reflect the timeframe of an updated national goal for linkage-to-care (Table 13).

Some modifications to measure definitions are made routinely to more accurately or more precisely describe the outcome or characteristic of interest; measure definitions are described in the appendix of this report. Additionally, Table 12 is designed as a flexible reporting mechanism to respond to emerging issues; the outcomes presented in this table may vary with each report.

TABLE ORGANIZATION

The tables in this report are ordered by content. Tables 1 and 5–13 are stratified by HIV status; that is, data are presented separately for HIV-negative participants and HIV-positive participants (HIV status was determined from the NHBS HIV test result). A small percentage of the sample could not be classified by HIV status because they had no valid NHBS HIV test result, that is, they did not consent to the HIV test, had an indeterminate result, or reported a previous HIV-positive test result but had a negative NHBS HIV test result. For data completeness, data from these participants are reported in the "No valid NHBS HIV test result" row. **Unless otherwise noted in tables, measurement notes, or the following highlights, the period for all outcomes is in the 12 months before interview**.

HIGHLIGHTS OF ANALYSES

Demographic Characteristics, HIV Prevalence, and HIV Testing

This report describes data from 9,582 heterosexually active males and females who participated in NHBS in 2019, of whom 45% were men; 55%, women; 34%, 18–29 years old; 68%, black, 22%, Hispanic/Latino, and 4%, white (Table 1). Of the participants, 81% had a household income at or below the federal poverty level, 24% had no health insurance, 20% had not visited a health care provider in the past 12 months, and 26% had been homeless in the past 12 months.

In 2019, 2% of participants with a valid HIV test result tested positive for HIV (Table 2). HIV prevalence was the same for males and females (2%). By race/ethnicity, HIV prevalence was as follows: black (2%), white (2%), and Hispanic/Latino (<1%).

Among participants who did not report a previous HIV-positive test result or who had received their first HIV-positive test result less than 12 months before interview, 79% reported that they had ever been tested and 40% reported that they had been tested for HIV during the 12 months before interview (Table 3). By gender, 82% of women and 76% of men had ever been tested for HIV. In the past 12 months, 41% of women and 38% of men had been tested for HIV. By race/ethnicity, HIV testing in the past 12 months was as follows: black (44%), multiple races (40%), Hispanic/Latino (28%), and white (28%). By city, there was a wide range: Washington, DC reported the highest (68%) proportion of HIV testing in the past 12 months, and San Juan, Puerto Rico reported the lowest (14%).

CDC recommends HIV testing at least once for all persons aged 13–64 years as part of a routine clinical visit [11]. Among participants who were tested for HIV in the 12 months before interview, 78% reported that their most recent test was performed in a clinical setting (Table 4), which was less common with older age groups. By race/ethnicity, testing in a clinical setting was more common among white participants (87%) than Hispanic/Latino (80%) or black (78%) participants.

Sexual Behaviors

Condomless vaginal sex was reported less often by HIV-positive men than HIV-negative men (63% and 84%; Table 5). Condomless anal sex was similar for HIV-negative (20%) and HIV-positive (20%) men. Further, HIV-positive men reported less condomless vaginal or anal sex with a main partner than HIV-negative men (35% and 68%); however, condomless vaginal or anal sex with casual partners was similar for HIV-positive and HIV-negative men (43% and 42%; Table 6).

Condomless vaginal sex was less common for HIV-positive women than HIV-negative women (77% and 89%), as was condomless anal sex (20% and 24%; Table 7). Although HIV-positive women reported less condomless vaginal or anal sex with a main partner than HIV-negative women (59% and 75%), they reported more condomless vaginal or anal sex with a casual partner (48% and 39%; Table 8).

Although proportions of condomless anal sex were similar for HIV-positive and HIV-negative persons, it is unknown whether HIV-positive persons had achieved viral suppression or if HIV-negative partners

were using PrEP. Nevertheless, correct and consistent condom use is one of many protection strategies against HIV, other sexually transmitted infections (STIs), and unplanned pregnancies [12]. The high percentages of heterosexually active men and women who engaged in condomless sex underscore the importance of leveraging a combination of effective, evidence-based, scalable prevention strategies, including condom access, achieving an undetectable viral load, increasing awareness and uptake of PrEP, risk-reduction counseling, and HIV testing [2,13].

HIV Prevention

Overall, 35% of participants received free condoms and 13% participated in an individual- or group-level conversation with an HIV counselor or outreach worker (Table 9). The percentages of both were highest for HIV-positive participants, 64% of whom reported receiving free condoms and 45% of whom reported participating in HIV counseling or outreach.

Only 32% of heterosexually active HIV-negative men or women had ever heard of PrEP. Women were more likely to be aware of PrEP than men (35% and 29%). Among racial/ethnic groups, 41% of multiracial, 36% of black, 30% of white, and 18% of Hispanic/Latino participants had heard of PrEP. PrEP use was low overall (0.4%); the numbers were too sparse to understand disparities in PrEP use in this population. PrEP is an effective biobehavioral intervention for reducing HIV transmission, yet awareness and use are persistently low among heterosexually active men and women. Women are underrepresented in PrEP clinical trials and campaigns [14]; unfortunately, this underrepresentation may reinforce stereotypes that PrEP is intended only for gay/bisexual men [15]. Although clinical trials have shown that PrEP is effective in preventing HIV in heterosexual cisgender men and women since 2012 [16], this population may not perceive themselves as either at risk for HIV or as a candidate for PrEP [17]. Therefore, primary care physicians who provide basic health care and preventive services (e.g., family practitioners, gynecologists) may play a role in educating and prescribing PrEP to heterosexually active patients at risk for HIV. Researchers may ensure that PrEP clinical trials include women and heterosexual men.

Racial/ethnic disparities in PrEP use persist in other groups at risk for HIV infection [18]. Providers, community organizations, pharmaceutical companies, and advocates have the opportunity to ensure this pattern of disparities does not repeat itself for heterosexual women and men. In this sample, Hispanic/Latino participants reported the lowest PrEP awareness across all racial/ethnic groups. PrEP campaigns and providers may translate materials in Spanish and ensure that they communicate the benefits of PrEP to Hispanic/Latino patients with cultural competency.

Sexually Transmitted Infections

Sexually transmitted infections (STIs) can increase the likelihood of acquiring and transmitting HIV [19]. The percentage of heterosexually active men and women who reported a diagnosis of any bacterial STI (chlamydia, gonorrhea, or syphilis) during the 12 months before interview was 7% overall, 9% among HIV-positive persons, and 7% among HIV-negative persons. Among all groups, the most commonly reported STI was chlamydia (5%; Table 10).

Substance Use

Noninjection drug use, including painkiller use, has been associated with HIV acquisition risk among heterosexuals [20]. In this sample of heterosexually active men and women who have never injected drugs, 9% of HIV-negative and 11% of HIV-positive persons used prescription painkillers during the 12 months before interview (Table 11). Noninjection opioid use can be a predictor of later injection opioid use, a risk factor for HIV [21].

Additional Outcomes

Table 12 presents data on additional outcomes related to the risk of HIV transmission and acquisition among heterosexually active men and women. Exchange of sex for money or drugs has also been associated with HIV infection [22]. Many persons who exchange sex experience stigma and low access to care, which can present a challenge in preventing HIV. In 2019, 15% of HIV-negative women received and 11% of HIV-negative men gave money or drugs in exchange for sex with a casual opposite-sex partner.

Half (51%) of all participants reported condomless sex with an HIV-discordant or unknown status partner at the most recent sexual encounter with an opposite-sex partner. The percentage of participants reporting condomless sex with an HIV-discordant partner was higher among HIV-negative participants (51%) than among HIV-positive participants (45%).

Five percent of HIV-negative and 9% of HIV-positive participants reported experiencing sexual violence in the past 12 months. Overall, 19% of participants reported experiencing physical violence in the past 12 months. Proportions of physical violence were higher among HIV-negative participants who were 18–24 years old (26%), multiple races (30%), or white (27%). Violence is a direct and indirect risk factor for HIV due to imbalanced power dynamics that can impact status disclosure, sexual risk behaviors, and exchange sex [23], as well as the syndemic of substance abuse, violence, and HIV infection [24].

Receipt of HIV Care

Early linkage to clinical care among persons with recently diagnosed HIV is a national goal [1]. Among persons who self-reported HIV, 92% reported ever visiting a health care provider for HIV care, 54% did so within 1 month after diagnosis, and 81% visited during the 6 months before interview. More men than women visited a provider within 1 month after diagnosis (59% and 51%; respectively) and in the last 6 months (83% and 80%; respectively). The national goal is for 85% of persons with HIV to see a provider within 1 month after diagnosis [25].

Overall, 81% of persons with self-reported HIV described currently using antiretroviral treatment (ART). Proportion of current ART use was higher for men (85%) than women (78%; Table 13). ART adherence is critical for achieving an undetectable viral load, which means a person has effectively no risk of sexually transmitting HIV to HIV-negative partners [26].

NHBS conducts rotating cycles of behavioral surveys among MSM, PWID, and heterosexually active men and women at increased risk for HIV infection [5]; data are collected in annual cycles from 1 risk group per year so that each population is surveyed once every 3 years. The same general eligibility criteria are used in each cycle: age of ≥18 years, current residence in a participating MSA, no previous participation in NHBS during the current survey cycle, ability to complete the survey in either English or Spanish, and ability to provide informed consent. In addition to these basic NHBS eligibility requirements, participation in the 2019 NHBS cycle was limited to persons who (1) were aged <60 years, (2) reported vaginal or anal sex with an opposite sex partner in the 12 months before interview, and (3) reported their gender as either male or female.

Further, participants are only included in this report if they met additional criteria: (1) Never injected any drugs other than those prescribed for them, or (2) male participants have never had oral or anal sex with another male.

A standardized questionnaire is used to collect information about behavioral risks for HIV infection, HIV testing, and use of HIV prevention services. The anonymous, in-person survey is administered by a trained interviewer using a portable computer. The goal of each participating city is to interview 500 persons from the population of interest. All participants are offered an anonymous HIV test, which is linked to the survey data through a unique survey identifier.

Activities for NHBS were approved by CDC [27] and by applicable institutional review boards (IRBs) in each participating city.

Participating Cities

State and local health departments eligible to participate in NHBS are among those whose jurisdictions include an MSA or a specified division with high HIV burden. Throughout this report, MSAs and divisions are referred to by the name of the principal city.

In 2019, 23 MSAs conducted NHBS, which represented approximately 59% of all persons living with HIV infection in urban areas with a population of at least 500,000 at year-end 2016 [28].

Sampling Method

Participants in the 2019 NHBS cycle were recruited by using respondent-driven sampling (RDS) [29, 30]. Recruitment started with a limited number of initial participants who were chosen by referrals from people who knew the local population of interest or through outreach to areas where the population of interest could be found. Initial participants who completed the eligibility screener and were deemed eligible were administered the survey, and those who completed the survey were asked to recruit up to 5 persons whom they knew personally. Those persons, in turn, completed the survey and were asked to recruit others by using a system of coded coupons. This recruitment process continued until the sample size was reached or the sampling period ended.

To reach the population of heterosexually active men and women at increased risk for HIV infection, initial participants were recruited from census tracts in which at least 25% of residents live below the U.S. Census Bureau's poverty threshold [31]. Poverty rates for census tracts were used from the 2013–2017 American Community Survey [32].

Data Collection

Persons who brought a valid coupon to an NHBS field site were escorted to a private area for eligibility screening. For those who met eligibility requirements, trained interviewers obtained informed consent and conducted face-to-face interviews, which took 39 minutes, on average, and consisted of questions concerning participants' demographic characteristics, HIV testing history, sexual and drug-use behaviors, testing and diagnosis of STIs, and use of HIV prevention services and programs. In exchange for their time spent taking part in the interview, participants received $20–$50 (amount determined locally).

HIV testing was performed for participants who consented; blood specimens were collected for rapid testing in the field or laboratory-based testing. A nonreactive rapid test result was considered HIV-negative; a reactive rapid test result was considered HIV-positive if supported by a second rapid test or supplemental laboratory-based testing.

Participants also received $20–$35 for HIV testing. Participants who agreed to recruit others received an additional $10–$20 for each recruit (up to 5) who completed the interview.

Each participating city's goal was to interview 500 persons who met the NHBS definition of a heterosexually active adult at increased risk for HIV. Risks included low income, which was defined as having a household income at or below 150% of the HHS poverty guidelines [33] after being adjusted for geographic differences in cost of living (see Appendix).

Data Analysis

This surveillance report presents descriptive data; no statistical tests were performed. In addition, these data are cross-sectional; we did not attempt to infer causal relationships. Reported numbers less than 12, and percentages based on these numbers, should be interpreted with caution because the numbers are considered unreliable.

Data for this report are not weighted. The purpose of this report is to provide a detailed summary of surveillance data collected as part of the NHBS 2019 cycle; unweighted data provide an efficient and transparent way to do so. Further, unweighted analysis allows for detailed reporting of outcomes among small subgroups of the population of interest.

In the 23 cities included in this report, 15,263 persons were recruited to participate. Of those, 2,731 did not meet eligibility criteria and were excluded from this report. An additional 248 eligible persons were excluded from this report because of lost data during electronic uploads, lack of consent to the survey, incomplete survey data, or survey responses of questionable validity. Finally, an additional 2,702 eligible persons were excluded from this report who had any history of injection drug use, had any history of male-male sex, or were not classified as low income (as defined above).

The full analysis sample for this report includes 2019 NHBS cycle participants who consented to and completed the survey (n = 9,582, Table 1). Additional inclusion criteria were applied for certain analyses; details of each analysis sample can be found in the footnotes of each table.

Supplemental Material

Infographic: HIV infection risk, prevention, and testing behaviors among heterosexually active persons at increased risk for HIV infection—National HIV Behavioral Surveillance, 23 U.S. cities, 2019 (PDF file is attached; also available at http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-26-infographic.pdf).

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Table 1. Selected characteristics of heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	HIV-negative[a]		HIV-positive[b]		No valid NHBS HIV test result[c]		Total	
	No.	%	No.	%	No.	%	No.	%
Gender								
Male	4,176	44.6	65	40.9	36	56.3	4,277	44.6
Female	5,183	55.4	94	59.1	28	43.8	5,305	55.4
Age at interview (yr)								
18–24	1,836	19.6	3	1.9	14	21.9	1,853	19.3
25–29	1,354	14.5	5	3.1	5	7.8	1,364	14.2
30–39	2,268	24.2	23	14.5	13	20.3	2,304	24.0
40–49	1,756	18.8	53	33.3	16	25.0	1,825	19.0
50–60	2,145	22.9	75	47.2	16	25.0	2,236	23.3
Race/ethnicity								
American Indian/Alaska Native	58	0.6	0	0.0	0	0.0	58	0.6
Asian	17	0.2	0	0.0	0	0.0	17	0.2
Black/African American	6,377	68.1	133	83.6	43	67.2	6,553	68.4
Hispanic/Latino[d]	2,078	22.2	12	7.5	17	26.6	2,107	22.0
Native Hawaiian/other Pacific Islander	33	0.4	0	0.0	0	0.0	33	0.3
White	413	4.4	10	6.3	3	4.7	426	4.4
Multiple races	362	3.9	4	2.5	1	1.6	367	3.8
Education								
Less than high school	2,416	25.8	60	37.7	11	17.2	2,487	26.0
High school diploma or equivalent	4,675	50.0	74	46.5	33	51.6	4,782	49.9
Some college or technical degree	2,029	21.7	23	14.5	17	26.6	2,069	21.6
College degree or more	237	2.5	2	1.3	3	4.7	242	2.5
Household income[e]								
At or below the federal poverty level	7,615	81.4	137	86.2	50	78.1	7,802	81.4
Above the federal poverty level	1,744	18.6	22	13.8	14	21.9	1,780	18.6
Health insurance								
Yes	7,101	75.9	131	82.4	53	82.8	7,285	76.0
No	2,216	23.7	28	17.6	10	15.6	2,254	23.5
Visited a health care provider, past 12 months								
Yes	7,496	80.1	144	90.6	54	84.4	7,694	80.3
No	1,858	19.9	15	9.4	10	15.6	1,883	19.7
Homeless,[f] past 12 months								
Yes	2,441	26.1	58	36.5	12	18.8	2,511	26.2
No	6,918	73.9	101	63.5	52	81.3	7,071	73.8
Incarcerated,[g] past 12 months								
Yes	1,349	14.4	19	11.9	10	15.6	1,378	14.4
No	8,006	85.5	140	88.1	54	84.4	8,200	85.6

Table 1. Selected characteristics of heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019 *(cont)*

	HIV-negative[a]		HIV-positive[b]		No valid NHBS HIV test result[c]		Total	
	No.	%	No.	%	No.	%	No.	%
City								
Atlanta, GA	299	3.2	13	8.2	3	4.7	315	3.3
Baltimore, MD	300	3.2	8	5.0	2	3.1	310	3.2
Boston, MA	502	5.4	6	3.8	3	4.7	511	5.3
Chicago, IL	368	3.9	4	2.5	1	1.6	373	3.9
Dallas, TX	440	4.7	0	0.0	4	6.3	444	4.6
Denver, CO	173	1.8	0	0.0	0	0.0	173	1.8
Detroit, MI	456	4.9	2	1.3	0	0.0	458	4.8
Houston, TX	430	4.6	27	17.0	2	3.1	459	4.8
Los Angeles, CA	501	5.4	1	0.6	0	0.0	502	5.2
Memphis, TN	516	5.5	3	1.9	0	0.0	519	5.4
Miami, FL	447	4.8	41	25.8	1	1.6	489	5.1
Nassau-Suffolk, NY	267	2.9	0	0.0	4	6.3	271	2.8
New Orleans, LA	322	3.4	8	5.0	0	0.0	330	3.4
New York, NY	486	5.2	6	3.8	11	17.2	503	5.2
Newark, NJ	551	5.9	11	6.9	2	3.1	564	5.9
Philadelphia, PA	353	3.8	3	1.9	6	9.4	362	3.8
Portland, OR	364	3.9	0	0.0	13	20.3	377	3.9
San Diego, CA	563	6.0	2	1.3	2	3.1	567	5.9
San Francisco, CA	255	2.7	5	3.1	2	3.1	262	2.7
San Juan, PR	479	5.1	3	1.9	4	6.3	486	5.1
Seattle, WA	253	2.7	2	1.3	0	0.0	255	2.7
Virginia Beach, VA	546	5.8	2	1.3	2	3.1	550	5.7
Washington, DC	488	5.2	12	7.5	2	3.1	502	5.2
Total	**9,359**	**100**	**159**	**100**	**64**	**100**	**9,582**	**100**

Abbreviation: NHBS, National HIV Behavioral Surveillance.

Note. "Past 12 months" refers to the 12 months before interview.

[a] Participants with a valid negative NHBS HIV test result.

[b] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[c] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

[d] Hispanics/Latinos can be of any race.

[e] Poverty level is based on household income and household size.

[f] Living on the street, in a shelter, in a single-room–occupancy hotel, or in a car.

[g] Having been held in a detention center, jail, or prison for more than 24 hours.

Table 2. HIV prevalence among heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Male			Female			Full sample		
	HIV-positive[a]		Total	HIV-positive[a]		Total	HIV-positive[a]		Total
	No.	%	No.	No.	%	No.	No.	%	No.
Age at interview (yr)									
18–24	1	0.1	807	2	0.2	1,032	3	0.2	1,839
25–29	1	0.2	591	4	0.5	768	5	0.4	1,359
30–39	8	0.8	977	15	1.1	1,314	23	1.0	2,291
40–49	20	2.5	797	33	3.3	1,012	53	2.9	1,809
50–60	35	3.3	1,069	40	3.5	1,151	75	3.4	2,220
Race/ethnicity									
American Indian/Alaska Native	0	0.0	24	0	0.0	34	0	0.0	58
Asian	0	0.0	8	0	0.0	9	0	0.0	17
Black/African American	52	1.7	2,997	81	2.3	3,513	133	2.0	6,510
Hispanic/Latino[b]	6	0.7	857	6	0.5	1,233	12	0.6	2,090
Native Hawaiian/other Pacific Islander	0	0.0	15	0	0.0	18	0	0.0	33
White	4	2.5	157	6	2.3	266	10	2.4	423
Multiple races	3	1.8	171	1	0.5	195	4	1.1	366
City									
Atlanta, GA	6	4.8	126	7	3.8	186	13	4.2	312
Baltimore, MD	4	2.2	182	4	3.2	126	8	2.6	308
Boston, MA	3	1.5	202	3	1.0	306	6	1.2	508
Chicago, IL	0	0.0	193	4	2.2	179	4	1.1	372
Dallas, TX	0	0.0	191	0	0.0	249	0	0.0	440
Denver, CO	0	0.0	53	0	0.0	120	0	0.0	173
Detroit, MI	1	0.5	199	1	0.4	259	2	0.4	458
Houston, TX	7	3.6	197	20	7.7	260	27	5.9	457
Los Angeles, CA	1	0.4	256	0	0.0	246	1	0.2	502
Memphis, TN	1	0.4	233	2	0.7	286	3	0.6	519
Miami, FL	17	6.8	249	24	10.0	239	41	8.4	488
Nassau-Suffolk, NY	0	0.0	128	0	0.0	139	0	0.0	267
New Orleans, LA	4	2.7	150	4	2.2	180	8	2.4	330
New York, NY	3	1.2	256	3	1.3	236	6	1.2	492
Newark, NJ	6	2.1	282	5	1.8	280	11	2.0	562
Philadelphia, PA	2	1.3	159	1	0.5	197	3	0.8	356
Portland, OR	0	0.0	143	0	0.0	221	0	0.0	364
San Diego, CA	1	0.5	214	1	0.3	351	2	0.4	565
San Francisco, CA	1	0.9	115	4	2.8	145	5	1.9	260
San Juan, PR	0	0.0	139	3	0.9	343	3	0.6	482
Seattle, WA	1	1.0	100	1	0.6	155	2	0.8	255
Virginia Beach, VA	1	0.4	247	1	0.3	301	2	0.4	548
Washington, DC	6	2.6	227	6	2.2	273	12	2.4	500
Total	**65**	**1.5**	**4,241**	**94**	**1.8**	**5,277**	**159**	**1.7**	**9,518**

Abbreviation: NHBS, National HIV Behavioral Surveillance [footnotes only].

Note. Data include participants with a valid NHBS HIV test result.

[a] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[b] Hispanics/Latinos can be of any race.

Table 3. HIV testing among heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Ever tested		Tested in past 12 months[a]		
	No.	%	No.	%	Total No.
Gender					
Male	3,201	75.6	1,608	38.0	4,234
Female	4,284	81.8	2,165	41.4	5,234
Age at interview (yr)					
18–24	1,114	60.2	751	40.6	1,850
25–29	1,101	81.0	570	41.9	1,360
30–39	1,974	86.3	1,002	43.8	2,288
40–49	1,576	88.2	720	40.3	1,786
50–60	1,720	78.8	730	33.4	2,184
Race/ethnicity					
American Indian/Alaska Native	49	84.5	30	51.7	58
Asian	11	64.7	4	23.5	17
Black/African American	5,305	82.1	2,870	44.4	6,458
Hispanic/Latino[b]	1,482	70.7	592	28.2	2,097
Native Hawaiian/other Pacific Islander	22	66.7	8	24.2	33
White	309	73.6	116	27.6	420
Multiple races	292	80.2	145	39.8	364
City					
Atlanta, GA	274	90.1	167	54.9	304
Baltimore, MD	282	92.8	187	61.5	304
Boston, MA	413	81.9	165	32.7	504
Chicago, IL	291	78.9	160	43.4	369
Dallas, TX	311	70.0	111	25.0	444
Denver, CO	120	69.4	52	30.1	173
Detroit, MI	350	76.6	146	31.9	457
Houston, TX	344	78.4	164	37.4	439
Los Angeles, CA	369	73.5	159	31.7	502
Memphis, TN	350	67.7	213	41.2	517
Miami, FL	361	78.0	203	43.8	463
Nassau-Suffolk, NY	228	84.1	127	46.9	271
New Orleans, LA	277	85.8	163	50.5	323
New York, NY	428	85.8	253	50.7	499
Newark, NJ	463	82.7	288	51.4	560
Philadelphia, PA	317	88.1	167	46.4	360
Portland, OR	265	70.3	104	27.6	377
San Diego, CA	418	73.9	177	31.3	566
San Francisco, CA	210	81.7	99	38.5	257
San Juan, PR	331	68.7	65	13.5	482
Seattle, WA	206	81.4	82	32.4	253
Virginia Beach, VA	400	72.9	187	34.1	549
Washington, DC	477	96.4	334	67.5	495
Total	**7,485**	**79.1**	**3,773**	**39.9**	**9,468**

Note. Data include all participants who did not report a previous HIV-positive test result and participants who received their first HIV-positive test result less than 12 months before interview.

[a] "Past 12 months" refers to the 12 months before interview.

[b] Hispanics/Latinos can be of any race.

Table 4. Setting of most recent HIV test among heterosexually active men and women who were tested for HIV in the 12 months before interview—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Clinical setting[a]		Nonclinical setting[b]		
	No.	%	No.	%	Total No.
Gender					
Male	1,180	73.4	312	19.4	1,608
Female	1,775	82.0	285	13.2	2,165
Age at interview (yr)					
18–24	623	83.0	84	11.2	751
25–29	478	83.9	65	11.4	570
30–39	784	78.2	148	14.8	1,002
40–49	539	74.9	139	19.3	720
50–60	531	72.7	161	22.1	730
Race/ethnicity					
American Indian/Alaska Native	25	83.3	2	6.7	30
Asian	4	100	0	0.0	4
Black/African American	2,225	77.5	488	17.0	2,870
Hispanic/Latino[c]	475	80.2	78	13.2	592
Native Hawaiian/other Pacific Islander	6	75.0	0	0.0	8
White	101	87.1	9	7.8	116
Multiple races	113	77.9	19	13.1	145
City					
Atlanta, GA	114	68.3	36	21.6	167
Baltimore, MD	157	84.0	23	12.3	187
Boston, MA	154	93.3	4	2.4	165
Chicago, IL	133	83.1	22	13.8	160
Dallas, TX	75	67.6	26	23.4	111
Denver, CO	48	92.3	4	7.7	52
Detroit, MI	123	84.2	10	6.8	146
Houston, TX	123	75.0	28	17.1	164
Los Angeles, CA	121	76.1	33	20.8	159
Memphis, TN	156	73.2	53	24.9	213
Miami, FL	95	46.8	97	47.8	203
Nassau-Suffolk, NY	114	89.8	6	4.7	127
New Orleans, LA	123	75.5	30	18.4	163
New York, NY	226	89.3	11	4.3	253
Newark, NJ	190	66.0	94	32.6	288
Philadelphia, PA	152	91.0	9	5.4	167
Portland, OR	97	93.3	0	0.0	104
San Diego, CA	153	86.4	17	9.6	177
San Francisco, CA	88	88.9	8	8.1	99
San Juan, PR	45	69.2	9	13.8	65
Seattle, WA	71	86.6	6	7.3	82
Virginia Beach, VA	150	80.2	14	7.5	187
Washington, DC	247	74.0	57	17.1	334
Total	**2,955**	**78.3**	**597**	**15.8**	**3,773**

Abbreviation: HMO, health maintenance organization [footnotes only].

Note. Data report setting of most recent HIV test. Data exclude participants who did not report an HIV test in the past 12 months or who reported receiving an HIV-positive test result more than 12 months before interview. Percentages may not add to 100% due to missing data and 'other' locations, which could not be classified as clinical or nonclinical settings.

[a] Clinical settings include private doctor's office (including HMO), emergency department, hospital (inpatient), public health clinic or community health center, family planning or obstetrics clinic, correctional facility, or drug treatment program.

[b] Nonclinical settings include HIV counseling and testing site, HIV street outreach program or mobile unit, syringe services program, or home.

[c] Hispanics/Latinos can be of any race.

Table 5. Sexual behavior with female sex partners in the 12 months before interview among heterosexually active men—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Vaginal sex		Condomless vaginal sex		Anal sex		Condomless anal sex		Total males
	No.	%	No.	%	No.	%	No.	%	No.
HIV-negative[a]	4,158	99.6	3,502	83.9	1,125	26.9	833	19.9	4,176
Age at interview (yr)									
18–24	803	99.6	683	84.7	160	19.9	99	12.3	806
25–29	590	100	522	88.5	158	26.8	120	20.3	590
30–39	968	99.9	839	86.6	307	31.7	239	24.7	969
40–49	774	99.6	649	83.5	229	29.5	170	21.9	777
50–60	1,023	98.9	809	78.2	271	26.2	205	19.8	1,034
Race/ethnicity									
American Indian/Alaska Native	24	100	20	83.3	7	29.2	7	29.2	24
Asian	8	100	7	87.5	0	0.0	0	0.0	8
Black/African American	2,931	99.5	2,452	83.3	685	23.3	497	16.9	2,945
Hispanic/Latino[b]	847	99.5	726	85.3	327	38.4	245	28.8	851
Native Hawaiian/other Pacific Islander	15	100	14	93.3	3	20.0	3	20.0	15
White	153	100	129	84.3	53	34.6	42	27.5	153
Multiple races	168	100	146	86.9	46	27.4	36	21.4	168
HIV-positive[c]	65	100	41	63.1	20	30.8	13	20.0	65
No valid NHBS HIV test result[d]	36	100	30	83.3	5	13.9	4	11.1	36
Total	**4,259**	**99.6**	**3,573**	**83.5**	**1,150**	**26.9**	**850**	**19.9**	**4,277**

Abbreviation: NHBS, National HIV Behavioral Surveillance.

[a] Participants with a valid negative NHBS HIV test result.

[b] Hispanics/Latinos can be of any race.

[c] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[d] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 6. Sexual behavior with female sex partners in the 12 months before interview among heterosexually active men, by partner type—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Main female partner				Casual female partner				Main and casual female partners—sex of any type[a]		Total males
	Vaginal or anal sex		Condomless vaginal or anal sex		Vaginal or anal sex		Condomless vaginal or anal sex				
	No.	%	No.	%	No.	%	No.	%	No.	%	No.
HIV-negative[b]	3,333	79.8	2,827	67.7	2,609	62.5	1,769	42.4	1,843	44.1	4,176
Age at interview (yr)											
18–24	668	82.9	561	69.6	536	66.5	362	44.9	416	51.6	806
25–29	506	85.8	441	74.7	388	65.8	250	42.4	308	52.2	590
30–39	803	82.9	695	71.7	608	62.7	413	42.6	454	46.9	969
40–49	591	76.1	508	65.4	465	59.8	317	40.8	292	37.6	777
50–60	765	74.0	622	60.2	612	59.2	427	41.3	373	36.1	1,034
Race/ethnicity											
American Indian/Alaska Native	15	62.5	14	58.3	18	75.0	14	58.3	9	37.5	24
Asian	6	75.0	6	75.0	4	50.0	2	25.0	2	25.0	8
Black/African American	2,368	80.4	1,991	67.6	1,871	63.5	1,256	42.6	1,353	45.9	2,945
Hispanic/Latino[c]	673	79.1	578	67.9	502	59.0	356	41.8	339	39.8	851
Native Hawaiian/other Pacific Islander	13	86.7	13	86.7	11	73.3	7	46.7	9	60.0	15
White	109	71.2	93	60.8	87	56.9	65	42.5	43	28.1	153
Multiple races	142	84.5	128	76.2	109	64.9	64	38.1	85	50.6	168
HIV-positive[d]	39	60.0	23	35.4	44	67.7	28	43.1	18	27.7	65
No valid NHBS HIV test result[e]	29	80.6	23	63.9	18	50.0	13	36.1	12	33.3	36
Total	**3,401**	**79.5**	**2,873**	**67.2**	**2,671**	**62.5**	**1,810**	**42.3**	**1,873**	**43.8**	**4,277**

Abbreviation: NHBS, National HIV Behavioral Surveillance.

[a] Participants who reported oral, vaginal, or anal sex with at least 1 female main partner and at least 1 female casual partner in the 12 months before interview.

[b] Participants with a valid negative NHBS HIV test result.

[c] Hispanics/Latinos can be of any race.

[d] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[e] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 7. Sexual behavior with male sex partners in the 12 months before interview among heterosexually active women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Vaginal sex		Condomless vaginal sex		Anal sex		Condomless anal sex		Total females
	No.	%	No.	%	No.	%	No.	%	No.
HIV-negative[a]	5,175	99.8	4,596	88.7	1,437	27.7	1,225	23.6	5,183
Age at interview (yr)									
18–24	1,028	99.8	923	89.6	256	24.9	217	21.1	1,030
25–29	764	100	694	90.8	220	28.8	186	24.3	764
30–39	1,297	99.8	1,152	88.7	403	31.0	341	26.3	1,299
40–49	978	99.9	877	89.6	290	29.6	250	25.5	979
50–60	1,108	99.7	950	85.5	268	24.1	231	20.8	1,111
Race/ethnicity									
American Indian/Alaska Native	34	100	33	97.1	14	41.2	13	38.2	34
Asian	9	100	8	88.9	4	44.4	4	44.4	9
Black/African American	3,425	99.8	3,021	88.0	837	24.4	715	20.8	3,432
Hispanic/Latina[b]	1,226	99.9	1,098	89.5	432	35.2	361	29.4	1,227
Native Hawaiian/other Pacific Islander	18	100	16	88.9	5	27.8	5	27.8	18
White	260	100	236	90.8	91	35.0	80	30.8	260
Multiple races	194	100	177	91.2	53	27.3	47	24.2	194
HIV-positive[c]	93	98.9	72	76.6	30	31.9	19	20.2	94
No valid NHBS HIV test result[d]	28	100	25	89.3	9	32.1	9	32.1	28
Total	**5,296**	**99.8**	**4,693**	**88.5**	**1,476**	**27.8**	**1,253**	**23.6**	**5,305**

Abbreviation: NHBS, National HIV Behavioral Surveillance.

[a] Participants with a valid negative NHBS HIV test result.

[b] Hispanics/Latinas can be of any race.

[c] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[d] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 8. Sexual behavior with male sex partners in the 12 months before interview among heterosexually active women, by partner type—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Main male partner				Casual male partner				Main and casual male partners—sex of any type[a]		Total females
	Vaginal or anal sex		Condomless vaginal or anal sex		Vaginal or anal sex		Condomless vaginal or anal sex				
	No.	%	No.	%	No.	%	No.	%	No.	%	No.
HIV-negative[b]	4,376	84.4	3,877	74.8	2,743	52.9	2,020	39.0	2,009	38.8	5,183
Age at interview (yr)											
18–24	929	90.2	842	81.7	538	52.2	365	35.4	453	44.0	1,030
25–29	664	86.9	591	77.4	432	56.5	305	39.9	340	44.5	764
30–39	1,096	84.4	964	74.2	678	52.2	483	37.2	497	38.3	1,299
40–49	818	83.6	730	74.6	515	52.6	420	42.9	363	37.1	979
50–60	869	78.2	750	67.5	580	52.2	447	40.2	356	32.0	1,111
Race/ethnicity											
American Indian/Alaska Native	28	82.4	28	82.4	16	47.1	15	44.1	10	29.4	34
Asian	9	100	8	88.9	3	33.3	1	11.1	3	33.3	9
Black/African American	2,913	84.9	2,554	74.4	1,834	53.4	1,333	38.8	1,371	39.9	3,432
Hispanic/Latina[c]	1,016	82.8	916	74.7	637	51.9	475	38.7	441	35.9	1,227
Native Hawaiian/other Pacific Islander	16	88.9	13	72.2	5	27.8	4	22.2	3	16.7	18
White	219	84.2	199	76.5	138	53.1	106	40.8	98	37.7	260
Multiple races	170	87.6	154	79.4	106	54.6	84	43.3	83	42.8	194
HIV-positive[d]	72	76.6	55	58.5	60	63.8	45	47.9	43	45.7	94
No valid NHBS HIV test result[e]	26	92.9	23	82.1	14	50.0	7	25.0	12	42.9	28
Total	**4,474**	**84.3**	**3,955**	**74.6**	**2,817**	**53.1**	**2,072**	**39.1**	**2,064**	**38.9**	**5,305**

Abbreviation: NHBS, National HIV Behavioral Surveillance.

[a] Participants who reported oral, vaginal, or anal sex with at least 1 male main partner and at least 1 male casual partner in the 12 months before interview.

[b] Participants with a valid negative NHBS HIV test result.

[c] Hispanics/Latinas can be of any race.

[d] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[e] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 9. Receipt of HIV prevention materials and services in the 12 months before interview among heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Free condoms[a]		Individual- or group-level intervention[b]		PrEP awareness[c]		PrEP use[d]		
	No.	%	No.	%	No.	%	No.	%	Total No.
HIV-negative[e]	3,267	34.9	1,195	12.8	3,026	32.3	42	0.4	9,359
Gender									
Male	1,520	36.4	518	12.4	1,221	29.2	18	0.4	4,176
Female	1,747	33.7	677	13.1	1,805	34.8	24	0.5	5,183
Age at interview (yr)									
18–24	720	39.2	268	14.6	500	27.2	5	0.3	1,836
25–29	438	32.3	139	10.3	468	34.6	6	0.4	1,354
30–39	736	32.5	289	12.7	826	36.4	14	0.6	2,268
40–49	638	36.3	202	11.5	600	34.2	12	0.7	1,756
50–60	735	34.3	297	13.8	632	29.5	5	0.2	2,145
Race/ethnicity									
American Indian/Alaska Native	24	41.4	8	13.8	23	39.7	1	1.7	58
Asian	3	17.6	0	0.0	8	47.1	0	0.0	17
Black/African American	2,239	35.1	838	13.1	2,322	36.4	32	0.5	6,377
Hispanic/Latino[f]	736	35.4	245	11.8	382	18.4	4	0.2	2,078
Native Hawaiian/other Pacific Islander	7	21.2	3	9.1	11	33.3	0	0.0	33
White	113	27.4	39	9.4	122	29.5	2	0.5	413
Multiple races	138	38.1	58	16.0	147	40.6	3	0.8	362
HIV-positive[g]	101	63.5	71	44.7	—	—	—	—	159
No valid NHBS HIV test result[h]	26	40.6	16	25.0	—	—	—	—	64
Total	**3,394**	**35.4**	**1,282**	**13.4**	**—**	**—**	**—**	**—**	**9,582**

Abbreviations: NHBS, National HIV Behavioral Surveillance; PrEP, preexposure prophylaxis.

[a] Excludes condoms received from friends, relatives, or sex partners.

[b] Individual-level intervention defined as a one-on-one conversation with an outreach worker, a counselor, or a prevention program worker about ways to prevent HIV. Group-level intervention defined as a small-group discussion that is part of an organized session about ways to prevent HIV; excludes informal discussions with friends. Conversations that were part of obtaining an HIV test were excluded.

[c] Ever heard of PrEP

[d] Took PrEP at any point in the 12 months before interview to reduce the risk of getting HIV.

[e] Participants with a valid negative NHBS HIV test result.

[f] Hispanics/Latinos can be of any race.

[g] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[h] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 10. Diagnosis of sexually transmitted infections among heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Diagnosis during the 12 months before interview								Diagnosis, ever				
	Any bacterial STI[a]		Chlamydia		Gonorrhea		Syphilis		Genital warts		Genital herpes		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Total No.
HIV-negative[b]	658	7.0	493	5.3	273	2.9	77	0.8	168	1.8	342	3.7	9,359
Gender													
Male	218	5.2	154	3.7	99	2.4	22	0.5	44	1.1	71	1.7	4,176
Female	440	8.5	339	6.5	174	3.4	55	1.1	124	2.4	271	5.2	5,183
Age at interview (yr)													
18–24	216	11.8	196	10.7	74	4.0	9	0.5	8	0.4	31	1.7	1,836
25–29	120	8.9	91	6.7	55	4.1	12	0.9	10	0.7	47	3.5	1,354
30–39	143	6.3	105	4.6	62	2.7	14	0.6	33	1.5	87	3.8	2,268
40–49	86	4.9	48	2.7	40	2.3	17	1.0	54	3.1	80	4.6	1,756
50–60	93	4.3	53	2.5	42	2.0	25	1.2	63	2.9	97	4.5	2,145
Race/ethnicity													
American Indian/Alaska Native	6	10.3	4	6.9	1	1.7	1	1.7	3	5.2	1	1.7	58
Asian	2	11.8	2	11.8	0	0.0	0	0.0	1	5.9	1	5.9	17
Black/African American	499	7.8	361	5.7	224	3.5	65	1.0	107	1.7	230	3.6	6,377
Hispanic/Latino[c]	102	4.9	83	4.0	31	1.5	10	0.5	31	1.5	66	3.2	2,078
Native Hawaiian/other Pacific Islander	1	3.0	1	3.0	0	0.0	0	0.0	0	0.0	1	3.0	33
White	14	3.4	13	3.1	4	1.0	0	0.0	17	4.1	23	5.6	413
Multiple races	34	9.4	29	8.0	13	3.6	1	0.3	9	2.5	19	5.2	362
HIV-positive[d]	15	9.4	5	3.1	9	5.7	7	4.4	9	5.7	17	10.7	159
No valid NHBS HIV test result[e]	2	3.1	1	1.6	1	1.6	0	0.0	6	9.4	2	3.1	64
Total	**675**	**7.0**	**499**	**5.2**	**283**	**3.0**	**84**	**0.9**	**183**	**1.9**	**361**	**3.8**	**9,582**

Abbreviations: STI, sexually transmitted infection; HPV, human papillomavirus; NHBS, National HIV Behavioral Surveillance.

[a] Includes diagnosis of gonorrhea, chlamydia, or syphilis in the 12 months before interview.

[b] Participants with a valid negative NHBS HIV test result.

[c] Hispanics/Latinos can be of any race.

[d] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[e] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 11. Noninjection drug use in the 12 months before interview and binge drinking in the 30 days before interview among heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Used drug	
	No.	%
HIV-negative[a]		
Binge drinking (past 30 days)[b]	3,375	36.1
Any noninjection drugs (excludes binge drinking)	5,592	59.7
Cocaine	965	10.3
Crack	762	8.1
Downers[c]	647	6.9
Ecstasy	693	7.4
Heroin	443	4.7
Marijuana	5,063	54.1
Methamphetamine	448	4.8
Prescription opioids[d]	859	9.2
HIV-positive[e]		
Binge drinking (past 30 days)[b]	54	34.0
Any noninjection drugs (excludes binge drinking)	79	49.7
Cocaine	22	13.8
Crack	31	19.5
Downers[c]	16	10.1
Ecstasy	6	3.8
Heroin	11	6.9
Marijuana	62	39.0
Methamphetamine	3	1.9
Prescription opioids[d]	17	10.7
No valid NHBS HIV test result[f]		
Binge drinking (past 30 days)[b]	19	29.7
Any noninjection drugs (excludes binge drinking)	34	53.1
Cocaine	5	7.8
Crack	3	4.7
Downers[c]	1	1.6
Ecstasy	3	4.7
Heroin	5	7.8
Marijuana	26	40.6
Methamphetamine	7	10.9
Prescription opioids[d]	0	0.0

Disclaimer: The use of trade names is for identification only and does not imply endorsement by the Department of Health and Human Services or the Centers for Disease Control and Prevention.

Abbreviation: NHBS, National HIV Behavioral Surveillance.

Note. Denominator is the total number of participants in the category; HIV-negative participants: n = 9,359; HIV-positive participants: n = 159; participants without a valid NHBS HIV test result: n = 64. Responses are not mutually exclusive; percentages may not add to 100.

[a] Participants with a valid negative NHBS HIV test result.

[b] Defined as 5 or more drinks within about 2 hours (males) or 4 or more drinks within about 2 hours (females) during the 30 days before interview.

[c] Benzodiazepines, such as Klonopin, Valium, Ativan, or Xanax.

[d] Painkillers, such as OxyContin, Vicodin, morphine, or Percocet.

[e] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[f] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 12. Additional outcomes among heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Number of opposite sex partners	Exchange sex[a]		Condomless sex with an HIV-discordant partner at last sex[b]		Sexual violence[c]		Physical violence[d]		
	Median (Q1–Q3)	No.	%	No.	%	No.	%	No.	%	Total No.
HIV-negative[e]	2(1–4)	1,219	13.0	4,749	50.7	447	4.8	1,742	18.6	9,359
Gender										
Male	2(1–5)	450	10.8	1,960	46.9	123	2.9	814	19.5	4,176
Female	2(1–3)	769	14.8	2,789	53.8	324	6.3	928	17.9	5,183
Age at interview (yr)										
18–24	2(1–4)	109	5.9	960	52.3	100	5.4	483	26.3	1,836
25–29	2(1–4)	120	8.9	703	51.9	68	5.0	293	21.6	1,354
30–39	2(1–4)	252	11.1	1,104	48.7	105	4.6	439	19.4	2,268
40–49	2(1–4)	302	17.2	860	49.0	102	5.8	283	16.1	1,756
50–60	2(1–3)	436	20.3	1,122	52.3	72	3.4	244	11.4	2,145
Race/ethnicity										
American Indian/Alaska Native	2(1–5)	4	6.9	28	48.3	4	6.9	15	25.9	58
Asian	1(1–3)	1	5.9	6	35.3	0	0.0	4	23.5	17
Black/African American	2(1–4)	962	15.1	3,093	48.5	292	4.6	1,111	17.4	6,377
Hispanic/Latino[f]	2(1–4)	175	8.4	1,205	58.0	92	4.4	381	18.3	2,078
Native Hawaiian/other Pacific Islander	2(1–3)	2	6.1	15	45.5	1	3.0	3	9.1	33
White	2(1–3)	31	7.5	212	51.3	24	5.8	112	27.1	413
Multiple races	2(1–4)	43	11.9	184	50.8	32	8.8	110	30.4	362
HIV-positive[g]	2(1–5)	53	33.3	71	44.7	15	9.4	20	12.6	159
No valid NHBS HIV test result[h]	2(1–3)	7	10.9	34	53.1	5	7.8	18	28.1	64
Total	**2(1–4)**	**1,279**	**13.3**	**4,854**	**50.7**	**467**	**4.9**	**1,780**	**18.6**	**9,582**

Abbreviations: Q, quartile; NHBS, National HIV Behavioral Surveillance.

Note. Unless otherwise stated, outcomes are reported for the 12 months before interview.

[a] For females, "exchange sex" refers to receiving money or drugs from a male casual partner in exchange for sex. For males, "exchange sex" refers to giving money or drugs to a female casual partner in exchange for sex.

[b] "Condomless sex" refers to engaging in vaginal or anal sex without a condom at any time during his or her most recent sexual encounter with an opposite-sex partner. "HIV-discordant partner" refers to a partner of different or unknown HIV status.

[c] Sexual violence is defined as being forced or pressured to have vaginal, oral, or anal sex when he or she did not want to in the past 12 months before interview.

[d] Physical violence is defined as being slapped, punched, shoved, kicked, shaken, or otherwise physically hurt in the past 12 months before interview.

[e] Participants with a valid negative NHBS HIV test result.

[f] Hispanics/Latinos can be of any race.

[g] Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

[h] Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

Table 13. Receipt of HIV care and treatment among self-reported, HIV-positive, heterosexually active men and women—National HIV Behavioral Surveillance, 23 U.S. cities, 2019

	Visited health care provider about HIV								
	Ever		Within 1 month after diagnosis		During past 6 months		Currently taking antiretrovirals		
	No.	%	No.	%	No.	%	No.	%	Total No.
Gender									
Male	41	89.1	27	58.7	38	82.6	39	84.8	46
Female	69	93.2	38	51.4	59	79.7	58	78.4	74
Age at interview (yr)									
18–24	4	80.0	2	40.0	2	40.0	2	40.0	5
25–29	3	75.0	2	50.0	2	50.0	3	75.0	4
30–39	15	78.9	10	52.6	11	57.9	11	57.9	19
40–49	35	92.1	21	55.3	34	89.5	33	86.8	38
50–60	53	98.1	30	55.6	48	88.9	48	88.9	54
Race/ethnicity									
American Indian/Alaska Native	0	—	0	—	0	—	0	—	0
Asian	0	—	0	—	0	—	0	—	0
Black/African American	93	93.0	53	53.0	83	83.0	82	82.0	100
Hispanic/Latino[a]	7	70.0	5	50.0	5	50.0	6	60.0	10
Native Hawaiian/other Pacific Islander	0	—	0	—	0	—	0	—	0
White	7	100	5	71.4	7	100	6	85.7	7
Multiple races	3	100	2	66.7	2	66.7	3	100	3
Total	**110**	**91.7**	**65**	**54.2**	**97**	**80.8**	**97**	**80.8**	**120**

Note. Data include all participants who reported having ever received an HIV-positive test result (which may include those who did not have a valid NHBS test result, positive or negative, or who did not consent to the HIV test). "Past 6 months" refers to the 6 months before interview.

[a] Hispanics/Latinos can be of any race.

Appendix: Measurement Notes

Sociodemographic Characteristics

- Gender: Male or female. Participants who did not identify themselves as male or female were not eligible for interview.
- Age: Calculated from the reported date of birth; age categories were chosen for epidemiologic relevance and consistency of reporting across all 3 National HIV Behavioral Surveillance (NHBS) populations.
- Race/ethnicity: Participants reported 1 or more race categories (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, and White). Hispanic/Latino ethnicity was asked separately; participants reporting Hispanic/Latino ethnicity were considered Hispanic/Latino, regardless of reported race. Participants reporting multiple races (but not Hispanic/Latino ethnicity) were classified as multiracial.
- Education: Highest level of education completed.
- Household income: Participants were asked about their combined monthly or yearly household income (in US$) from all sources for the calendar year before interview. Poverty was determined by using the U.S. Department of Health and Human Services poverty guidelines for 2018. These guidelines are issued yearly for the United States and are one indicator used for determining eligibility for many federal and state programs. The 2018 guidelines [1] were used for participants interviewed in 2019. Because the poverty guidelines are not defined for the territory of Puerto Rico, the guidelines for the contiguous states and Washington, DC were used for this jurisdiction. Participants were asked to identify the range of their income by selecting from a list of income ranges and the number of dependents on that income. If the participant's income range and household size resulted in an ambiguous determination of poverty level, the participant's household income was assumed to be the low-point of the income range.
- Low income: Participants were classified as low-income if their income was 150% of the federal poverty level multiplied by a geographical adjustment, which was calculated as the ratio of the U.S. Census supplemental poverty measure threshold for the NHBS city's MSA [2] to the U.S. Census official poverty measure thresholds [3]. The cities were adjusted thus:

NHBS cities	Multiplier
Memphis; San Juan	1.0
Atlanta; Chicago; Dallas; Detroit; Houston; New Orleans; Virginia Beach; Portland	1.1
Baltimore; Denver; Miami; Philadelphia; Seattle	1.2
Boston; Nassau-Suffolk; New York City; Newark	1.3
Los Angeles; San Diego; Washington, DC	1.4
San Francisco	1.5

- Health insurance: Currently having some form of health insurance.
- Homeless: Living on the street, in a shelter, in a single-room–occupancy hotel, or in a car at any time during the 12 months before interview.
- Incarcerated: Having been held in a detention center, jail, or prison, for more than 24 hours during the 12 months before interview.
- City: Throughout this report, eligible MSAs and divisions are referred to by the name of the principal city. State and local health departments eligible to participate in NHBS are among those whose jurisdictions included an MSA or a specified division within an MSA with high prevalence of HIV. This report presents 2019 data in 23 MSAs (see list at the end of the report), which represented approximately 59% of all HIV diagnoses in urban areas with a population of at least 500,000 in 2016.

HIV Status

HIV testing was performed for participants who consented to testing; blood or oral specimens were collected for either rapid testing in the field or laboratory-based testing.

- HIV-negative: Participants with a valid negative NHBS HIV test result.
- HIV-positive: Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.
- No valid NHBS HIV test result: Participants who did not have a valid positive or negative NHBS HIV test result, including those who did not consent to the HIV test, had an indeterminate laboratory result, had discordant rapid test results, or reported a previous HIV-positive test result but had a negative NHBS HIV test result.

HIV Testing

- Ever tested: Having had an HIV test during one's lifetime.
- Tested in past 12 months: Having had an HIV test during the 12 months before interview.
- Clinical setting: Participants reported the location of their most recent HIV test—private doctor's office (including health maintenance organizations), emergency room, hospital (inpatient), public health clinic or community health center, family planning or obstetrics clinic, correctional facility (jail or prison), or drug treatment program.
- Nonclinical setting: Participants reported the location of their most recent HIV test—HIV counseling and testing site, HIV street outreach program or mobile unit, syringe services program, or home.
- Other locations: "Other" locations could not be classified and are excluded from the clinical/nonclinical setting classification.

Sexual Behaviors

- Any sex: Includes vaginal, oral, or anal sex.
- Vaginal sex: Penis inserted into a partner's vagina.
- Oral sex: Mouth on a partner's vagina or penis.
- Anal sex: Penis inserted into a female partner's anus.
- Condomless sex: Vaginal or anal sex during which a condom is not used.
- Main partner: Person with whom the participant has sex and to whom he or she feels most committed (e.g., girlfriend/boyfriend, wife/husband, significant other, or life partner).
- Casual partner: Person with whom the participant has sex, but to whom he or she does not feel committed or whom he or she does not know very well.

HIV Prevention

- Free condoms: Received free condoms during the 12 months before interview, excluding those given by a friend, relative, or sex partner.
- Individual- or group-level intervention: Defined as either one-on-one conversations with an outreach worker, a counselor, or a prevention program worker about ways to prevent HIV, excluding conversations as part of an HIV test, or participating in any organized session that involves a small group of people discussing ways to prevent HIV infections, excluding informal discussions with friends.
- PrEP awareness: Ever heard of PrEP, an antiretroviral medicine taken by a person who is HIV-negative to reduce their risk of HIV.
- PrEP use: Took PrEP at any point in the 12 months before interview to reduce the risk of getting HIV.

Sexually Transmitted Infections

- Chlamydia: Received a diagnosis of chlamydia during the 12 months before interview.
- Gonorrhea: Received a diagnosis of gonorrhea during the 12 months before interview.
- Syphilis: Received a diagnosis of syphilis during the 12 months before interview.
- Any bacterial STI: Received a diagnosis of chlamydia, gonorrhea, or syphilis during the 12 months before interview.
- Genital warts: Received a diagnosis of genital warts during one's lifetime.
- Genital herpes: Received a diagnosis of genital herpes during one's lifetime.

Noninjection Substance Use

Participants were asked about their use of alcohol in the 30 days before interview and their use of noninjection drugs (excluding those prescribed for them) during the 12 months before interview. Participants were considered to have used a substance if they reported using that substance with any frequency other than "never."

- Binge drinking: Consumed 5 or more alcoholic drinks in about 2 hours (males) or 4 or more alcoholic drinks in about 2 hours (females) during the 30 days before interview.
- Cocaine: Used powder cocaine during the 12 months before interview.
- Crack: Used crack cocaine during the 12 months before interview.
- Downers: Used downers (benzodiazepines), such as Klonopin, Valium, Ativan, or Xanax, during the 12 months before interview.
- Ecstasy: Used X or ecstasy during the 12 months before interview.
- Heroin: Smoked or snorted heroin during the 12 months before interview.
- Marijuana: Used marijuana during the 12 months before interview.
- Methamphetamine: Used methamphetamines (i.e., meth, crystal meth, speed, or crank) during the 12 months before interview.
- Prescription opioids: Used pain killers, such as OxyContin, Vicodin, morphine, or Percocet, during the 12 months before interview.
- Any noninjection drug: Used any noninjection drug, excluding alcohol, during the 12 months before interview.

Additional Outcomes

Table 12 includes outcomes that were of particular interest at the time of publication, but were not included in the other tables.

- Number of opposite sex partners: Median number of opposite sex partners during the 12 months before interview; first and third quartiles (25th and 75th percentiles) are also reported.
- Exchange sex among casual partners: For females, "exchange sex" refers to receiving money or drugs from a male casual partner in exchange for sex. For males, "exchange sex" refers to giving money or drugs to a female casual partner in exchange for sex
- Condomless sex with an HIV-discordant partner at last sex: A composite measure based on self-reported HIV status of the participant (positive, negative, or unknown), the participant's reported HIV status of his or her most recent opposite-sex partner (positive, negative, or unknown), and whether the participant reported engaging in vaginal or anal sex without a condom at any time during his or her last sexual encounter with the partner. A partner was considered to be of discordant HIV status if the participant reported he or she did not know the HIV status of at least one member of the partnership (the participant or the partner) or if one member of the partnership was known to be HIV-positive while the other was known to be HIV-negative. The result of the NHBS HIV test completed after the interview was not factored into this measure.
- Sexual violence is defined as anyone forcing or pressuring the participant to have oral, vaginal, or anal sex when they did not want to during the 12 months before interview.
- Physical violence is defined as being slapped, punched, shoved, kicked, shaken, or otherwise physically hurt during the 12 months before interview.

Receipt of HIV Care

Participants who reported having received a positive HIV test result before interview were asked about their receipt of HIV care. Specifically, participants were asked: the date of their first HIV-positive test result; if they had ever visited a doctor, nurse, or other health care provider for a medical evaluation or care related to their HIV infection; the date of their first visit to a health care provider for HIV care after learning they had HIV; the date of their most recent visit to a health care provider for HIV care; and whether they were currently taking any antiretroviral treatment (ART).

- Visited health care provider about HIV, ever: Having ever visited a health care provider for their HIV infection.
- Visited health care provider about HIV, within 1 month after diagnosis: Having visited a health

care provider for their HIV infection within 1 month after the date of his or her first HIV-positive test result.

- Visited health care provider about HIV, in the past 6 months: Having visited a health care provider for HIV care in the 6 months before date of interview.
- Currently taking antiretroviral medications: Taking antiretroviral HIV medicines at the time of interview.

REFERENCES

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2. U.S. Census Bureau. Table of supplemental poverty measure thresholds by metro area for 2017. https://www.census.gov/content/census/en/library/publications/2018/demo/p60-265.html. Revised September 2018. Accessed December 21, 2020.
3. U.S. Census Bureau. Table of poverty thresholds for 2017 by size of family and number of children. https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html. Revised August 2020. Accessed December 21, 2020.

Participating Metropolitan Statistical Areas, 2019

Principal city	Metropolitan statistical area (division)
Atlanta, Georgia	Atlanta–Sandy Springs–Roswell, Georgia
Baltimore, Maryland	Baltimore–Columbia–Towson, Maryland
Boston, Massachusetts	Boston–Cambridge–Newton, Massachusetts–New Hampshire (Boston Division)
Chicago, Illinois	Chicago–Naperville–Elgin, Illinois–Indiana–Wisconsin (Chicago Division)
Dallas, Texas	Dallas–Fort Worth–Arlington, Texas (Dallas Division)
Denver, Colorado	Denver–Aurora–Lakewood, Colorado
Detroit, Michigan	Detroit–Warren–Dearborn, Michigan (Detroit Division)
Houston, Texas	Houston–The Woodlands–Sugar Land, Texas
Los Angeles, California	Los Angeles–Long Beach–Anaheim, California (Los Angeles Division)
Memphis, Tennessee	Memphis, Tennessee–Mississippi–Arkansas
Miami, Florida	Miami–Fort Lauderdale–West Palm Beach, Florida (Miami Division)
Nassau–Suffolk, New York	New York–Newark–Jersey City, New York–New Jersey–Pennsylvania (Nassau Division)
New Orleans, Louisiana	New Orleans–Metairie, Louisiana
New York, New York	New York–Newark–Jersey City, New York–New Jersey–Pennsylvania (New York Division)
Newark, New Jersey	New York–Newark–Jersey City, New York–New Jersey–Pennsylvania (Newark Division)
Norfolk, Virginia	Virginia Beach–Norfolk–Newport News, Virginia–North Carolina
Philadelphia, Pennsylvania	Philadelphia–Camden–Wilmington, Pennsylvania–New Jersey–Delaware–Maryland (Philadelphia Division)
Portland, Oregon	Portland–Vancouver–Hillsboro, Oregon–Washington
San Diego, California	San Diego–Carlsbad, California
San Francisco, California	San Francisco–Oakland–Hayward, California (San Francisco Division)
San Juan, Puerto Rico	San Juan–Carolina–Caguas, Puerto Rico
Seattle, Washington	Seattle–Tacoma–Bellevue, Washington (Seattle Division)
Virginia Beach, Virginia	Virginia Beach–Norfolk–Newport News, Virginia–North Carolina
Washington, DC	Washington–Arlington–Alexandria, District of Columbia (DC)–Virginia–Maryland–West Virginia (Washington Division)