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HIV Testing Pre- and Post-COVID-19 Pandemic Among Persons who Inject Drugs – National HIV Behavioral Surveillance, 19 Cities, 2018 and 2022

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Abstract

HIV testing decreased during the COVID-19 pandemic among persons who inject drugs (PWID), though it is unclear how these changes in HIV testing affected different sub-groups of PWID. We estimated the change in past-year HIV testing between 2018 and 2022 overall and by sociodemographic and health care characteristics among PWID. Past-year HIV testing significantly decreased between 2018 and 2022 overall and across most sub-groups of PWID, including PWID accessing and not accessing medical and harm reduction services. Integrating HIV testing across medical and harm reduction services accessed by PWID and expanding community-based HIV testing might increase HIV testing among PWID.

Keywords

HIV testing; Persons who inject drugs; COVID-19; HIV prevention

Introduction

HIV testing is a crucial strategy for the Ending the HIV Epidemic in the U.S. (EHE) initiative, which aims to decrease new HIV infections by 90% by 2030 [1]. CDC recommends that persons who inject drugs (PWID) get HIV tested at least annually [2]. Evidence demonstrates HIV testing decreased during the COVID-19 pandemic overall and among PWID due to disruptions to health care delivery [3–5]. This reduction in HIV

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Ethical Approval National HIV Behavioral Surveillance activities were approved by the Centers for Disease Control and Prevention and applicable institutional review boards in each participating city.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Disclaimer The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Competing Interests The authors have no relevant financial or non-financial interests to disclose.

testing might explain the decreases in U.S. HIV diagnoses during the COVID-19 pandemic [3, 5]. However, there is limited understanding on how changes in HIV testing pre- and post-pandemic affected different sub-groups of PWID. Using data from CDC's National HIV Behavioral Surveillance (NHBS) for 2018 and 2022, we assessed changes in past-year HIV testing among PWID overall and by sociodemographic and health care characteristics. Results will help inform efforts to increase HIV testing among PWID in response to service gaps identified during the COVID-19 pandemic.

Methods

NHBS conducted biobehavioral surveys among PWID using respondent-driven sampling in 2018 (23 participating cities) and 2022 (20 participating cities) [6–8]. Eligibility criteria included: 18 years or older; residing in participating city; no previous participation during that year's NHBS cycle; ability to complete the survey in English or Spanish; ability to provide informed consent; and self-reported drug injection in the past 12 months. In 2018, additional eligibility criteria included having physical evidence of recent injection or demonstrating knowledge of injection drug use; in 2022, additional eligibility criteria included demonstrating knowledge of injection drug use. Participants received incentives for survey participation, HIV testing, and recruiting others.

Each recruited person completed eligibility screening in a private area at a project field site with a trained interviewer. If the person was eligible and provided informed consent, the interviewer administered the anonymous standardized questionnaire and conducted HIV testing. The questionnaire took approximately 40 min to complete and asked about demographic characteristics, HIV testing, sexual and substance use behaviors, and use of HIV prevention services. In 2018, interviews were conducted face-to-face at the project field site. In 2022, to reduce COVID-19 transmission risk, participants were interviewed at the project field site by videoconference.

The outcome variable was past-year HIV testing. Sociodemographic characteristics included age, race, ethnicity, sex, education, household income, disability, past-year homelessness, past-year incarceration, and U.S. Census region [7, 8]. Health care characteristics included health insurance and having visited a health care provider, received syringes from a syringe services program (SSP) or pharmacy, participated in a substance use disorder (SUD) treatment program, and used medications for opioid use disorder (MOUD) in the past year [7, 8].

This analysis used data collected from 19 cities that participated in NHBS in both 2018 and 2022. Additionally, the analysis was restricted to eligible participants who did not report a previous HIV-positive test result or received their first HIV-positive test result less than 12 months before the interview and had valid data for past-year HIV testing. We used log-linked Poisson regression models with generalized estimating equations that adjusted for city and participant's network size and accounted for clustering by recruitment chain to estimate adjusted prevalence ratios (aPRs) and 95% confidence intervals (CIs). Each model estimated the change in prevalence of past-year HIV testing between 2018 and 2022 overall and by a sociodemographic or health care characteristic; an interaction

term between year of data collection and the selected characteristic was included in each model. Chi-square testing was conducted to assess whether HIV testing location at last HIV testing visit differed by year among participants reporting past-year HIV testing. Analyses were conducted on SAS (version 9.4; SAS Institute). Activities were approved by CDC and applicable institutional review boards in each participating city.¹

Results

The distribution of sociodemographic and health care characteristics differed between 2018 ($n = 9,244$) and 2022 samples ($n = 6,187$) (Table 1). There was a smaller percentage of 18–29 year-old participants (2018: 14.4%; 2022: 6.8%), recently incarcerated participants (2018: 35.8%; 2022: 24.8%), and participants from the Midwest (2018: 11.3%; 2022: 4.1%) in 2022 compared with 2018; there was a larger percentage of Black/African American participants in 2022 (44.1%) compared with 2018 (37.7%). The percentage of participants who reported visiting a health care provider (2018: 79.0%; 2022: 72.4%), participating in a SUD treatment program (2018: 43.3%; 2022: 31.7%), and using MOUD (2018: 51.9% 2022: 45.1%) in the past year decreased between 2018 and 2022.

Past-year HIV testing decreased from 55.3% in 2018 to 45.6% in 2022 (aPR = 0.85; 95% CI = 0.80–0.89; p -value < 0.01). The prevalence of HIV testing decreased across most sub-groups of participants, including participants accessing and not accessing medical and harm reduction services. Large decreases in past-year HIV testing were seen among 18–29 year-old participants (aPR = 0.79; 95% CI = 0.69–0.91; p -value < 0.01), participants in the Midwest (aPR = 0.76; 95% CI = 0.58–0.98; p -value = 0.03) and West (aPR = 0.70; 95% CI = 0.64–0.77; p -value < 0.01), and participants who did not visit a health care provider in the past year (aPR = 0.79; 95% CI = 0.70–0.90; p -value < 0.01). There was also a large decrease among Asian participants (aPR = 0.53; 95% CI = 0.31–0.92; p -value = 0.03), although these results should be interpreted with caution due to small sample size.

Among participants who reported past-year HIV testing ($n = 7,929$), the HIV testing location at the last HIV testing visit differed by year (Chi-square p -value < 0.01). The largest percentage point changes were reporting HIV testing at an HIV counseling and testing site (2018: 4.7%; 2022: 8.0%), a hospital (inpatient) (2018: 12.6%; 2022: 15.8%), and a correctional facility (2018: 12.4%; 2022: 8.0%).

Discussion

While it is well-documented that HIV testing decreased overall and among PWID during the COVID-19 pandemic [4, 5], this study investigates changes in HIV testing pre- and post-pandemic among sub-groups of PWID. The results elucidate understanding on which PWID are at greatest need for HIV testing to increase access to HIV prevention and treatment services and reduce the number of missed HIV diagnoses [3, 5]. Results show decreases in HIV testing among PWID that were observed in early stages of the pandemic have persisted in 2022, with less than half of PWID receiving an annual HIV test [3]. The reductions in

¹45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Section 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Section 3501 et seq.

HIV testing were observed for most sub-groups of PWID, including PWID accessing and not accessing medical and harm reduction services and PWID in the Midwest and West. These findings are consistent with research that found SSPs had reduced capacity to offer HIV testing and maintain relationships with clients during the COVID-19 pandemic [9]; however, the findings diverge from one study that found PWID on MOUD had no change in HIV testing access during the COVID-19 pandemic [10]. Regional differences in HIV testing reductions may be due to variations in resource availability for accessible HIV testing services for PWID, although further research is needed [11]. In addition, while significant HIV testing reductions were observed across all age groups, the largest decrease in HIV testing was among young PWID who likely recently initiated injection drug use, making them a particularly important group to engage in HIV testing [12].

There are limitations to note. Variables were measured using self-report and are subject to social desirability bias. Additionally, the analytic sample included PWID from 19 U.S. cities, limiting generalizability to PWID living elsewhere. Finally, NHBS eligibility criteria, interviewing procedures, and sample size by city and certain sub-populations (e.g., young PWID) differed in 2018 and 2022.

Public Health Implications

To meet the goals of the EHE initiative, efforts are needed to better engage PWID, especially young PWID, in services and ensure those services are resourced to offer routine opt-out HIV screening [1, 3]. During public health emergencies, integrating HIV testing across medical and harm reduction services accessed by PWID, such as SSPs and SUD treatment centers, and expanding community-based HIV prevention efforts might increase HIV testing among PWID [3].

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Data Availability

Please send data use requests to NHBS@cdc.gov. A summary of the data is available via CDC surveillance reports: <https://stacks.cdc.gov/view/cdc/106349>; <https://stacks.cdc.gov/view/cdc/150464>.

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Associations between sociodemographic and health care characteristics and past-year HIV testing among persons who inject drugs - National HIV Behavioral Surveillance (NHBS), 19 cities, 2018–2022^{a, b}

Table 1

Characteristic	2018 n (%)	2022 n (%)	HIV tested in past 12 months		
			2018 n (%)	2022 n (%)	aPR 95% CI p-value
Sociodemographic characteristics					
Age at interview (years)					
18–29	1,331 (14.4)	419 (6.8)	781 (58.7)	189 (45.1)	0.79 0.69,0.91 < 0.01
30–39	2,499 (27.0)	1,461 (23.6)	1,461 (58.5)	700 (47.9)	0.86 0.81,0.92 < 0.01
40–49	2,148 (23.2)	1,645 (26.6)	1,211 (56.4)	775 (47.1)	0.87 0.81,0.94 < 0.01
≥50	3,266 (35.3)	2,662 (43.0)	1,655 (50.7)	1,157 (43.5)	0.86 0.79,0.93 < 0.01
Hispanic/Latino ^c					
Yes	1,849 (20.0)	1,173 (19.0)	1,048 (56.7)	506 (43.1)	0.81 0.74,0.89 < 0.01
No	7,392 (80.0)	5,010 (81.0)	4,058 (54.9)	2,315 (46.2)	0.86 0.81,0.91 < 0.01
Race ^{c, d}					
American Indian/Alaska Native	313 (3.5)	204 (3.4)	170 (54.3)	94 (46.1)	0.95 0.80, 1.13 0.57
Asian	40 (0.5)	24 (0.4)	26 (65.0)	7 (29.2)	0.53 0.31,0.92 0.03
Black/African American	3,339 (37.7)	2,659 (44.1)	1,879 (56.3)	1,299 (48.9)	0.84 0.78,0.90 < 0.01
Native Hawaiian/Other Pacific Islander	67 (0.8)	50 (0.8)	42 (62.7)	21 (42.0)	0.75 0.51, 1.11 0.15
White	4,490 (50.6)	2,691 (44.6)	2,416 (53.8)	1,150 (42.7)	0.85 0.80,0.90 < 0.01
Multiple races	619 (7.0)	404 (6.7)	354 (57.2)	188 (46.5)	0.85 0.73,0.98 0.03
Sex ^c					
Male	6,387 (69.6)	4,154 (67.8)	3,498 (54.8)	1,878 (45.2)	0.85 0.80,0.90 < 0.01
Female	2,786 (30.4)	1,976 (32.2)	1,570 (56.4)	909 (46.0)	0.83 0.78,0.89 < 0.01
Education ^c					
Less than high school	2,606 (28.2)	1,764 (28.5)	1,461 (56.1)	801 (45.4)	0.83 0.77,0.90 < 0.01
High school diploma or equivalent	3,791 (41.0)	2,583 (41.8)	2,039 (53.8)	1,188 (46.0)	0.87 0.80,0.93 < 0.01
Some college or technical degree	2,485 (26.9)	1,594 (25.8)	1,395 (56.1)	708 (44.4)	0.83 0.76,0.90 < 0.01
College degree or more	360 (3.9)	244 (3.9)	213 (59.2)	124 (50.8)	0.89 0.77, 1.03 0.13

Characteristic	2018 n (%)	2022 n (%)	HIV tested in past 12 months			p-value
			2018 n (%)	2022 n (%)	2022 vs. 2018 aPR 95% CI	
Household income ^c						
At or below the federal poverty level	6,942 (75.6)	4,794 (78.4)	3,811 (54.9)	2,192 (45.7)	0.85 0.81,0.91	< 0.01
Above the federal poverty level	2,244 (24.4)	1,317 (21.6)	1,261 (56.2)	597 (45.3)	0.83 0.76,0.90	< 0.01
Disability ^c						
Yes	6,226 (67.4)	4,331 (70.3)	3,483 (55.9)	2,000 (46.2)	0.85 0.80,0.90	< 0.01
No	3,009 (32.6)	1,827 (29.7)	1,621 (53.9)	806 (44.1)	0.83 0.77,0.90	< 0.01
Experienced homelessness, past 12 months ^c						
Yes	6,291 (68.1)	4,304 (69.6)	3,675 (58.4)	2,010 (46.7)	0.82 0.78,0.87	< 0.01
No	2,951 (31.9)	1,881 (30.4)	1,432 (48.5)	810 (43.1)	0.91 0.84,0.98	0.02
Incarcerated, past 12 months ^c						
Yes	3,305 (35.8)	1,532 (24.8)	2,080 (62.9)	771 (50.3)	0.83 0.78,0.88	< 0.01
No	5,934 (64.2)	4,652 (75.2)	3,023 (50.9)	2,048 (44.0)	0.89 0.83,0.94	< 0.01
U.S. Census region						
Northeast	1,551 (16.8)	1,053 (17.0)	1,039 (67.0)	639 (60.7)	0.90 0.82,0.99	0.04
South	3,411 (36.9)	2,302 (37.2)	1,889 (55.4)	1,099 (47.7)	0.93 0.86, 1.02	0.12
Midwest	1,046 (11.3)	251 (4.1)	494 (47.2)	82 (32.7)	0.76 0.58,0.98	0.03
West	2,794 (30.2)	2,199 (35.5)	1,504 (53.8)	848 (38.6)	0.70 0.64,0.77	< 0.01
Territories	442 (4.8)	382 (6.2)	182 (41.2)	153 (40.1)	1.00 0.85, 1.17	0.97
Health care access and use						
Health insurance ^c						
Yes	6,955 (75.7)	5,003 (81.5)	4,018 (57.8)	2,328 (46.5)	0.84 0.79,0.89	< 0.01
No	2,231 (24.3)	1,135 (18.5)	1,056 (47.3)	472 (41.6)	0.83 0.74,0.94	< 0.01
Visited a health care provider, past 12 months ^c						
Yes	7,299 (79.0)	4,473 (72.4)	4,353 (59.6)	2,297 (51.4)	0.88 0.84,0.93	< 0.01
No	1,940 (21.0)	1,706 (27.6)	753 (38.8)	522 (30.6)	0.79 0.70,0.90	< 0.01
Received syringes from an SSP, past 12 months ^c						
Yes	5,138 (55.6)	3,409 (55.2)	3,164 (61.6)	1,681 (49.3)	0.85 0.80,0.90	< 0.01
No	4,098 (44.4)	2,772 (44.8)	1,941 (47.4)	1,137 (41.0)	0.84 0.78,0.92	< 0.01

Characteristic	2018 n (%)	2022 n (%)	HIV tested in past 12 months				
			2018 n (%)	2022 n (%)	2022 vs. 2018		
					aPR	95% CI	p-value
Received syringes from a pharmacy, past 12 months ^c							
Yes	2,846 (30.8)	1,359 (22.0)	1,531 (53.8)	565 (41.6)	0.82	0.74,0.90	< 0.01
No	6,390 (69.2)	4,822 (78.0)	3,574 (55.9)	2,253 (46.7)	0.85	0.80,0.91	< 0.01
Participated in a SUD treatment program, past 12 months ^{c, e}							
Yes	4,003 (43.3)	1,964 (31.7)	2,539 (63.4)	1,093 (55.7)	0.89	0.84,0.94	< 0.01
No	5,239 (56.7)	4,222 (68.3)	2,569 (49.0)	1,727 (40.9)	0.84	0.78,0.90	< 0.01
Used MOUD, past 12 months ^{c, f}							
Yes	4,795 (51.9)	2,788 (45.1)	2,934 (61.2)	1,422 (51.0)	0.86	0.81,0.91	< 0.01
No	4,447 (48.1)	3,394 (54.9)	2,172 (48.8)	1,397 (41.2)	0.84	0.78,0.91	< 0.01
HIV testing experiences							
HIV tested, past 12 months	5,108 (55.3)	2,821 (45.6)	---	---	0.85	0.80,0.89	< 0.01
HIV testing location at last HIV testing visit, past 12 months ^{c, g}							
HIV counseling and testing site	238 (4.7)	223 (8.0)	---	---	---	---	---
HIV/AIDS street outreach program or mobile unit	730 (14.3)	437 (15.6)	---	---	---	---	---
SUD treatment program	549 (10.8)	254 (9.1)	---	---	---	---	---
SSP	445 (8.7)	192 (6.8)	---	---	---	---	---
Correctional facility (jail or prison)	634 (12.4)	223 (8.0)	---	---	---	---	---
Family planning or obstetrics clinic	44 (0.9)	26 (0.9)	---	---	---	---	---
Public health clinic or community health center	992 (19.5)	569 (20.3)	---	---	---	---	---
Private doctor's office (including HMO)	303 (5.9)	179 (6.4)	---	---	---	---	---
Emergency room	298 (5.8)	132 (4.7)	---	---	---	---	---
Hospital (inpatient)	644 (12.6)	443 (15.8)	---	---	---	---	---
At home	9 (0.2)	9 (0.3)	---	---	---	---	---
Other	211 (4.1)	116 (4.1)	---	---	---	---	---
Total	9,244 (100.0)	6,187 (100.0)	5,108 (55.3)	2,821 (45.6)	---	---	---

Abbreviations: aPR = adjusted prevalence ratio; 95% CI = 95% confidence interval; SSP = syringe services program; SUD = substance use disorder; MOUD = medications for opioid use disorder; HMO = health maintenance organization

Note: Bolded aPR and 95% CI estimates are statistically significant at $p < 0.05$

^aAnalyses restricted to participants who did not report a previous HIV-positive test result or who received their first HIV-positive test result less than 12 months before the interview and had valid data for past-year HIV testing

^bControlled for city and network size and clustered on recruitment chain

^cMissing data: Race: $n = 531$; Hispanic/Latino: $n = 7$; Sex: $n = 128$; Education: $n = 4$; Household income: $n = 134$; Disability: $n = 38$; Homelessness: $n = 4$; Incarceration: $n = 8$; Insurance: $n = 107$; Visited health care provider: $n = 13$; Syringes, SSP: $n = 14$; Syringes, pharmacy: $n = 3$; Used MOUD: $n = 7$; HIV testing location: $n = 29$

^dEach race category includes participants who reported being Hispanic/Latino or non-Hispanic

^eParticipated in a SUD treatment program (including outpatient, inpatient, residential, detox, or 12-step program)

^fUsed medicines, such as methadone, buprenorphine, Suboxone, or Subutex, to treat drug use

^gRestricted to participants who reported HIV testing in the past 12 months ($n = 7,929$)