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## Pre-Exposure Prophylaxis (PrEP) Awareness among Black Men who have Sex with Men with a History of Criminal Justice Involvement in Six US Cities: Findings from the HPTN 061 Study

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### Abstract

Transition from detention to the community for Black men who have sex with men with criminal justice involvement (BMSM-CJI) represents a particularly vulnerable period for HIV acquisition and transmission. We examined levels of HIV PrEP awareness among BMSM-CJI. PrEP awareness among BMSM-CJI was low (7.9%) with evidence of lower awareness levels among those with STI. There was evidence that HIV testing history was associated with higher PrEP awareness. Study findings highlight needs for further assessment of PrEP knowledge among BMSM-CJI. The strong association between HIV testing and PrEP awareness underscores an opportunity to integrate PrEP education within HIV/STI testing services

### Keywords

Men who have sex with men (MSM); Criminal justice; PrEP; Minority Populations

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Authors contributions:

JF proposed the original research question, conducted analysis, and wrote the initial draft of the manuscript. CC assisted with statistical analysis; MK, TD, RT, CHO, CC, JS, LH, KM and RB provided guidance and expertise on subject matter related to the study sample and design, and all authors reviewed the final manuscript prior to submission *AIDS and Behavior*

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**Code availability:** Coding for the analysis in the report is available from the primary author

## Introduction

Black men who have sex with men (BMSM) are disproportionately impacted by dual epidemics of HIV and incarceration (Brewer et al., 2014a, 2014b). BMSM accounted for more than a quarter of all new HIV diagnoses in 2018 (Centers for Disease Control & Prevention, 2020). Elevated incarceration history and incarceration incidence have also been documented among this population (Brewer et al., 2014a, 2014b). The transition from detention to community for many, including BMSM, represents a particularly vulnerable period of time when new sex partners, transactional sex, and substance use are observed with corresponding increases in HIV acquisition and transmission (Epperson, El-Bassel, Chang, & Gilbert, 2010; Khan et al., 2009; Ricks, Crosby, & Terrell, 2015). Thus, BMSM with a recent history of incarceration would benefit from HIV pre-exposure prophylaxis (PrEP), an effective HIV biomedical prevention strategy that is recommended by the Centers for Disease Control and Prevention (CDC) for all individuals at substantial risk for HIV (Centers for Disease Control & Prevention, 2019a), during post detention periods and potentially while incarcerated.

The PrEP care continuum starts with identifying HIV negative individuals who are at risk for HIV (PrEP candidates), followed by movement along the PrEP continuum from PrEP awareness to initiation/uptake, adherence, and eventually PrEP persistence (Nunn et al., 2017). The purpose of this manuscript is to examine levels of PrEP awareness, a key step in the PrEP care continuum, among BMSM with a history of criminal justice involvement (BMSM-CJI) enrolled in the HIV Prevention Trials Network (HPTN) 061 study. HPTN 061 participants represent a cohort of BMSM at increased risk for HIV with documented high incidence (i.e., 35%) and previous history (i.e., 60%) of incarceration (Brewer et al., 2014a, 2014b). We examined PrEP awareness by CDC sexual risk taking PrEP indications (e.g., multiple partners, HIV-positive partners, STI), history of HIV testing, and prior receipt of HIV-related services while incarcerated.

## Methods

The HPTN 061 enrollment and recruitment methods have been described comprehensively elsewhere (Brewer et al., 2014a, 2014b). HPTN 061 sought to examine the feasibility and efficacy of interventions to prevent the acquisition and transmission of HIV predominantly among BMSM in the United States (US). Enrollment occurred from 2009–2010 in six US metropolitan cities: Atlanta, Boston, Los Angeles, New York City, San Francisco, and Washington D.C. Institutional review boards at all participating institutions approved the study. Participants completed an audio computer-assisted self-interview (ACASI).

The analysis for this study was restricted to participants who had reported any history of incarceration at baseline. We measured self-reported PrEP awareness (coded as Yes/No) as our outcome and associations with CDC indications for PrEP use (i.e., multiple partnerships (i.e. two or more partners), HIV partnerships (having a HIV positive partner), STI infection, sex trade involvement, and inconsistent condom use) as exposure variables. (Centers for Disease Control & Prevention, 2019a) We also examined associations between PrEP and several other important variables including history of HIV testing (history of ever being

tested for HIV, coded as Yes/No), and previous receipt of HIV services while incarcerated to include HIV testing, condoms, prevention services, and HIV treatment within prisons (all coded as Yes/No). Descriptive statistics along with unadjusted odds ratios (OR) with 95% confidence intervals were tabulated for each variable and its association with PrEP awareness. STATA 15 was used for the analysis. This study was classified as non-human subjects research by New York University's IRB.

## Results

A total of 1,553 participants were enrolled and 914 (58.9%) reported a history of incarceration at the baseline visit were included in the final analysis. The median age was 39 years, 60% had annual incomes of less than \$30,000, and 7.9% had reported hearing of/being aware of PrEP. Table 1 describes PrEP awareness by key variables of interest. PrEP awareness was low across all CDC indications including having multiple partnerships (7.9%), having an HIV partnership (8.4%), reporting inconsistent condom use with partners (8.2%), and sex trade involvement (7.9%). Notably, there was evidence that BMSM-CJI who tested positive for an STI at baseline were much less likely to be aware of PrEP (3.1%) as those who did not test positive (8.6%; OR: 0.34, 0.10, 1.09). Additionally, regardless of the number of reported CDC PrEP indications, PrEP awareness remained extremely low (range from 7.2% for 4–5 indicators to 8.1% for 2–3 CDC PrEP indications). There was evidence that PrEP awareness was higher among those with any history of HIV testing compared with those without any history of HIV testing (8.6% vs. 3.4%, OR 2.64, 95% CI: 0.95, 7.40). For those who responded to questions on HIV-related services while incarcerated (N=453, 49.6%), PrEP awareness was generally low and similar to rates reported for the CDC indications. PrEP awareness was 7.3% among those who received HIV testing in prison, 6.7% among those receiving HIV prevention services, 12.5% among those who received condoms, and 11.1% among those who received HIV treatment in prison.

## Discussion

PrEP awareness was low among BMSM-CJI overall and by CDC PrEP indications who are priority populations for PrEP. The findings highlight the need for a current assessment of PrEP knowledge among BMSM-CJI to evaluate whether low PrEP awareness persists as a public health threat. Given the current dearth of available data on PrEP knowledge among BMSM-CJI these findings, importantly, have highlighted a clear unmet need for improved knowledge of and access to PrEP among BMSM-CJI with STIs or high levels of risk behaviors, given evidence of the lowest knowledge levels in these groups.

We observed higher levels of PrEP awareness among individuals who had previously tested for HIV compared with those who had not previously received an HIV test. This is not a surprising finding given that PrEP initiation requires initial and routine HIV testing and education about PrEP during HIV testing is common (Centers for Disease Control & Prevention, 2019b). However, there may be opportunities for greater integration of PrEP education within HIV/STI testing services within correctional facilities and immediately following release for this population.

HPTN 061 recruited participants prior to the FDA's approval of Truvada™ for PrEP in 2012, which could explain the observed low levels of PrEP awareness in this population (HIV.gov, 2012). However, PrEP was already proven to be effective in MSM in the iPREX study, so a higher level of awareness may be expected (Grant et al., 2010). Study findings are limited to BMSM-CJI enrolled in HPTN 061 and also are not representative of all BMSM-CJI.

The study is among the first to report on PrEP awareness among BMSM-CJI in the US. While there have been substantial increases in PrEP awareness in the decade since HPTN 061 enrollment (Sullivan et al., 2020), we still do not know enough about CJI barriers, opportunities, and implementation strategies to enhance PrEP uptake within CJI settings and immediately upon release for this population. Future implementation science studies are warranted to examine these factors among BMSM-CJI.

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**Table 1.**

Prep Awareness at Baseline for HPTN 061 among BMSM reporting Incarceration History at Baseline (N= 914)

		(N, %) with CDC Indicator in Total Sample	PrEP Awareness (N, %) by key variables	OR (95% CI) for Association between PrEP Awareness and key variables
<b>CDC Indicators</b>				
Multiple Partners	No	191 (20.9)	15 (7.9)	(Ref)
	Yes	722 (79.1)	57 (7.9)	0.99 (0.55, 1.80)
HIV Partnerships	No	446 (48.8)	33 (7.4)	(Ref)
	Yes	468 (51.2)	39 (8.4)	1.14 (0.70, 1.85)
Inconsistent Condom Use	No	117 (12.8)	7 (5.9)	(Ref)
	Yes	797 (87.2)	65 (8.2)	1.40 (0.63, 3.13)
Sex Trade involvement	No	616 (67.4)	49 (7.9)	1 (Ref)
	Yes	298 (32.6)	23 (7.7)	0.97 (0.58, 1.62)
STI Infection	No	749 (88.4)	64 (8.6)	(Ref)
	Yes	98 (11.6)	3 (3.1)	0.34 (0.10, 1.09)
<b>Number of CDC Indicators</b>				
0-1		127 (13.9)	10 (7.9)	(Ref)
2		272 (29.8)	22 (8.1)	1.02 (0.47, 2.23)
3		333 (36.4)	27 (8.1)	1.03 (0.48, 2.18)
4-5		182 (19.9)	13 (7.2)	0.89 (0.38, 2.12)
<b>History of HIV Testing</b>	No	117 (12.8)	4 (3.4)	(Ref)
	Yes	796 (87.2)	68 (8.6)	2.64 (0.95, 7.40)
<b>Prison Services</b>				
HIV Testing	No	528 (57.8)	44 (8.4)	(Ref)
	Yes	386 (42.2)	28 (7.3)	0.86 (0.52, 1.41)
HIV Prevention Services	No	690 (75.5)	57 (8.3)	(Ref)
	Yes	224 (24.5)	15 (6.7)	0.79 (0.45, 1.44)
Access/use of condoms	No	825 (90.3)	61 (7.4)	(Ref)
	Yes	89 (9.7)	11 (12.5)	1.78 (0.90, 3.53)
HIV treatment	No	878 (96)	68 (7.8)	(Ref)
	Yes	36 (4)	4 (11.1)	1.48 (0.51, 4.32)

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