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A Systematic Review up to 2018 of HIV and Associated Factors Among Criminal Justice–Involved (CJI) Black Sexual and Gender Minority Populations in the United States (US)

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Abstract

Black men who have sex with men (BMSM) and Black transgender women (BTW) are impacted by dual epidemics of HIV and incarceration. We advanced understanding of the relationship between criminal justice involvement, HIV, and other key HIV-related characteristics among these key populations in the US. We conducted a systematic review up to 2018 and 47 articles met the inclusion criteria of scientific publications involving quantitative findings of US-based HIV-related studies focused on criminal justice–involved (CJI) BMSM and BTW. Overall, there was a dearth of studies focused specifically on BTW. Criminal justice involvement was relatively high among BMSM and BTW and more pronounced among BTW. The current evidence favors no association between incarceration and HIV acquisition among BMSM with limited information about BTW. Criminal justice involvement was associated with a greater likelihood of STIs among BMSM with mixed results for sexual risk behaviors. Criminal justice settings served as an important venue for HIV testing/diagnosis for both BMSM and BTW. However, these settings were not conducive for subsequent stages of the HIV care continuum. Studies pointed to an independent association between criminal justice involvement, substance use, housing instability, and greater odds of incarceration among BMSM who were unemployed and had limited education. Future incarceration was associated with high levels of perceived racism among BMSM. Among young BMSM, high network criminal justice prevalence was also associated with sexual risk behaviors, poorer mental health outcomes, drug use, and housing instability. CJI BMSM and BTW represent a critical subpopulation to end the HIV epidemic in the US.

Keywords HIV · Criminal justice–involved · Corrections · Black men who have sex with men · Black transgender women

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Introduction

Black sexual and gender minority individuals are disproportionately impacted by HIV in the United States (US) [1–9]. In 2017, Black men who have sex with men (BMSM) nationally accounted for more than a quarter of all new HIV diagnoses in the US, with a majority of new HIV diagnoses occurring among younger BMSM aged 13–34 [1]. Among transgender individuals, an estimated 14% of transgender women were living with HIV in 2017, with the highest prevalence estimate (i.e., 44%) being among Black transgender women (BTW) [10].

High incarceration rates have also been identified among BMSM and BTW in the US [11, 12]. A landmark longitudinal study, the HIV Prevention Trials Network (HPTN) 061 study conducted in six urban US cities (i.e., District of Columbia, San Francisco, Los Angeles, Boston, Atlanta, and New York City), highlighted the disproportionate burden of incarceration

among sexual and gender minority populations. Consisting of primarily cisgender BMSM, the HPTN 061 study showed an elevated lifetime history of incarceration (60%) and high incarceration incidence (35%, 95% CI = [31%, 38%]) among sexual and gender minority participants. Furthermore, BTW had a greater odds (3.26) of incarceration history compared with cisgender BMSM [12]. However, to date, there is not a comprehensive understanding of the impact of incarceration among these priority populations and there remains a dearth of information about the connection between criminal justice involvement and HIV among BMSM and BTW who sit at the intersection of multiple marginalized identities (i.e., Black race, gender identity, sexual orientation) [3, 5]. Thus, in the current systematic review, we sought to expand understanding of the burden of incarceration as well as the relationship between HIV and criminal justice involvement among Black sexual and gender minority populations in the US [11, 12].

Previous studies have shown that network characteristics (e.g., high sexually transmitted infection [STI] rates among sexual partners), psychosocial characteristics (e.g., mental health and substance use/misuse), and socio-structural factors (e.g., unstable housing, racism/stigma, unemployment) contribute to HIV vulnerability and poor access to HIV services for Black sexual and gender minority populations [1, 13–25]. What is less understood are the reasons surrounding why these characteristics may or may not be more pronounced and/or exacerbated among criminal justice–involved (CJI) BMSM and BTW. To address this gap, we focus our systematic review on quantitative studies that have examined the various intersections between criminal justice involvement, HIV, and key characteristics (e.g., network, psychosocial, socio-structural) known to be associated with HIV vulnerability and poor access to HIV services (i.e., HIV care and treatment). We use the term CJI to include those who are currently detained or under criminal justice supervision (probation or parole) or who have a history of arrest, incarceration, or supervision. We also highlight epidemiological studies focused on YBMSM given that they account for the majority of new HIV diagnoses among all men who have sex with men (MSM) and the need to fully engage this population in order to reach HIV elimination [1, 14].

Pre-detention, detention, and post-release incarceration periods have been identified as important intervention opportunities for evidence-based and informed HIV interventions [15, 16]. A recent systematic review found that the most common interventions within criminal justice settings consisted of HIV/STI screenings as well as educational interventions [17]. In addition, relatively few interventions were focused on MSM and TW, perhaps, because this approach may expose these populations to unwarranted attention and violence within criminal justice settings [17]. Of the 58 studies identified in this review, only one was focused specifically on CJI among BMSM [17]. The information gathered from the current systematic review can be used to inform gaps in existing research focused on CJI BMSM and BTW in the US and guide the development of future research and interventions.

Methods

The final systematic review search was completed on September 6, 2018, and included all articles up to that date. Relevant keywords and Medical Subject Headings (MeSH) terms based on a priori knowledge and manuscript goals were used to search the PubMed, PsychINFO, and SocINDEX databases. The finalized terms inputted into these databases are available in the appendix. The search yielded a total of 393 articles that were then exported into an Endnote library [18]. Seventy-four (74) duplicate articles were removed and the remaining articles were assessed for eligibility.

Article Eligibility

The systematic review was focused on quantitative epidemiological studies conducted in the US that provided data for individuals 18 and older. Thus, qualitative and non-US studies were excluded. Studies had to (1) report criminal justice involvement estimates (e.g., previous incarceration history or incidence) that were specific to BMSM and/or BTW participants and/or (2) contain CJI estimates specific to BMSM and/or BTW within the context of at least one of the following conditions: (a) HIV, (b) STIs, (c) sexual risk behaviors, (d) mental health outcomes, (e) substance use/misuse, and (f) socio-structural experiences (including stigma/discrimination, housing status, education levels, and employment history). Articles were reviewed for inclusion or exclusion in an Endnote library. Detailed information on article identification and selection, including exclusion criteria, is available in Fig. 1 (PRISMA diagram). Each ineligible article was categorized by a single exclusion reason. An initial review of titles, abstracts, and full texts of articles was conducted by a member of the research team, and uncertainties related to eligibility were resolved with input from the primary author. In total, 47 articles were identified for inclusion.

Data Abstraction

General article characteristics (e.g., location, type of study, primary outcomes) are described in Table 1. All relevant point estimates from the eligible articles were abstracted and described in Tables 2–4. Within Tables 2–4, each article with qualifying data is presented along with article-specific estimates and organized according to variables of interest. Table 2 includes articles with HIV/STI estimates. Table 3 includes articles involving sexual behavior, substance use, and

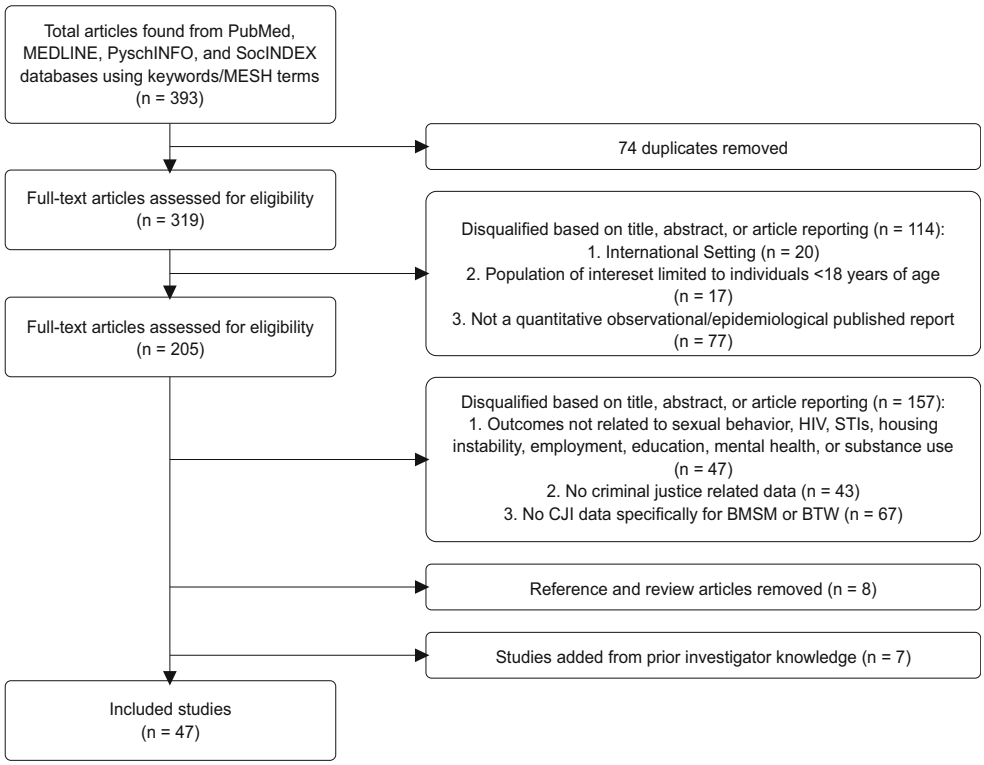

Fig. 1 PRISMA flow diagram: systematic review of US-based studies among CJI BMSM and BTW

mental health. Table 4 includes all articles that assessed and provided information about socio-structural characteristics to include stigma/discrimination, education, employment, and housing.

Quality Assessment

Eligible studies were assessed for quality using a ten-item risk of bias tool developed by Hoy et al. [19] for population-based prevalence studies (range: 0, worst–10, best). The risk of bias tool included domains such as the method of sample selection, non-response bias, and reliability and validity of the study instrument. Some limitations with applicability of the scale existed due to its intended use to rate observational studies of clinical disease prevalence. The scale was modified to more appropriately assess the quality of included articles based on the senior investigator's knowledge of epidemiological studies of sexual and gender minorities and based on previous work [26]. Initially, 5 articles were scored independently to assess interrater reliability. A member of the research team generated a quality score for each article using the scale items with input from senior investigators.

We organize our findings in the following order: (1) a summary of the studies included in the systematic review; (2) studies describing criminal justice involvement estimates among BMSM and BTW; (3) studies focused on the intersection of HIV and criminal justice involvement to include the HIV care continuum; (4) studies focused on criminal justice involvement and STIs; (5) studies focused on criminal justice involvement and sexual risk behaviors; (6) studies focused on criminal justice involvement and substance use/misuse; (7) studies focused on criminal justice involvement and mental health outcomes; and finally (8) studies focused on criminal justice involvement and socio-structural factors.

Results

Summary of Included Articles

A total of 47 eligible articles published over a span of 18 years were identified for inclusion. Aggregate characteristics of the included articles are summarized in Table 1 to include studies by region, design, and primary outcomes (e.g., HIV, STIs, mental health, and substance use). Tables 2–4 containing all abstracted article data are available as part of the supplementary materials. The mean rating for article quality based on the risk of bias tool [19] was 7.04 (SD = 2.00), with scores ranging from 4 to 9.

Notably, 25 published articles (53.2%) were analyzed utilizing datasets similar to at least one other article (i.e., based on the same local cohort or from the same multi-site study such as the HPTN 061 study and the National HIV Behavioral Surveillance survey). Information on usage of

Table 1 Characteristics of included studies focused on criminal justice–involved (CJI) Black men who have sex with men (BMSM) and Black transgender women (BTW), 2000–2018

United States Region	6
South	4
Northeast	14
West	5 (all Chicago, IL)
Midwest	11
Multiple regions	7
National/web-based/other	
HIV estimates	18
STI estimates	7
Substance-misuse estimates (e.g., alcohol and drugs)	9
Sexual behavior estimates (e.g., condomless sex, multiple partners, unknown HIV status)	11
Mental health estimates	5
Social/structural estimates	0
HIV stigma	6
Housing	3
Employment	5
Education	47 (39 estimates)*
Incarceration	
Study type	3
Randomized clinical trial (RCT)	0
Quasi RCT	36**
Cross-sectional study (CS)	6
Longitudinal study (LS)	1
Case-control study	1
Meta-analysis	
Inclusion of BTW	18 total trans inclusive studies
Study sample includes BTW but combines reported estimates with BMSM	7
Study sample includes BTW but combines reported estimates with non-Black TW	3
Study samples includes Black transgender persons, but does not specify MTF or FTM	2
Study provides specific estimates for BTW	6

*39 explicit estimates on incarceration prevalence, frequency, duration, etc. + 8 additional articles with 100% CJI population containing relevant socio-demographic or other information on detainees/CJI populations; **4 studies analyzed baseline data from a RCT, 7 analyzed baseline data from a longitudinal study

similar datasets is detailed in a separate column for each applicable article in Table 4. Nearly all studies were implemented in urban settings, with just one article providing specific estimates for a rural location [27]. All studies in the Midwest (n = 5) were conducted in Chicago, IL. More than a quarter (n=13) of all studies were conducted in the West Coast, primarily in Los Angeles County, CA.

Criminal Justice Involvement Estimates Among BMSM and BTW

All included articles described criminal justice involvement estimates for BMSM and BTW. However, the type (e.g., prior history, arrest, currently detained) and measures used varied substantially across studies. The most common measure, reported by 28 studies (60%), was prevalence of incarceration history. Of these, 19 articles reported lifetime incarceration history estimates [11, 12, 28–44]. Eleven of these articles had estimates focused on BMSM of all ages (i.e., samples of all or primarily BMSM) [11, 28–31, 34–36, 40, 42, 43], five particularly among YBMSM [33, 37–39, 44], one among BTW only [41], and two among both BMSM and BTW [12, 32]. Incarceration estimates focused on BMSM had values ranging from 25.5 to 84%, while those on YBMSM ranged from 2.4 to 53.5% [32, 33, 37–39, 44]. The three estimates among BTW of all ages had relatively small sample sizes, but estimates were uniformly high in contrast to estimates among BMSM of all ages, ranging from 46.9 to 80% [12].

Seven studies (15% of total) assessed more recent estimates of incarceration prevalence ranging from the past 2 months to 2 years [22, 35, 45–49]. Among these, two articles contained estimates specific to BTW [45, 46] and one among YBMSM in particular [49]. Six articles described prevalence estimates for history of arrest [25, 39, 50–53], varying from lifetime history to the past 6 or 12 months, though one had an unspecified window [50], Two analyses based on the same sample of YBMSM broadly assessed lifetime criminal justice involvement (inclusive of both arrest and incarceration) [13, 54].

Incarceration frequency and duration were relatively uncommon variables of interest with only three articles providing estimates of incarceration duration [29, 55, 56], four on incarceration frequency [11, 25, 32, 55], one on arrest frequency [51], and one on length of time since release [57]. Two estimates among these were specific to BTW [32, 55]. Only one analysis explored incarceration incidence, reporting an annualized incidence rate of 35% [31, 38] among a sample of 1278 BMSM [11]. Twelve articles (25.5%) also contained comparative incarceration estimates by race and/or ethnicity [22, 27, 30, 31, 33, 39, 41, 46, 47, 52, 53, 58]. Seven (14.9%) studies were conducted among detainees in a jail setting [56, 59–64], and an additional four reported on a post-incarcerated population in which all participants had been recently released from jail or prison [55, 57, 65, 66].

Key Findings Related to the Intersection Between HIV and Criminal Justice Involvement Among BMSM and BTW

Seventeen (17) studies examined the intersection between HIV and criminal justice involvement among BMSM and BTW. These articles are described in Table 2. Among these, 14 were focused primarily on BMSM [11, 13, 22, 28, 34, 37, 40, 44, 54, 56, 57, 62, 64, 67], two primarily on BTW [45, 65], and one on both BMSM and BTW [46]. We describe the specific studies in detail below by four categories of interest.

Table 2 HIV and STI Estimates Among Criminal Justice-Involved BMSM and BTW

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
Anderson-Carpenter et al. [42]	Associations between Methamphetamine Use, Housing Status, and Incarceration Rates among Men Who Have Sex with Men and Transgender Women	2017	CS	CA	2010-2014	SGM: MSM, 84.1% (n = 6,243), MTF TG, 15.9% (n = 1,176); Age: 18.5% (1,153/6,243) ≤ 25, 81.5% (5,079/7,405) >25; Race: 12.2% (760/6,243) Black among MSM; 21.0% (246/1,176) Black among TW	Recent incarceration history (past 12 months, jail or prison)	Recent incarceration (past 12 months) among PLWHA: 21% among HIV+ BMSM vs. 14% among HIV- BMSM; Probability of incarceration (past 12 months) by sociodemographic profile: HIV- non-white TW: <26, 44.75%, >25, 35.2%; HIV+ non-white TW <26, 48.2%, >25, 38.5%; HIV- non-white male: <26, 14.4%, >25, 16.8%; HIV+ non-white male: <26, 22.1%, >25, 25.4%.	N/A	8
Arnold et al. [28]	Identifying social and economic barriers to regular care and treatment for Black men who have sex with men and women (BMSMW) and who are living with HIV: a qualitative study from the Bruthas cohort	2017	CS (RCT baseline data)	CA	2011-2015	SGM: 100% BMSMW%; Mean age: 50; Sample size: 25 (100% PLWHA)	Lifetime incarceration history	Lifetime incarceration among PLWHA: 84% (subsample of 25).	N/A	6
Beckwith et al. [65] *CARE+ Corrections and STT Jail data used due to high % of BTW in STT Jail and CARE+ Corrections study, despite lacking results specifically for this group.*	Risk behaviors and HIV care continuum outcomes among criminal justice-involved HIV-infected transgender women and cisgender men: Data from the Seek, Test, Treat, and	2018	CS (baseline data from three studies)	CA; D.C.; IL	2012-16 (LINK LA); 2013-15 (CARE+ Correctio-ns); 2013-16 (STT jail)	SGM: 38% (20/52) BTW (LINK LA), 85% (17/20) BTW, (CARE+ Corrections), 94% (15/16) BTW; Mean age: 35 (SD = 10); Sample size: 52, 20, and 16 transgender	Incarceration history (leaving jail/correctional facilities or recently released); *100% CJI*	No significant difference between TW and cisgender men in ART adherence, viral suppression, or CD4 counts of ≤ 200 across the studies.	NA	4

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
	Retain Harmonization Initiative					women in Link LA, CARE+ Corrections, and STT Jail, respectively (100% PLWHA)				
Bland et al. [29]	Sentencing risk: history of incarceration and HIV/STD transmission risk behaviours among Black men who have sex with men in Massachusetts	2012	CS	MA	2008	SGM: 100% BMSM; Mean age: 40.0 years (incarceration duration <90 days); 43.3 years (incarceration duration >90 days); Sample size: 197	Lifetime incarceration history (jail or prison); Duration of last incarceration (< or ≥ 90 days)	N/A	**Incarceration duration and lifetime STI** history (compared to those with no CJI): <90 days (n = 55): 38.2% STI prevalence, AOR = 2.90 [1.24, 6.82], p = 0.01; ≥ 90 days (n = 46): 43.5% STI prevalence, AOR = 3.27, [1.31, 8.18], p = 0.01.	9
Brewer et al. [11]	Exploring the relationship between incarceration and HIV among Black men who have sex with men in the United States	2014	LS	MA; GA; CA; NY; D.C.	2009-2011	SGM: BMSM, 98.0%, BTW, 2.0% ; Age: 32.7% (418/1,278) 18-29 years; 67.3% (860/1,278) ≥ 30 years; Sample size: 1,278	Lifetime incarceration history and frequency (as of enrollment; jail or prison); Incident incarceration during 12 months of study follow-up	**Incarceration incidence and HIV incidence** association: No significant association between incident incarceration and HIV acquisition during 6 month follow-up period after controlling for demographics/URAI (aHR 1.69, 95% CI = 0.64–4.44).	N/A	9
Bukowski et al. [45]	Characterizing the HIV Care Continuum and Identifying Barriers and Facilitators to HIV Diagnosis and Viral Suppression among Black	2018	CS	PA; TX; D.C.; MI; GA; TN	2014-2017	SGM: 100% BTW; Mean age: 30.7 (SD = 10.8); Sample size: 422	Recent incarceration history (past 2 years, jail or prison)	**Recent incarceration (past 2 years) and HIV status among BTW**: 31.5% incarcerated (HIV-, n = 232) vs. 42.3% incarcerated (undiagnosed HIV+	N/A	5

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
	Transgender Women in the United States							status, n = 111), AOR = 1.92 [1.15, 3.22], remained significant after adjusting for acess to care, 39.7% incarcerated (diagnosed HIV+, n = 70); **Viral suppression and incarceration (past 2 years)**: 28.9% incarcerated (suppressed, n = 45) vs. 59.1% incarcerated (unsuppressed, n = 22), AOR = 0.15 [0.03, 0.71].		
Chen et al. [63]	Syphilis control among incarcerated men who have sex with men: public health response to an outbreak	2002	CS	CA	2000	SGM: MSM, 92%, TG, 8%; Age: 23% 18-25, 40% 26-35, 30% 36-45, 7% ≥ 46; Race: 35% (150/430) Black; Sample size: 430	Detainees (jail)	N/A	**STI prevalence among Black detainees in MSM unit**: 30% (45/150). STI data was based on syphilis and HIV screening from March-August 2000, with the addition of chlamydia and gonorrhea screening from April-August 2000.	5
Chen et al. [62]	Sexually transmitted diseases surveillance among incarcerated men who have sex with men--An opportunity for HIV prevention	2003	CS	CA	200-2002	SGM: 100% MSM (MSM unit, no information on gender identity); Age: 17.5% 18-24, 38.7% 25-34, 35.4% 35-44, 7.4% 45-54, 1.0% 55+; Race: 36.8%	Detainees (jail)	**HIV prevalence among Black detainees in MSM unit**: 11.9% (91/767).	**STI prevalence among Black detainees in MSM unit**: 0.1% (1/767) for early syphilis, 2.9% (22/767) for chlamydia, and 1.6% (12/767) for gonorrhea.	5

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
						(767/2,087) Black; Sample size: 2,087				
Fields et al. [34]	Association of discrimination--related trauma with sexual risk among HIV-positive African American men who have sex with men	2013	CS	CA	2007-2009	SGM: 87.8% BMSM, 12.2% BTW; Mean age: 42.4 (SD = 8.7); Sample size: 131 (100% PLWHA)	Lifetime incarceration history	**Lifetime incarceration among PLWHA**: 28% (37/131).	N/A	5
Gore et al. [44]	Human Immunodeficiency Virus Partner Notification Services Among a Representative Sample of Young Black Men Who Have Sex With Men Demonstrates Limited Service Offering and Potential Benefits of Clinic Involvement	2018	CS (LS baseline data)	IL	2013-2015	SGM: 100% YBMSM; Age: 54.7% <25, 45.3% ≥ 25 (range 16-29); Sample size: 618	Lifetime incarceration history (jail)	**Lifetime incarceration among recently diagnosed PLWHA**: 53.51% (99/185).	N/A	6
Nelson et al.	Efficacy of a Small-Group Intervention for Post-Incarcerated Black Men Who Have Sex with Men and Women (MSMW)	2018	CS (RCT baseline data)	CA	2011-2012	SGM: 100% BMSM; Age: 18% <30, 23% 30-39,37% 40-49, 22% >50; Sample size: 212	Recent incarceration history (past 12 months); *100% CJI*	**HIV prevalence among post-incarcerated BMSM**: 30.7% (self-reported), 60% negative, 9% unknown.	N/A	6
Javanbakht et al. [64]	Sexually transmitted infections and HIV prevalence among incarcerated men who have sex with men, 2000-2005	2009	CS	CA	2000-2005	SGM: (MSM Unit): MSM, 85-92%, TG, 8-15%; Mean age: 35 years; Race: 37% (2,621/7,004) Black; Sample size: 7,004	Detainees (jail)	**HIV prevalence among Black detainees. comparative OR**: 16.3% (258/1,584), OR for testing HIV+ = 1.7 [1.4-2.1] relative to White detainees).	**STI prevalence among detainees and comparative ORs**: 3.4% (54/1,575) of tests for chlamydia from Black detainees in the MSM unit were + (OR = 1.3	6

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
									[0.8-1.9] relative to tests from White detainees). 1.7% (27/1,560) of tests for gonorrhea from Black detainees were + (OR = 1.0 [0.6-1.8] relative to tests from White detainees). 1.6% (35/2,256) of tests for syphilis from Black detainees were + (OR = 1.5 [0.9-2.6] relative to tests from White detainees).	
Koblin et al. [37]	Informing the Development of a Mobile Phone HIV Testing Intervention: Intentions to Use Specific HIV Testing Approaches Among Young Black Transgender Women and Men Who Have Sex With Men	2017	CS	Web-based	2014-2015	SGM: YBMSM, 91.7% (n = 155), YBTW 8.3% (n = 14); Mean age: 24.1 (SD = 3.0); Sample size: 169	Lifetime incarceration history (jail, prison, or detention facility)	Intention to test at a clinic or other provider was negatively associated with a lifetime history of incarceration: AOR = 0.37 [0.16, 0.89], p = .008.	N/A	6
Li et al. [66]	Racial pride and condom use in post-incarcerated African-American men who have sex with men and women: Test of a conceptual model for the men in life environments intervention	2018	RCT, Modeling (baseline data alone from RCT used to test model included here)	CA	2011-2012	SGM: 100% BMSM; Mean age: 40.5 years (SD = 10.6); Sample size: 212	Recent incarceration history (past 12 months); *100% CJI*	**HIV prevalence among post-incarcerated BMSM**: 30.7% (self-reported), 69% negative or unknown.	N/A	9
Magnus et al. [40]		2010		D.C.	2008				N/A	9

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
	Elevated HIV prevalence despite lower rates of sexual risk behaviors among black men in the District of Columbia who have sex with men		Cross-sectional; Secondary analysis of NHBS-MS-M2 data			SGM: 100% MSM; Age: Among Black participants (n = 178), 36.0% (64/178) 18-24, 36.0% (64/178) 25-34, 19.1% (34/178) 35-44, 9.0% (16/178) 45+; Race: 35.6% (178/500) Black; Sample size: 500	Lifetime incarceration history (jail, prison, or juvenile detention)	**Lifetime incarceration and HIV OR among BMSM** (compared to BMSM with no CJI): OR = 1.34 [0.79, 2.25].		
Mimiaga et al. [67]	Health system and personal barriers resulting in decreased utilization of HIV and STD testing services among at-risk Black men who have sex with men in Massachusetts	2009	CS	MA	2008	SGM: 100% BMSM; Mean age: 38.7 (SD = 11.3); Sample size: 197	Incarceration history	**HIV testing (past 2 years) and incarceration history prevalence**: Not tested: 47.9% (23) vs. Tested: 53.6% (52); **Other estimates** (**HIV testing**): Having an HIV test at jail lowered odds of not having tested for HIV in two years prior to study enrollment (OR = 0.53 [0.13–0.99], p = 0.049); 20% of participants had ever tested for HIV in jail/prison (data by testing location also available for HIV test or STD test in past two years).	**STI testing (past 2 years) and incarceration history prevalence**: Not tested: 51.7% (61/118) vs. Tested: 50.6% (40/79).	9
Nelson et al. [25]	Economic, Legal, and Social Hardships Associated with HIV Risk among Black Men who have Sex with Men in Six US Cities	2016	LS (secondary analysis of HPTN 061)	MA; GA CA; NY; D.C.	2009-2010	SGM: 100% BMSM; Mean age: 37.7 years (SD = 11.5); Sample size: 1,522	Lifetime incarceration history and frequency; Recent arrest history (past 6 months); Recent conviction history (past 6	N/A	**Recent conviction and OR for any STI in past 6 months**: aOR = 3.97 [1.58, 9.94], p < .05.	9

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
							months, jail or prison)			
Oster et al. [22]	Understanding disparities in HIV infection between Black and White MSM in the United States	2011	CS (2008 NHBS-MS-M2)	USA	2008	SGM: 100% MSM; Median age: 28 years (BMSM), 36 years (White MSM); Race: 38.8% (2270/5855) Black; Sample size: 5,855	Recent incarceration history (past 12 months) of > 1 day	**Recent incarceration (past 12 months) among newly diagnosed Black vs. White MSM**: BMSM: 12% (45/365) vs. White MSM: 7% (10/143), p = 0.08. Incarceration not independently associated with HIV infection.	N/A	9
Schneider et al. [13]	Criminal justice involvement history is associated with better HIV care continuum metrics among a population-based sample of young black MSM	2017	CS (LS baseline data from uConnect cohort)	IL	2013-2014	SGM: 100% YBMSM; Age: 71.1% 24 years of age and under at enrollment; Sample size: 618	History, frequency, and duration of CJI; *CJI defined as ever detained, arrested, or spent time in jail, prison, juvenile detention center, or other correctional facility as per supplemental materials*	**CJI and HIV care engagement**: Any CJI history was associated with the overall care continuum (aOR = 2.35 [1.13-4.88] and significantly for variables: Serostatus (aOR = 2.24 [1.28, 3.94], p < 0.01, n =618), Linked to care (aOR = 3.20 [1.10, 9.36], p < 0.05, n = 214), Retained in care (aOR = 3.72 [1.77, 7.84], p < 0.01, n = 214), Adherence to ARV's (aOR = 2.52 [1.30, 4.89], p < 0.01, n = 214). CJI was also associated with viral suppression (aOR = 3.00 [1.15, 7.79], p-value not given, > 0.05; n = 214); Length and frequency of CJI also	N/A	9

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
								associated with care continuum metrics. Repeated CJI resulted in worse HIV care engagement, but longer duration stays were associated with better HIV care engagement.		
Schenider et al. [13]	At the intersection of criminal justice involvement and sexual orientation: Dynamic networks and health among a population-based sample of young black men who have sex with men	2017	LS	IL	2013-2015	SGM: 100% YBMSM ; Mean age: 22.7 (SD = 3.3); Sample size: 618	History, frequency, and duration of CJI; *CJI defined as ever detained, arrested, or spent time in jail, prison, juvenile detention center, or other correctional facility as per supplemental materials*	**HIV prevalence and CJI history among YBMSM**: 46.0% HIV seropositve (with CJI) vs. 25.5% HIV seropositive (no CJI), p = 0.001.	**Syphilis prevalence and CJI history association among YBMSM**: 35.1% seropositive (with CJI) vs 22.6% seropisitive (no CJI), p = 0.023.	9
Vagenas et al. [56]	HIV-infected men who have sex with men, before and after release from jail: The impact of age and race, results from a multi-site study	2016	LS	USA	2008-2011	Comparative study of the following groups: 18 YBMSM (<30); 55 Older BMSM ; 40 non-black MSM; 461 male non-MSM; Sample size: 574 (100% PLWHA)	Detainees (jail)	**HIV care at baseline among detainees**: 55.6% (10/18), 44.4% (8/18), 16.7% (3/18), and 11.1% (2/18) of YBMSM had access to an HIV provider, any ART adherence, > 95% ART adherence, and viral suppression respectively compared to 87.3% (48/55), 54.5% (30/55), 29.1% (16/55), and 23.6% (13/55) of older BMSM ($p < 0.01$, p = 0.56, p = 0.31, and p = 0.28). YBMSM were less likely to	N/A	5

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
								have access to an HIV provider compared to non-Black MSM and non-MSM (p = 0.02 and 0.04). **HIV care post-release**: (Lower bound vs. multiple imputation) 33.3% (6/18) vs. 83.3% (15/18), 16.6% (3/18) vs. 44.4% (8/18), 11.1% (2/18) vs. 27.7% (5/18), and 16.6% (3/18) vs. 33.3% (6/18) YBMSM had access to an HIV provider, any ART adherence, >95% ART adherence, and viral suppression (<400 copies/mL) respectively 6 months post-release compared to 65.5% (36/55) vs. 85.4% (47/55), 60.0% (33) vs. 72.7% (40), 40.0% (22) vs. 49.1% (27), 40.0% (22) vs. 52.7% (29) of older BMSM (p = 0.87, 0.09, 0.15, and 0.26); **Linkage**: 16.7% (3/18), 33.3% (6/18), and 11.1% (2/18) of YBMSM had immediate linkage in the first quarter (non-imputed), delayed linkage in the second quarter (non-imputed) and		

Table 2 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	HIV Estimates[3]	STI Estimates[3]	Score
								continous retention (visits in quarter one and quarter two) respectively compared to 32.7% (18/55), 47.3% (26/55), and 16.4% (9/55) of older BMSM (p = 0.20, 0.34, and 0.69).		

[1] Year of publication

[2] City and/or state abbreviation

[3] API, Asian-Pacific Islander; BMSM, Black men who have sex with men; BMSMW, Black men who have sex with men and women; BTW, Black transgender women; CJI, Criminal justice involved; CS, Cross-sectional; EHR, Electronic health record; HS, High school; LS, Longitudinal study; M, Male; MSM, Men who have sex with men; MTF, Male to female; PLWHA, People living with HIV/AIDS; RCT, Randomized controlled trial; SGM, Sexual gender minority; TG, Transgender; TW, Transgender women; YBMSM, Young Black men who have sex with men; YMSM, Young men who have sex with men; YBTW, Young Black transgender women

Table 3 Sexual Behavior, Mental Health, and Substance Use Estimates Among Criminal Justice-Involved BMSM and BTW

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
Anderson-Carpenter et al. [46]	Associations between Methamphetamine Use, Housing Status, and Incarceration Rates among Men Who Have Sex with Men and Transgender Women	2017	CS	CA	2010-2014	SGM: MSM, 84.1% (n = 6,243), MTF TG, 15.9% (n = 1,176); Age: 18.5% (1,153/6,243) ≤ 25, 81.5% (5,079/7,405) >25; Race: 12.2% (760/6,243) Black among MSM; 21.0% (246/1,176) Black among TW	Recent incarceration history (past 12 months, jail or prison)	N/A	N/A	**Recent incarceration (past 12 months) and methamphetamine use OR among BMSM/BTW**: AOR for past 30-Day use was 1.00 (95% CI = [0.84, 1.20] in logistic model, 1.02 (95% CI = [0.80, 1.30] in negative binomial model.	8
Beckwith et al. [65] CARE+ Corrections and STT Jail data used due to high % of BTW in STT Jail and CARE+ Corrections study, despite lacking results specifically for this group.	Risk behaviors and HIV care continuum outcomes among criminal justice-involved HIV-infected transgender women and cisgender men: Data from the Seek, Test, Treat, and Retain Harmonization Initiative	2018	CS (baseline data from three studies)	CA; D.C.;	2012-16 (LINK LA); 2013-15 (CARE+ Correctio-ns); 2013-16 (STT jail)	SGM: 38% (20/52) BTW (LINK LA), 85% (17/20) BTW, (CARE+ Corrections), 94% (15/16) BTW; Mean age: 35 (SD = 10); Sample size: 52, 20, and 16 transgender women in Link LA, CARE+ Corrections, and STT Jail, respectively (100% PLWHA)	Incarceration history (leaving jail/-correctional facilities or recently released); 100% CJI	**Condomless sex (past 90 days) among TW**: CARE+ Corrections: 78% (14/18), STT Jail: 44% (7/16); **Exchange sex (past 90 days)**: Care+ Corrections: 65% (13/20), higher odds than cismen (OR = 3.9 [2.3, 6.6], p > 0.001); **> 1 partner (past 90 days)**: STT jail: 67% (10/15), higher odds than cismen (OR = 2.9 [1.6, 5.2], p < 0.001).	N/A	**CARE+ Corrections substance use** (transwomen, alcohol use in past year, 90 days for illicit substances, n = 20): 75% alcohol, 55% binge alcohol, 40% marijuana, 45% crack/cocaine, 5% opioids, 20% stimulants< 25% other substance, 55% multiple (≥ 2) substances, 0% no substances, mean AUDIT-C score = 5.8 (SD = 4.4); **STT Jail substance use** (transwomen, past 180 days, n = 16): 81% alcohol, 69% binge alcohol, 81%	4

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
										marijuana, 56% crack/cocaine, 19% opioids, 31% stimulants, 25% other substance, 88% multiple (≥ 2) substances, 0% no substances, mean AUDIT-C score = 4.0 (SD = 4.1); Across sites: transwomen were significantly more likely to report useage of crack/cocaine than cismen	
Bland et al. [29]	Sentencing risk: history of incarceration and HIV/STD transmission risk behaviours among Black men who have sex with men in Massachusetts	2012	CS	MA	2008	SGM: 100% BMSM; Mean age: 40.0 years (incarceration duration <90 days); 43.3 years (incarceration duration >90 days); Sample size: 197	Lifetime incarceration history (jail or prison); Duration of last incarceration (< or ≥ 90 days)	**Unprotected sex (past 12 months) among those incarcerated < 90 days**: Male partner: 70.9%, AOR = 3.09 [1.34, 7.14], p = 0.008; > 3 male partners: 29.1%, AOR = 2.55 [1.09, 5.97], p = 0.03; Most recent male partner: 56.4%, AOR = 2.32 [1.03-5.19], p = 0.04. **Incarceration of ≥ 90 days (n = 46) and sex with female partner**: 52.2%, AOR = 2.46, [1.01-5.99], p = 0.047.	**Symptoms among those incarcerated > 90 days**: Depressive: 45.7%, AOR = 2.76 [1.22, 6.24], p = 0.01; PTSD: 21.7%, AOR = 10.10 [2.44, 41.82], p = 0.001.	**Incarceration of < 90 days associated with (n = 55)**: Lifetime IDU history: 12.7%, AOR = 12.14 [1.42, 103.97], p = 0.02, lifetime substance use treatment history: 52.7%, AOR = 3.98 [1.85, 8.56], p = 0.0004; **Incarceration of ≥ 90 days associated with (n = 46)**: Lifetime IDU history: AOR = 33.40 [3.94, 282.88], p = 0.001, lifetime substance use treatment history: AOR = 10.83 [4.35, 26.99], p < 0.0001.	9
Brewer et al. [11]		2014	LS		2009-2011						9

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
	Exploring the relationship between incarceration and HIV among Black men who have sex with men in the United States			MA; GA; CA; NY; D.C.		SGM: BMSM, 98.0%, BTW, 2.0% ; Age: 32.7% (418/1,278) 18-29 years; 67.3% (860/1,278) ≥ 30 years; Sample size: 1,278	Lifetime incarceration history and frequency (as of enrollment; jail or prison); Incident incarceration during study period (baseline -12 months of study follow-up)	**Age of 1st intercourse (anal or vaginal) and OR for incarceration during study period**: Don't remember: 0.90 (0.55, 1.50), p = 0.70, ≤ 12 years: 1.19 (0.72, 1.97), p = 0.49, 13-16 years: 1.00 (0.63, 1.60), p = 1.00, 17-19 years: 0.78 (0.46, 1.33), p = 0.37.	**CES-D scale score and incarceration during study period**: 0-15: 22% (146/679) incarcerated, ≥ 16: 27% (130/486) incarcerated, AOR = 0.82 [0.57, 1.17], p-value = 0.27.	**Drug use (past 6 months) and incarceration during study period**:17% (62/369) incarcerated (no use) vs. 27% (243/909) incarcerated (used drugs), AOR = 1.24 [0.83, 1.86], p = 0.30; **Drug use and unadjusted OR for incarceration during study by drug type**: Opiates: 1.01 [0.56, 1.82], p = 0.98, Poppers: 0.64 [0.40, 1.02], p = 0.06, Stimulants: 1.54 [1.18, 2.00] , p <.01. Marijuana: 1.54 [1.18, 2.02], p <.01.	
Brewer et al. [11]	The high prevalence of incarceration history among Black men who have sex with men in the United States: Associations and implications	2014	CS (LS baseline data)	MA; GA; CA; NY; D.C.	2009-2011	SGM: BMSM, 98.0%, BTW, 2.0% ; Age: 60.2% ≥ 35, 39.8% < 35; Sample size: 1,521	Lifetime incarceration history and frequency (jail or prison)	**Lifetime incarceration and URAI (past 6 months) prevalence/OR with male partner**: Never incarcerated: 56% (340/605), AOR = 1.00 (ref.) vs. Incarcerated: 48% (430/902), AOR = 0.89 [0.71, 1.12]); **Lifetime incarceration and prevalence/OR of > 2 male partners (past 6 months)**: Never incarcerated: 82% (499/607), AOR = 1.00	**Lifetime incarceration and depression prevalence/OR (indicated by CES-D >16)**: Never incarcerated: 39% (216/557), AOR = 1.00 (ref.) vs. Incarcerated: 46% (377/828), AOR = 1.21 [0.96, 1.54].	**Lifetime incarceration and drug use (past 6 months) prevalence/OR**: Never incarcerated: 61% (370/607), AOR = 1.00 (ref.) vs. Incarcerated: 78% (711/914), AOR = 2.17 [1.69, 2.78]; **Lifetime incarceration and alcohol use (past 6 months)**	9

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
								(ref.) vs. Incarcerated: 82% (750/914), AOR = 1.13 [0.84, 1.51].		**prevalence/OR**: Never incarcerated: 43% (262/604), AOR = 1.00 (ref.) vs. Incarcerated: 50% (453/904), AOR = 1.39 [1.11, 1.75].	
Hall et al. [36]	Sexual risk behaviors among Black men who have sex with men who also report having sex with transgender partners: Analysis of HIV Prevention Trials Network (HPTN) 061 Study	2017	LS	GA; MA; CA; NY; D.C.	2009-2010	SGM: 100% BMSM; Age: 35% ≤ 30 (community recruited), 18% ≤ 30 (referred); Sample size: 1,449 (*participants who identified as men/were Black cisgender MSM from the total sample of 1,533 in the HPTN 061 study*)	Lifetime incarceration history	**Transgender partners and lifetime incarceration**: No transgender partners: 52.5% (581/1,106) incarcerated vs. ≥ 1 transgender partners: 74.3% (255/343) incarcerated, AOR = 1.86 [1.34, 2.60]; **Lifetime incarceration and prevalence/OR of ≥ 5 partners (past 6 months)**: Never incarcerated: 28.7% (167/582) vs. Incarcerated: 31.6% (260/823), AOR = 0.84 [0.63, 1.13]; **Lifetime incarceration and ≥ 6 condomless sex acts prevalence/OR**: Never incarcerated: 25.3% (145/574) vs. Incarcerated: 39.9% (323/810), AOR = 1.11 [0.83, 1.49].	N/A	N/A	9
Harawa et al. [17]	Efficacy of a Small-Group Intervention for Post-Incarcerated Black Men Who Have Sex with Men and Women (MSMW)	2018	CS (RCT baseline data)	CA	2011-2012	SGM: 100% BMSM; Age: 18% <30, 23% 30-39,37% 40-49, 22% >50; Sample size: 212	Recent incarceration history (past 12 months); 100% CJI	**Sexual identity among CJI BMSM (n = 212)**: 71% bisexual, 17% gay/homosexual/SGL, 7% heterosexual, 5% other; **Sexual behaviors (prevalence/-frequency/# with**	N/A	**Substance use among BMSM (past 30 days)**: 67% (PWID excluded from this analysis); 46% were ever in a drug/alcohol	6

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
								female partner, male partner, TG partner, respectively): Exchange sex (buying/selling): 21%, 30%, N/A. Sex in jail (past 12 months): 2%, 25%, 6%, Total: 33%. Unprotected sex (past 3 months): 92%, 82%, 28%, Total: 100%. Frequency of unprotected sex (past 3 months): 10.4, 16.6, 0.4. Mean # of sex partners (vaginal/anal, past 3 months): 2.8, 2.9, 2.6.		treatment program.	
Jones et al. [49]	Nonsupportive peer norms and incarceration as HIV risk correlates for young black men who have sex with men	2008	CS	NC	2004	SGM: 100% BMSM; Mean age: 23 (SD = 3.1); Sample size: 252	Recent incarceration history (past two months, jail or prison)	**Recent incarceration and unprotected anal sex prevalence (past 2 months) by type**: Insertive: 52.6% (incarcerated) vs. 29.6 (not incarcerated), OR = 2.64 [1.03, 6.78], $p < 0.05$, Receptive: 52.6% (incarcerated) vs. 33.5% (not incarcerated), OR = 2.21 [0.86, 5.66], Any unprotected: 63.2% (among incarcerated) vs. 43.8% (not incarcerated), OR = 2.20 [0.84, 5.79].	N/A	N/A	5
Li et al. [66]	Racial pride and condom use in post--incarcerated African-American men who have sex with men and women: Test of a conceptual	2018	RCT, Modeling (baseline data alone from RCT used to test model	CA	2011-2012	Recent incarceration history (past 12 months); *100% CJI*	Lifetime incarceration history	**Condom usage scores with female and male partners, respectively**: Mean self-efficacy: 18.9 (SD = 8.2, scale range: 0–28, Cronbach's $\alpha = 0.93$), 17.9 (SD = 8.3, scale range: 0–28, Cronbach's $\alpha = 0.91$).	N/A	N/A	9

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
	model for the men in life environments intervention		included here)					Mean use intentions: 2.9 (SD = 2.7, scale range: 0–6, Cronbach's α = 0.86), 3.0 (SD = 2.6, range: 0–6, Cronbach's α = 0.87). **Frequency of sex without condoms (past 3 months**: 16.7 (SD = 29.5) with females (vaginal/anal), 10.4 (SD = 14.4) with males (insertive/receptive).			
Nelson et al. [25]	Economic, Legal, and Social Hardships Associated with HIV Risk among Black Men who have Sex with Men in Six US Cities	2016	LS (secondary analysis of HPTN 061)	MA; GA CA; NY; D.C.	2009-2010	SGM: 100% BMSM; Mean age: 37.7 years (SD = 11.5); Sample size: 1,522	Lifetime incarceration history and frequency; Recent arrest history (past 6 months); Recent conviction history (past 6 months, jail or prison)	**Lifetime incarceration and OR for condomless receptive anal sex**: AOR = 0.73 [0.58, 0.91], p < 0.05; Recent conviction and OR for ≥ 2 male sex partners (past 6 months): AOR = 0.56 [0.33, 0.93], p < 0.01; **Recent conviction and OR for any STI (past 6 months)**: AOR = 3.97 [1.58, 9.94], p < 0.05; ***Individual city estimates for various risk behaviors by CJI types available in table 2****; Cross-city differences: For those with incarceration histories, cross-city differences were found for proportions of condomless receptive anal sex (χ2=12.01, n=902, pG.04) and any STI at 12 months (χ2=15.8, n=522, pG.01). Among those with recent conviction, proportions differed*	N/A	N/A	9

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
								across cities for ≥2 male sexual partners (χ2 = 11.35, n = 167, pG.05) and any STI diagnosis at 12 months (χ2=15.7, n=90, pG.01).			
Schenider et al. [13]	At the intersection of criminal justice involvement and sexual orientation: Dynamic networks and health among a population--based sample of young black men who have sex with men	2017	LS	IL	2013-2015	SGM: 100% YBMSM ; Mean age: 22.7 (SD = 3.3); Sample size: 618	History, frequency, and duration of CJI; *CJI defined as ever detained, arrested, or spent time in jail, prison, juvenile detention center, or other correctional facility as per supplemental materials*	**CJI history and mean # of sex partners among YBMSM**: With CJI: 5.0 (SD = 7.3) vs. No CJI: 2.9 (SD = 2.9), p = 0.001; **CJI history and sexual identity**: With CJI: 50.8% gay-identified vs. No CIJ: 66.1% gay-identified, p = 0.003. Bisexual identity had higher OR (OR = 1.79 [1.24, 2.59]) for ever having been to jail in Wave 1.	**Respondent/network CJI and depression prevalence (based on BSI-18 scores)**: Not indepdently associated, although network stability was protective for depression (OR = 0.67 [0.45, 0.99], p < .05).	**Illicit substance use prevalence (past 12 months) and CJI association among YBMSM**: 89.3% (with CJI) vs 64.9% (without CJI), p < 0.0001; **Crack/cocaine use (past 12 months) and CJI**: 5.6% (with CJI) vs. 1.2% (no CJI), p = 0.001.	9
Stein et al. [61]	HIV-positive and in jail: race, risk factors, and prior access to care	2013	CS (LS baseline data)	NY; GA; PA; MA; OH; IL; RI; PA; SC; CT	2008-2011	SGM: 2.1% (17/807) of Black entrants identified as transgender; 22.3% (126/567) of Black male entrants identified as gay or bisexual.; Mean age (among Black entrants): 42.8 (SD = 9.2); Race: M, 70.3% (567) Black, F, 27.5% (240) Black; Sample	Detainees (jail)	N/A	N/A	**% MSM and non-IDU: Black entrants**: 20.2% (n = 113) vs. Non-Black entrants: 11.9% (n = 34), p = 0.002; **% MSM and IDU**: Black entrants: 2.3% (n = 13) vs. Non-Black entrants: 4.5% (n = 13), p = 0.08.	5

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
						size: 1,270 (100% PLWHA)					
Vagenas et al. [56]	HIV-infected men who have sex with men, before and after release from jail: The impact of age and race, results from a multi-site study	2016	LS	USA	2008-2011	Comparative study of the following groups: 18 YBMSM (<30); 55 Older BMSM ; 40 non-black MSM; 461 male non-MSM; Sample size: 574 (100% PLWHA)	Detainees (jail)	N/A	**Depression symptoms prevalence at baseline**: YBMSM: 50.0% (9/18) vs. Older BMSM: 58.2% (32/55), p = 0.54; **Pyschiatric medication use**: YBMSM: 11.1% (2/18) vs. Older BMSM: 32.7% (18/55), p = 0.09; . No signficant differences between YBMSM and non-MSM/non-Black MSM in these measures.	**Alcohol, cocaine, or heroin use, respectively (30 days prior to incarceration)**: YBMSM: 33.3% (6/18), 16.7% (3/18), 0%, vs. Older BMSM: 32.7% (18/55), 58.2% (32/55),14.5% (8/55), p = 0.99, 0.01, and n/a; Non-Black MSM/non-MSM more likely to use cocaine than YBMSM (p = 0.04, 0.02); **High Addiction Severity Prevalence (>0.22 psychiatric, >0.16 drug use, > 0.17 alcohol use, respectively):** YBMSM: 38.9% (7/18), 50.0% (9/18), 50.0% (9/18) vs. Older BMSM: 58.2% (32/55), 58.2% (32/55), 67.3% (36/55), p = 0.18, 0.56, 0.21.	5
Wohl et al. [68]	High-risk behaviors during incarceration in	2000	Case-control	CA	1997-1998	SGM: 69% BMSM (cases), 11% BMSM (controls);	Incarceration history (jail, detention center,	**Sexual behaviors during incarceration**: For additional estimates, such as for oral sex, prevalence of sex with	N/A	N/A	5

Table 3 (continued)

Reference	Title	Pub. Year[1]	Study Design[3]	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]	Sexual Behavior Estimates[3]	Mental Health Estimates[3]	Substance Use Estimates[3]	Score
	African-American men treated for HIV at three Los Angeles public medical centers					Age range: 20-49 years; Race: 100% Black; Sample size: 305 cases (PLWHA), 305 controls		guards and of rape, see table 3 within Wohl et al. article; OR for anal sex with a man (controlling for anal sex with a man while not incarcerated): 1.1 [0.6–2.2]; **Frequency of receptive anal sex with a man** (among men reporting oral/anal sex during incarceration): Cases: Sometimes: 29% (10/35), Always: 43% (15/35), Controls: Sometimes: 0%, Always: 18% (3/17); **Condom use frequency during anal sex**: Cases: Never: 91% (32/35), Sometimes: 9% (3/35), Controls: Never: 88% (15/17), Sometimes: 6% (1/17), Always: 6% (1/16); Prevalence of anal sex with > 1 male partner: Cases: 69% (24/35), Controls: 47% (8/17); **Prevalence of exchange sex (for drugs, money, or other items)**: Cases: 9% (14/140), Controls: 4% (7/181).			

HIV Prevalence Among Current and Recently Incarcerated BMSM and BTW

Two studies reported HIV prevalence estimates among a large sample of Black detainees receiving HIV testing in the same protected jail unit for MSM and transgender women (consisting of primarily MSM), reporting prevalence estimates of 11.9% (91/767) and 16.3% (258/1,584) respectively [62, 64]. These estimates were somewhat low because detainees with diagnosed HIV disease generally were not screened for HIV. Three studies reported HIV prevalence estimates among criminal justice–involved BMSM. Harawa et al. [57] and Li et al. [66] both provided a self-reported HIV positivity estimate of 30.7% based on the same RCT sample of 212 BMSM with a recent 12-month incarceration. Schneider et al. [13] reported a higher HIV prevalence in a sample of YBMSM reporting a history of incarceration, among which 46.0% were HIV seropositive (n = 285).

Incarceration History Among BMSM and BTW Living with HIV

Four studies reported a high prevalence of incarceration among BMSM living with HIV [28, 34, 44, 46]. Three of these analyses reported lifetime incarceration history estimates ranging from 28 to 84% [28, 34, 44]. The fourth article examined the prevalence of recent incarceration among BMSM by HIV serostatus, reporting a prior 12-month incarceration prevalence of 21% among BMSM living with HIV compared to 14% among BMSM who were not living with HIV (n = 760) [46]. Only one article, by Bukowski et al. [45], provided estimates on incarceration prevalence specific to BTW living with HIV, finding that 42.3% (n = 111) of BTW with previously undiagnosed HIV were incarcerated in the past 2 years, compared to 31.5% of BTW who were not living with HIV (n = 232), aOR = 1.92 [1.15, 3.22], and 39.7% of BTW with diagnosed HIV (n =70). In summary, a high percentage of BMSM and BTW living with HIV have a high frequency of contact with the criminal justice system.

Independent Associations Between Criminal Justice Involvement and HIV

Four studies explicitly examined the independent associations between HIV and criminal justice involvement among BMSM and BTW [11, 22, 40, 46]. Three of those analyses utilized cross-sectional data [22, 40, 46] and one utilized longitudinal data [11]. Anderson-Carpenter et al. [46] found that recent incarceration history was associated with HIV-positive status (aOR = 1.69, CI = [1.31, 2.16], $p \leq .001$). Oster et al. [22] found that 12% of newly diagnosed BMSM living with HIV were incarcerated in the past 12 months but did not find an independent association between incarceration and HIV infection. Similarly, Magnus et al. [40] did not find an independent association between HIV infection and incarceration history among 178 BMSM. The study by Brewer et al. [11] was the only analysis to longitudinally explore the relationship between incident incarceration and HIV acquisition. Brewer et al. [11] did not find an association between incarceration (last 6 months) and HIV acquisition (adjusted hazard ratio 1.69, CI = [0.64–4.44]) among a sample of 1278 BMSM followed for 12 months after controlling for demographics and unprotected receptive anal intercourse (URAI). In summary, findings related to the independent association between HIV and criminal justice involvement are mixed, but the current evidence favors no association between incarceration and HIV.

Criminal Justice Involvement and the HIV Care Continuum Components Among BMSM and BTW

Five studies examined the relationship between criminal justice involvement and the HIV care continuum, with four focused on BMSM and one on BTW [37, 45, 54, 56, 67]. Koblin et al. [37] found that intention to test for HIV was negatively associated with lifetime incarceration history (aOR = 0.37, CI = [0.16, 0.89], p = .008) in a sample of 169 consisting of 91.7% YBMSM and 8.3% YBTW. Yet Mimiaga et al. [67] found that in a sample of 197 BMSM, those who had not received an HIV test in the past 2 years were less likely to report a history of incarceration. This is likely due to an increased likelihood of receiving an HIV test during incarceration, as those who had ever obtained HIV testing in jail had a lower odds of not testing for HIV in the 2 years prior to study enrollment relative to those who were never tested in jail (OR = 0.53, CI = [0.13–0.99], p = .049) [67]. The sole article focused exclusively on BTW showed that incarceration was significantly and positively associated with undiagnosed HIV and negatively associated with viral suppression in multivariable models such that BTW who were virally suppressed had significantly lower odds of incarceration compared to those who were virally unsuppressed (aOR = 0.15, CI = [0.03, 0.71], $p < .05$).[45] Thus, criminal justice settings may serve as an important venue for the first step (i.e., HIV testing/diagnosis) of the HIV care continuum and not subsequent stages (e.g., viral suppression) among BTW.

The findings from Schneider et al.'s [54] examination of the associations between criminal justice involvement and the HIV care continuum broadly aligned with those of Mimiaga et al. [67]. Such that, any history of criminal justice involvement was associated with engagement in the overall care continuum (aOR = 2.35, CI = [1.13–4.88]), as well as linkage and retention to care, adherence to anti-retroviral treatment, and viral suppression. Although longer incarceration duration events were associated with improved engagement, repeated incarceration events were associated with poorer HIV care engagement [54]. In contrast, Vagenas et al. [56] highlighted

Table 4 Social and Structural Estimates among Criminal Justice-Involved BMSM and BTW

Reference	Title	Pub. Year[1]	Study Design[2]	Overlapping Datasets	Location[2]	Time Period	Demographics[3] and Sample Size	CJI Status[3]
Anderson-Carpenter et al. [46]	Associations between Methamphetamine Use, Housing Status, and Incarceration Rates among Men Who Have Sex with Men and Transgender Women	2017	CS	N/A	CA	2010-2014	SGM: MSM, 84.1% (n = 6,243), MTF TG, 15.9% (n = 1,176); Age: 18.5% (1,153/6,243) ≤ 25, 81.5% (5,079/7,405) >25; Race: 12.2% (760/6,243) Black among MSM; 21.0% (246/1,176) Black among TW	Recent incarceration history (past 12 months, jail or prison)
Arnold et al. [28]	Identifying social and economic barriers to regular care and treatment for Black men who have sex with men and women (BMSMW) and who are living with HIV: a qualitative study from the Bruthas cohort	2017	CS (RCT baseline data)	N/A	CA	2011-2015	SGM: 100% BMSMW; Mean age: 50; Sample size: 25 (100% PLWHA)	Lifetime incarceration history
Beckwith et al. [65] *CARE+ Corrections and STT Jail data used due to high % of BTW in STT Jail and CARE+ Corrections study, despite lacking results specifically for this group.*	Risk behaviors and HIV care continuum outcomes among criminal justice-involved HIV-infected transgender women and cisgender men: Data from the Seek, Test, Treat, and Retain Harmonization Initiative	2018	CS (baseline data from three studies)	CARE+ Correction-s, LINK LA (Beckwith et al. 2018 [65], Cunningh-am et al.)	CA; D.C.; IL	2012-16 (LINK LA); 2013-15 (CARE+ Correctio-ns); 2013-16 (STT Jail)	SGM: 38% (20/52) BTW (LINK LA), 85% (17/20) BTW, (CARE+ Corrections), 94% (15/16) BTW (STT Jail); Mean age: 35 (SD = 10); Sample size: 52, 20, and 16 transgender women in Link LA, CARE+ Corrections, and STT Jail, respectively (100% PLWHA)	Incarceration history (leaving jail/correctional facilities or recently released); *100% CJI*
Beckwith et al. [55] *Data used due to high % of BTW, despite lacking results specifically for this group.*	Gender Differences in HIV Care among Criminal Justice-Involved Persons: Baseline Data from the CARE+ Corrections Study	2017	CS	CARE+ Corrections (Beckwith et al. 2017 [55])	D.C.	2013-2015	SGM: MTF TG, 18%; Gender: M, 58%, F, 24%, TG, 18%; Mean age: 40 (SD = 10.5); Race: 85.5% Black (Among transwomen: 85.0% (17/20) Black); Sample size: 110 (100% PLWHA)	Recent incarceration history (released in past 6 months); Duration of last incarceration; Lifetime incarceration frequency; *100% CJI*
Bland et al. [29]	Sentencing risk: history of incarceration and HIV/STD transmission risk behaviours among Black men who have sex with men in Massachusetts	2012	CS	See Mimiaga et al.	MA	2008	SGM: 100% BMSM; Mean age: 40.0 years (incarceration duration <90 days); 43.3 years (incarceration duration >90 days); Sample size: 197	Lifetime incarceration history (lifetime; jail or prison); Duration of last incarceration (< or ≥ 90 days)
Brewer et al. [11]	Exploring the relationship between incarceration and HIV among Black men who	2014	LS	HPTN 061 (both Brewer et	MA; GA; CA; NY; D.C.	2009-2011	SGM: BMSM, 98.0%, BTW, 2.0% ; Age: 32.7% (418/1,278) 18-29 years;	Lifetime incarceration history and frequency (as of enrollment; jail or prison);

Table 4 (continued)

	have sex with men in the United States			al., both Hall et al., Nelson et al.)			67.3% (860/1,278) ≥ 30 years; Sample size: 1,278	Incident incarceration during 12 months of study follow-up
Brewer et al. [11]	The high prevalence of incarceration history among Black men who have sex with men in the United States: Associations and implications	2014	CS (LS baseline data)	HPTN 061 (both Brewer et al., both Hall et al., Nelson et al.)	MA; GA; CA; NY; D.C.	2009-2011	SGM: BMSM, 98.0%, BTW, 2.0% ; Age: 60.2% ≥ 35, 39.8% < 35; Sample size: 1,521	Lifetime incarceration history and frequency (jail or prison)
Brown et al. [27]	Racial health disparities in a cohort of 5,135 transgender veterans	2014	CS	N/A	VHA/other databases	Data from 1996-2013	SGM: 100% TG (Among Black TG veterans, gender was 30.2% female, 69.8% male); Mean age: 51.2 (Black veterans); Race: 7.5% (387/5,135) Black; Sample size: 5,135	Incarceration history (based on services noted in EHR)
Bukowski et al. [45]	Characterizing the HIV Care Continuum and Identifying Barriers and Facilitators to HIV Diagnosis and Viral Suppression among Black Transgender Women in the United States	2018	CS	N/A	PA; TX; D.C.; MI; GA; TN	2014-2017	SGM: 100% BTW; Mean age: 30.7 (SD = 10.8); Sample size: 422	Recent incarceration history (past 2 years, jail or prison)
Chen et al. [63]	Syphilis control among incarcerated men who have sex with men: public health response to an outbreak	2002	CS	LAC STD Program (Chen et al. 2003, Javanbakht et al.)	CA	2000	SGM: MSM, 92%, TG, 8%; Age: 23% 18-25, 40% 26-35, 30% 36-45, 7% ≥ 46; Race: 35% (150/430) Black; Sample size: 430	Detainees (jail)
Chen et al. [62]	Sexually transmitted diseases surveillance among incarcerated men who have sex with men--An opportunity for HIV prevention	2003	CS	LAC STD Program (Chen et al. 2002 [63], Javanbakht et al.)	CA	2000-2002	SGM: 100% MSM (MSM unit, no information on gender identity); Age: 17.5% 18-24, 38.7% 25-34, 35.4% 35-44, 7.4% 45-54, 1.0% 55+; Race: 36.8% (767/2,087) Black; Sample size: 2,087	Detainees (jail)
Choi et al. [30]	Social network characteristics and HIV risk among African American, Asian/Pacific Islander, and Latino men who have sex with men	2013	CS	Ethnic Minority Men's Health Study (Han et al.)	CA	2008-2009	SGM: 100% MSM; Mean age: 41 (Black), 36 (overall); Race: 33.7% Black; Sample size: 1,196	Lifetime incarceration history
Crosby et al. [33]	How do young black men having sex with only women differ from those also having sex with men?	2013	CS		LA; NC	No information	SGM: 10.7% YBMSM; Gender: M, 100%; Mean age: 19.7 years (no significant difference between YBMSM	Lifetime incarceration history

Table 4 (continued)

							and non-MSM groups, p = 0.56); Race: 100% Black; Sample size: 702	
Crosby et al. [32]	A comparison of HIV-risk behaviors between young black cisgender men who have sex with men and young black transgender women who have sex with men	2018	CS (RCT baseline data)	N/A	Mid-size southern city (no further informa-tion)	2012-2015	SGM: 94.7% YBMSM, 5.3% YBTWSM; Mean age: 22.6 (SD = 3.2); Sample size: 609	Lifetime incarceration history
Cunningham et al. [59]	Effectiveness of a Peer Navigation Intervention to Sustain Viral Suppression Among HIV-Positive Men and Transgender Women Released From Jail: The LINK LA Randomized Clinical Trial	2018	RCT	LINK LA (Beckwith et al. 2018 [65])	CA	2012-2016	SGM: 85% MSM, 15% MTF TG; Mean age: 39.5 (SD = 10.4); Race: 42% (151/356) Black; Sample size: 356 (100% PLWHA)	Detainees (jail), follow-up post-release
Fields et al. [34]	Association of discrimination-related trauma with sexual risk among HIV-positive African American men who have sex with men	2013	CS	N/A	CA	2007-2009	SGM: 87.8% BMSM, 12.2% BTW; Mean age: 42.4 (SD = 8.7); Sample size: 131 (100% PLWHA)	Lifetime incarceration history
Garofalo et al. [50] *Data used due to high % of BTW, despite lacking results specifically for this group.*	Overlooked, misunderstood and at-risk: Exploring the lives and HIV risk of ethnic minority male-to-female transgender youth	2006	CS	N/A	IL	2003	SGM: 100% MTF TG; Median age: 22 years (range, 16-25); Race: 57% Black; Sample size: 51	Incarceration history; Arrest history
German et al. [35]	Characteristics of Black Men Who Have Sex With Men in Baltimore, Philadelphia, and Washington, D.C.: Geographic Diversity in Socio-Demographics and HIV Transmission Risk	2017	CS	NHBS-MSM 3 (Neaigus et al.)	MD; PA; D.C.	2011	SGM: 100% BMSM; Age: 23%, 36%, and 18% 18-24 years in D.C., Baltimore, and Philadelphia, respectively; Sample size: 854 (159 in DC, 331 in Philadelphia, 364 in Baltimore)	Lifetime and recent (past 12 months) incarceration history
Gore et al. [44]	Human Immunodeficiency Virus Partner Notification Services Among a Representative Sample of Young Black Men Who Have Sex With Men Demonstrates Limited Service Offering and Potential Benefits of Clinic Involvement	2018	CS (LS baseline data)	uConnect (both Schneider et al.)	IL	2013-2015	SGM: 100% YBMSM; Age: 54.7% <25, 45.3% ≥ 25 (range 16-29); Sample size: 618	Lifetime incarceration history (jail)
Hall et al. [48]	A comparison of referred sexual partners to their community recruited counterparts in The	2015	LS	HPTN 061 (both Brewer et	GA; MA; CA; NY; D.C.	2009-2010	SGM: 100% BMSM (<5% TG); Age: 35% ≤ 30 (community recruited), 18%	Recent incarceration history (past 6 months)

Table 4 (continued)

	BROTHERS Project (HPTN 061)			al., both Hall et al., Nelson et al.)			≤ 30 (referred); Sample size: 1,533	
Hall et al. [36]	Sexual risk behaviors among Black men who have sex with men who also report having sex with transgender partners: Analysis of HIV Prevention Trials Network (HPTN) 061 Study	2017	LS	HPTN 061 (both Brewer et al., both Hall et al., Nelson et al.)	GA; MA; CA; NY; D.C.	2009-2010	SGM: 100% BMSM; Age: 35% ≤ 30 (community recruited), 18% ≤ 30 (referred); Sample size: 1,449 (*participants who identified as men/were Black cisgender MSM from the total sample of 1,533 in the HPTN 061 study*)	Lifetime incarceration history
Han et al.	Stress and coping with racism and their role in sexual risk for HIV among African American, Asian/Pacific Islander, and Latino men who have sex with men	2015	CS	Ethnic Minority Men's Health Study (Choi et al.)	CA	2008-2009	SGM: 100% MSM; Mean age: 41 years (Black); Race: 33.7% (403/1,196) Black; Sample size: 1,196	Lifetime incarceration history
Harawa et al. [60]	Sex and condom use in a large jail unit for men who have sex with men (MSM) and male-to-female transgenders	2010	CS	N/A	CA	2007	SGM: (Jail MSM Unit) MSM, 81%, MTF TG 19%; Race: 33% Black; Sample size: 101	Detainees (jail)
Harawa et al. [43]	Efficacy of a Culturally Congruent HIV Risk-Reduction Intervention for Behaviorally Bisexual Black Men: Results of a Randomized Trial	2013	RCT	N/A	CA	2007-2011 (enrollment)	SGM: 100% BMSMW; Mean age: 42.8 (SD = 10.2); Sample size: 381	Lifetime incarceration history
Harawa et al. [17]	Efficacy of a Small-Group Intervention for Post-Incarcerated Black Men Who Have Sex with Men and Women (MSMW)	2018	CS (RCT baseline data)	MILE intervention (Li et al.)	CA	2011-2012	SGM: 100% BMSM; Age: 18% <30, 23% 30-39,37% 40-49, 22% >50; Sample size: 212	Recent incarceration history (past 12 months); *100% CJI*
Javanbakht et al. [64]	Sexually transmitted infections and HIV prevalence among incarcerated men who have sex with men, 2000-2005	2009	CS	LAC STD Program (both Chen et al.)	CA	2000-2005	SGM: (MSM Unit): MSM, 85-92%, TG, 8-15%; Mean age: 35 years; Race: 37% (2,621/7,004) Black; Sample size: 7,004	Detainees (jail)
Jones et al. [49]	Nonsupportive peer norms and incarceration as HIV risk correlates for young black men who have sex with men	2008	CS		NC	2004	SGM: 100% YBMSM; Mean age: 23 (SD = 3.1); Sample size: 252	Recent incarceration history (past two months, jail or prison)
Koblin et al. [37]	Informing the Development of a Mobile Phone HIV Testing Intervention: Intentions to Use Specific HIV Testing Approaches Among Young	2017	CS	N/A	Web-based	2014-2015	SGM: YBMSM, 91.7% (n = 155), YBTW 8.3% (n = 14); **Mean age**: 24.1 (SD = 3.0); **Sample size**: 169	Lifetime incarceration history (jail, prison, or detention facility)

Table 4 (continued)

	Black Transgender Women and Men Who Have Sex With Men							
Li et al. [66]	Racial pride and condom use in post-incarcerated African-American men who have sex with men and women: Test of a conceptual model for the men in life environments intervention	2018	RCT, Modeling (baseline data alone from RCT used to test model included here)	MILE interven-tion (Harawa et al. 2018 [17])	CA	2011-2012	SGM: 100% BMSM; Mean age: 40.5 years (SD = 10.6); Sample size: 212	Recent incarceration history (past 12 months); *100% CJI*
Lim et al. [52]	History of arrest and associated factors among men who have sex with men	2011	CS	NHBS-MSM 1	GA; MD; MA; IL; CO; FL; TX; CA; NJ; NY; PA; Puerto Rico	2003-2005	SGM: 100% MSM; Median age: 33.0 years; Race: 17.3% (n = 1,739) Black (including non-Hispanic Black only); Sample size: 10,030	Recent arrest history (past 12 months)
Magnus et al. [40]	Elevated HIV prevalence despite lower rates of sexual risk behaviors among black men in the District of Columbia who have sex with men	2010	CS	NHBS-MSM 2 (Oster et al.)	D.C.	2008	SGM: 100% MSM; Age: Among Black participants (n = 178), 36.0% (64/178) 18-24, 36.0% (64/178) 25-34, 19.1% (34/178) 35-44, 9.0% (16/178) 45+; Race: 35.6% (178/500) Black; Sample size: 500	Lifetime incarceration history (jail, prison, or juvenile detention)
Millett et al. [58]	Comparisons of disparities and risks of HIV infection in Black and other men who have sex with men in Canada, UK, and USA: A meta-analysis	2012	Meta-analysis	N/A	Meta-analysis of studies in Canada, UK, and USA	Studies from 1981-2011	Meta-analysis with a comparative focus on BMSM and other MSM; Data aggregated across studies to generate summary ORs for outcomes of interest for 106,148 BMSM relative to 581,577 other MSM; 174 US studies.	Lifetime incarceration history
Mimiaga et al. [67]	Health system and personal barriers resulting in decreased utilization of HIV and STD testing services among at-risk Black men who have sex with men in Massachusetts	2009	CS	See Bland et al.	MA	2008	SGM: 100% BMSM; Mean age: 38.7 (SD = 11.3); Sample size: 197	Incarceration history
Mojola et al. [38]	STD and HIV risk factors among US young adults: Variations by gender, race, ethnicity and sexual orientation	2012	LS	N/A	USA	2001-2002; 2007-2008 (data from two separate waves)	SGM: Among 1,020 Black male respondents (9.2% of total sample of 11,044), 964 (94.5%) were heterosexual, 27 (2.6%) were mixed-oriented , and 29	Lifetime incarceration history (jail, prison, juvenile detention center, or other correctional facility)

Table 4 (continued)

							(2.8%) were gay; Gender: M, 44.4% (n = 5,009); Mean age: 21 (Wave 3, range: 18-28), 29 (Wave 4, range: 24-34); Race: 20.4% (1020/5009) Black among male respondents; Sample size: 11,044	
Neaigus et al. [47]	Multilevel risk factors for greater HIV infection of black men who have sex with men in New York City	2014	CS	NHBS-MSM 3 (German et al.)	NY	2011	SGM: 100% MSM; Median age: 28 years (interquartile range, 22-39 years); Race: 19.5% (81/416) Black; Sample size: 416	Recent incarceration history (past 12 months) of > 24 hours
Nelson et al. [25]	Economic, Legal, and Social Hardships Associated with HIV Risk among Black Men who have Sex with Men in Six US Cities	2016	LS (secondary analysis of HPTN 061)	HPTN 061 (both Brewer et al., both Hall et al., Nelson et al.)	MA; GA CA; NY; D.C.	2009-2010	SGM: 100% BMSM; Mean age: 37.7 years (SD = 11.5); Sample size: 1,522	Lifetime incarceration history and frequency; Recent arrest history (past 6 months); Recent conviction history (past 6 months, jail or prison)
Okafor et al. [53]	Disparities in herpes simplex virus type 2 infection between black and white men who have sex with men in Atlanta, GA	2015	CS (LS baseline data)	N/A	GA	2010-2012	SGM: 100% MSM; Mean age: 25.6 (BMSM, SD = 5.4), 8.1 (White MSM, SD = 6.0); Race: 46.4% (211/455) Black; Sample size: 455	Recent arrest history (past 12 months)
Oster et al. [22]	Understanding disparities in HIV infection between Black and White MSM in the United States	2011	CS	NHBS-MSM 2 (Magnus et al.)	USA	2008	SGM: 100% MSM; Median age: 28 years (BMSM), 36 years (White MSM); Race: 38.8% (2270/5855) Black; Sample size: 5,855	Recent incarceration history (past 12 months) of > 1 day
Phillips et al. [39]	Interplay of race and criminal justice involvement on sexual behaviors of young men who have sex with men	2018	LS	N/A	IL	2009-2010	SGM: 100% YMSM; Median age: 19.1 (eligibility criteria was 16-20 years); Race: 53.3% (240/450) Black; Sample size: 450	Lifetime incarceration history (jail or juvenile detention); Lifetime arrest history
Reisner et al. [41]	Racial/ethnic disparities in history of incarceration, experiences of victimization, and associated health indicators among transgender women in the US	2014	CS	N/A	USA	2008-2009	SGM: 100% MTF TG (broadly defined); Age: 18-24 years, 12.4% (479/3878), 25-44 years, 46.0% (1787/3878), 45+ years, 41.6% (1612/3878) (calculated approximately using percentages from incarceration data); Race: 5.1% (198/3,878) Black (calculated approximately using percentages from	Lifetime incarceration history (jail or prison)

Table 4 (continued)

							incarceration data); Sample size: 3,878	
Rutledge et al. [42]	What's in an identity label? Correlates of sociodemographics, psychosocial characteristics, and sexual behavior among African American men who have sex with men	2018	CS (RCT baseline data)	N/A	PA	2008-2011	SGM: 100% BMSM; Mean age: 41.6 (SD = 10.72); Sample size: 593	Lifetime incarceration history (jail or prison)
Schneider et al. [54]	Criminal justice involvement history is associated with better HIV care continuum metrics among a population-based sample of young black MSM	2017	CS (LS baseline data)	uConnect (both Schneider et al, Gore et al.)	IL	2013-2014	SGM: 100% YBMSM; Age: 71.1% 24 years of age and under at enrollment; Sample size: 618	History, frequency, and duration of CJI; *CJI defined as ever detained, arrested, or spent time in jail, prison, juvenile detention center, or other correctional facility as per supplemental materials*
Schenider et al. [13]	At the intersection of criminal justice involvement and sexual orientation: Dynamic networks and health among a population-based sample of young black men who have sex with men	2017	LS	uConnect (both Schneider et al., Gore et al.)	IL	2013-2015	SGM: 100% YBMSM ; Mean age: 22.7 (SD = 3.3); Sample size: 618	History, frequency, and duration of CJI; *CJI defined as ever detained, arrested, or spent time in jail, prison, juvenile detention center, or other correctional facility as per supplemental materials*
Stein et al. [61]	HIV-positive and in jail: race, risk factors, and prior access to care	2013	CS (LS baseline data)	EnhanceLink (Vagenas et al.)	NY; GA; PA; MA; OH; IL; RI; PA; SC; CT	2008-2011	SGM: 2.1% (17/807) of Black entrants identified as transgender; 22.3% (126/567) of Black male entrants identified as gay or bisexual.; Mean age (among Black entrants): 42.8 (SD = 9.2); Race: M, 70.3% (567) Black, F, 27.5% (240) Black; Sample size: 1,270 (100% PLWHA)	Detainees (jail)
Vagenas et al. [56]	HIV-infected men who have sex with men, before and after release from jail: The impact of age and race, results from a multi-site study	2016	LS	EnhanceLink (Stein et al.)	USA	2008-2011	Comparative study of the following groups: 18 YBMSM (<30); 55 Older BMSM ; 40 non-black MSM; 461 male non-MSM; Sample size: 574 (100% PLWHA)	Detainees (jail)
Wheeler et al. [51]	A comparative analysis of sexual risk characteristics of Black men who have sex with men or with men and women	2008	CS	N/A	NY; CA	2005-2006	SGM: 100% BMSM or BMSMW; Age: 15.8% 18-29, 21.8% 30-39, 45.9% 40-49, 16.5% 50+; Sample size: 822 (226 BMSMW, 596 BMSM)	Lifetime arrest history
Wohl et al. [68]	High-risk behaviors during incarceration in	2000	Case-control	N/A	CA	1997-1998	SGM: 69% BMSM (cases), 11% BMSM (controls); Age	

Table 4 (continued)

	African-American men treated for HIV at three Los Angeles public medical centers			range: 20-49 years; Race: 100% Black/AA; Sample size: 305 cases (PLWHA), 305 controls	History of incarceration (jail, detention center, prison); 100% CJI	
Reference	Incarceration[3]	Stigma/Discrimination	Education[3]	Employment[3]	Housing[3]	Score
Anderson-Carpenter et al. [46]	Anderson-Carpenter et al. [46]	Associations between Methamphetamine Use, Housing Status, and Incarceration Rates among Men Who Have Sex with Men and Transgender Women	2017	CS	N/A	CA
Arnold et al. [28]	Lifetime incarceration among PLWHA (BMSMW): 84% (subsample of 25).	N/A	N/A	N/A	N/A	6
Beckwith et al. [65] *CARE+ Corrections and STT Jail data used due to high % of BTW in STT Jail and CARE+ Corrections study, despite lacking results specifically for this group.*	*100% CJI*, see demographics.	N/A	**CARE+ Corrections (TW)**: <HS: 35% (7/20), HS: 45% (9/20), > HS: 20% (4/20); **STT jail (TW)**: 31% (5/16), 38% (6/16), and 31% (5/16), respectively	N/A	**STT jail (TW)**: 44% homeless (7/16).	4
Beckwith et al. [55] *Data used due to high % of BTW, despite lacking results specifically for this group.*	**Duration of last incarceration**: Mean for MTF TW was 8.9 months (SD = 21.4); **Lifetime incarceration frequency**: Mean # for MTF TW: 10.7 (SD = 8.5); Other: 20.0% (4/20) of MTF TW were enrolled at the DC DOC.	N/A	N/A	N/A	N/A	5
Bland et al. [29]	**Lifetime incarceration among BMSM**: 51% (101/197); **Duration (last incarceration)**: 54% (55/101) < 90 days, 46% (46/101) ≥ 90 days.	N/A	N/A	N/A	N/A	9
Brewer et al. [11]	**Lifetime incarceration (at enrollment, primarily BMSM)**: 60.8% (777/1278), (unadjusted OR = 3.65 [2.67, 5.00], p <.01, for incarceration during study); **Incarceration incidence during 12-months**	Incarceration during study follow up was significantly associated with high levels of perceived racism (aOR 1.82;	**Education and incident incarceration during study**: Some college/higher: 16% (96/609) incarcerated vs. HS or less: 31% (209/668) incarcerated, AOR = 1.83 [1.27, 2.62], p < .01.	**Empoyment and incident incarceration during study**: Employed: 15% (61/408) incarcerated vs. Unemployed: 28% (244/86) incarcerated,	**Housing and incident incarceration during study**: Stable housing: 22% (241/1100) incarcerated vs. No stable home: 36% (64/178)	9

Table 4 (continued)

	of study follow-up: 23.9% (305/1,278); **Overall incarceration incidence** per 100 person-yrs = 35% [31, 38]; **Other**: Inreased reported incarceration frequency at enrollment significantly associated with incarceration during follow-up: For those reporting three or more at enrollment, AOR = 3.13, (2.00, 4.91), p <.01; For two, AOR = 2.63 (1.43, 4.86), p <.01; For one, AOR = 2.49 (1.40, 4.42), p <.01	95% CI = 1.02 – 3.27)		AOR = 1.23 [0.82, 1.85], p = 0.33.	incarcerated, AOR = 1.41 [0.90, 2.20], p < 0.13.	
Brewer et al. [11]	**Lifetime incarceration, comparative**: 80.0% (24/30) of BTW vs. 59.7% (890/1491) of BMSM (AOR = 3.26[1.17, 9.13]); **Social support/incarceration**: 22% (127/588) of participants reporting no history of incarceration had low social support based on a 6-item scaled-score qustionnaire (AOR = 1.00, ref); 23% (203/873) of participants reporting history of incarceration had low social support (AOR = 0.89 [0.68, 1.18])	N/A	N/A	N/A	N/A	9
Brown et al. [27]	**OR for incarceration among Black/White TG veterans**: 7% (Black) vs 2% (White), AOR = 2.91 [1.84, 4.62], p < 0.0001)	N/A	N/A	N/A	N/A	4
Bukowski et al. [45]	**Recent incarceration (past 2 years) among BTW**: 35.9% (151/422)	N/A	N/A	N/A	N/A	5
Chen et al. [63]	*100% CJI*, see demographics.	N/A	N/A	N/A	N/A	5
Chen et al. [62]	*100% CJI*, see demographics.	N/A	N/A	N/A	5	100% CJI, see demo-graphics.
Choi et al. [30]	Lifetime incarceration, comparative: 41% among BMSM (n = 403), higher than		N/A	N/A	N/A	7

Table 4 (continued)

	among API or Latino MSM ($p < 0.001$)				
Crosby et al. [33]	Lifetime incarceration, comparative: 22.1% among YBMSM, comparatively less than 36.1% among young Black non-MSM (bivariate analysis p-value = 0.02)	N/A	N/A	N/A	6
Crosby et al. [32]	Lifetime incarceration, comparative: 46.9% (15/32) among YBTWSM vs. 25.8% (149/577) among YBMSM (Rate ratio = 1.82, p = 0.009); Frequency (lifetime): Mean of 1.0 times for YBTWSM compared to 0.62 times for YBMSM (p = 0.14);	N/A	N/A	N/A	6
Cunningham et al. [59]	*100% CJI* (detainees, jail), see demographics.	N/A	N/A	N/A	7
Fields et al. [34]	Lifetime incarceration: 28% (BMSM/BTW combined)	N/A	N/A	N/A	5
Garofalo et al. [50] *Data used due to high % of BTW, despite lacking results specifically for this group.*	Incarceration (unknown period) among TW: 37% (19/51), history of arrest among TW: (unknown period): 67% (34/51)	N/A	N/A	N/A	6
German et al. [35]	**Lifetime incarceration**: D.C.: 22.2% among 18-24 year olds and 17.0% among total sample, Baltimore: 36.2% among 18-24 year olds and 49.5% among total sample, Philadelphia: 21.3% among 18-24 year olds and 24.2% among total sample. Calculated aggregate across cities (total sample): 33.6% (287/854). **Comparative results (between geographic locations)**: Chi-squared test results for lifetime incarceration across cities: 18-24 year olds, 5.58, p = 0.062; total sample, 73.86, p < 0.001; **Recent incarceration (past 12 months)**: 8.3% of 18-24 year olds and 4.4% of total sample in D.C. reported	N/A	N/A	N/A	9

Table 4 (continued)

	incarceration in past 12 months; 16.9% of 18-24 year olds and 14.8% of total sample in Baltimore reported incarceration in past 12 months; 8.2% of 18-24 year olds and 6.3% of total sample in Philadelphia reported incarceration in past 12 months. **Comparative results (between geographic locations)**: Chi-squared test results for past 12 month incarceration across cities: 18-24 year olds, 3.65, p = 0.162; total sample, 20.48, p < 0.001					
Gore et al. [44]	Lifetime incarceration among recently diagnosed PLWHA: 53.51% (99/185)		N/A	N/A	N/A	6
Hall et al. [48]	Recent incarceration (past 6 months), comparative: 59% (798/1,384) among community-recruited participants vs. 71% (116/169) among referred participants (chi-squared = 8.67; p = 0.003);		N/A	N/A	N/A	9
Hall et al. [36]	Lifetime incarceration among BMSM: 40.6% (835/1,449)	N/A	N/A	N/A	9	Hall et al.
Han et al.	Lifetime incarceration, comparative: 41% among BMSM vs. 13% among API/35% among Latinos (p < 0.001).		N/A	N/A	N/A	9
Harawa et al. [60]	100% CJI, see demographics.		N/A	N/A	N/A	6
Harawa et al. [43]	Lifetime incarceration: Intervention group: 74.2% (n = 196), Control group: 77.8% (n = 185), Calculated combined value: 75.9% (n = 381).	N/A	N/A	N/A	N/A	6
Harawa et al. [17]	*100% CJI*, **post-incarcerated BMSM**; Other : 36% were on probation/parole. **Cumulative length in prison**: 45% reported a cumulative lifetime	N/A	**Among post-incarcerated BMSM**: < HS: 25%, GED/HS diploma/some college: 67%, college graduate: 8%.	**Among post-incarcerated BMSM**: 13% employed part/full time.	**Among post-incarcerated BMSM**: 62% reported housing instability in the past 12 months.	6

Table 4 (continued)

	in prison of over 3 years; **Length of time since last released from incarceration**: 29% <30 days, 18% 30-90 days, 27% 90-180 days, 26% ≥180 days					
Javanbakht et al. [64]	*100% CJI*, see demographics.	N/A	N/A	N/A	N/A	6
Jones et al. [49]	**Recent incarceration (past 2 months) among YBMSM**: 7.5% (19/252)		N/A	N/A	N/A	5
Koblin et al. [37]	**Lifetime incarceration**: 22.5% (38/169), YBMSM/YBTW combined.		N/A	N/A	N/A	6
Li et al. [66]	*100% CJI*, recently incarcerated BMSM.		N/A	N/A	**BMSM with recent incarceration**: 62.7% (133/212) reported homelessness in the past 12 months.	9
Lim et al. [52]	**Recent arrest among BMSM**: 12% (209/1,739); Comparative OR: BMSM were more likely to report arrest history than white MSM (OR = 1.6 [1.3–2.1]).		N/A	N/A	N/A	9
Magnus et al. [40]	**Lifetime incarceration among BMSM**: 25.5% (40/178).		N/A	N/A	N/A	9
Millett et al. [58]	Comparative OR: A summary OR of 2.17 (1.49, 3.18) was found using 4 studies of BMSM for odds of incarceration relative to other MSM ($p < 0.05$).	N/A	N/A	N/A	N/A	Millett et al.
Mimiaga et al. [67]	**Incarceration (unknown period) among BMSM**: 51.3% (101/197)		N/A	N/A	N/A	9
Mojola et al. [38]	Lifetime incarceration: 2.4% of 29 gay Black male respondents and 18.1% of 27 mixed-oriented Black male respondents reported ever being incarcerated across both waves		N/A	N/A	N/A	7
Neaigus et al. [47]	**Recent incarceration (past 12 months) among BMSM**: 14.8% (12/81) vs. 8.4% (35/416) among the total sample;		N/A	N/A	N/A	9

Table 4 (continued)

	Comparative OR: Black race was associated with higher odds of incarceration (OR = 2.2, [1.1, 4.6], p = 0.03).				
Nelson et al. [25]	**Lifetime incarceration frequency (overnight)**: In Atlanta (n = 288), Boston (n = 235), LA (n = 279), NYC (n = 306), and SF (n = 195): 3.3, 3.1, 3.6, 2.9, 3.3, and 1.1 were the mean values for lifetime # of overnight incarcerations; **Recent arrest (past 6 months)**: 10.0%, 16.6%, 9.6%, 5.7%, 12.2%, and 5.1% respectively (as above) reported recent arrest; **Recent conviction or incarceration in jail/prison (past 6 months)**: 12.8%, 17.4%, 9.4%, 9.4%, 13.9%, and 9.4% respectively (as above) reported recent conviction	N/A	N/A	N/A	9
Okafor et al. [53]	**Recent arrest (past 12 months), comparative**: 12% (26/211) among BMSM vs. 9% (23/244) among White MSM (p = 0.3)	N/A	N/A	N/A	8
Oster et al. [22]	**Recent incarcceration (past 12 months), comparative among recently diagnosed HIV+ MSM**: 12% (45/365) of BMSM vs. 7% (10/143) of white MSM (p = 0.08).	N/A	N/A	N/A	9
Phillips et al. [39]	**Lifetime incarceration among YBMSM, comparative**: 14.2% (34/240), correlated with Black race (chi-squared = 14.7, p < 0.01); **Lifetime arrest, comparative among YBMSM**: 37.5% (90/240), correlated with Black race (chi-squared = 19.9, p < 0.01)	N/A	N/A	N/A	9
Reisner et al. [41]	**Lifetime incarceration among BTW**: 56.0% (111/198); **Comparative OR**: Compared to non-Hispanic White TW, BTW had a higher relative	N/A	N/A	N/A	7

Table 4 (continued)

	risk of incarceration (RR = 3.26 [2.24, 4.75], p < 0.0001, logistic regression model inclusive of sociodemographics only; RR = 1.87 [1.21, 2.88], p = 0.01, logistic regression model inclusive of sociodemographics and health-related indicators); **Other Comparative (mistreatment/victimization in jail/prison)**: Relative to non-Hispanic white TW, BTW had a higher relative risk for reporting mistreatment/victimization in jail/prison (RR = 2.31 [1.17, 4.55], p = 0.02) but there was no significant difference for being denied healthcare (RR = 1.17 [0.56, 2.47], p = 0.67)					
Rutledge et al. [42]	Lifetime incarceration among BMSM: 51.8% (307/593).	N/A	N/A	N/A	N/A	6
Schneider et al. [54]	**Lifetime CJI among YBMSM**: 40.8% at enrollment; **Frequency and Duration**: *Also collected but presented in context of HIV care continuum measures. Exact values not given, see figure 1 in article.*	N/A	N/A	N/A	N/A	9
Schenider et al. [13]	**Lifetime CJI among YBMSM**: 46.2% (285/617); **Frequency and Duration**: Information pesented in figure 2 in article along with CJI by age/sexual orientation and age at first CJI, exact values not given. Other: YBMSM with CJI history were significantly older (mean age: 23.4 years vs. 22.2 for those without CJI, p = 0.0012); Network CJI was additionally found to account for a portion of the association between CJI, housing instability, and substance use.	N/A	**Among YBMSM with CJI (n = 285)**: < HS: 10.4%, HS diploma: 37.5%, > HS: 52.1%; No significant difference in YBMSM with/without CJI in having < HS education, p = 0.542.	**Among YBMSM with CJI (n = 285)**: Unemployed: 53.4%, Part-time: 24.9%, Full-time: 21.8%; No significant difference in YBMSM with/without CJI in unemployment (p = 0.686).	28.9% of YBMSM with CJI reported housing instability in the past 12 months vs. 20.7% of YBMSM without CJI, p = 0.063.	9

Table 4 (continued)

Stein et al. [61]	***100% CJI* (detainees, jail); Distribution of gender/sexual identity among 1,233 HIV+ detainees: Black detainees**: 22.3% (126/567) male and gay/bisexual, vs. non-Black detainees: 16.2% male and gay/bisexual, p = 0.03. 2.1% (17/807) of Black detainees identified as transgender.	N/A	N/A	N/A	N/A	5
Vagenas et al. [56]	**100% CJI (detainees, jail); Mean incarceration duration**: YBMSM: 63.6 days (SD = 87.5) vs. Older BMSM: 89.6 days (SD = 100.9), p = 0.39. Non-Black MSM: 91.6 days (SD = 101.2), non-MSM: 105.1 (SD = 135.2), p < 0.01; **Recidivism at baseline (re-incarcerated during 6-month post-release period following index incarceration)**: 16.7% (3/18) of YBMSM vs. 41.8% (23/55) of older BMSM,p = 0.06.	N/A	**Among YBMSM vs Older BMSM detainees**: < HS: 38.9% (7/18) vs. 36.4% (20/55), p = 0.89. HS: 22.2% (4/18) vs. 41.8% (23/55), p = 0.15. > HS: 38.9% (7/18) vs. 20.1% (11/55), p = 0.13; YBMSM had a significantly higher rate of > HS education than non-MSM, p = 0.01.	N/A	38.9% (7/18) of YBMSM were homeless at baseline vs. 32.7% (18/55) of older BMSM (p = 0.63)	5
Wheeler et al. [51]	**Lifetime arrest frequency**: Once: 23.9% of BMSMW, 22.2% of BMSM, and 22.7% of total sample. Twice or more: 57.1% of BMSMW, 33.7% of BMSM, and 40.1% of total sample (p < 0.0001).	N/A	N/A	N/A	N/A	8
Wohl et al. [68]	*100% CJI*, see demographics.	N/A	N/A	N/A	N/A	5

[1] Year of publication

[2] City and/or state abbreviation

[3] API, Asian-Pacific Islander; BMSM, Black men who have sex with men; BMSMW, Black men who have sex with men and women; BTW, Black transgender women; CJI, Criminal justice involved; CS, Cross-sectional; EHR, Electronic health record; HS, High school; LS, Longitudinal study; M, Male; MSM, Men who have sex with men; MTF, Male to female; PLWHA, People living with HIV/AIDS; RCT, Randomized controlled trial; SGM, Sexual gender minority; TG, Transgender; TW, Transgender women; YBMSM, Young Black men who have sex with men; YMSM, Young men who have sex with men; YBTW, Young Black transgender women

low rates of access to HIV treatment, retention in HIV care, and viral suppression among jail detainees including YBMSM. Thus, the relationship between criminal justice involvement and the HIV care continuum may be highly dependent upon the specific CJI measure assessed among BMSM. However, criminal justice settings may serve as a critical venue for HIV testing services for both BMSM and BTW.

Key Findings Related to Criminal Justice Involvement and STIs Among BMSM and BTW

Only 7 studies (15%) examined the relationship between criminal justice involvement and STIs among the populations of interest. Three studies were among BMSM [25, 29, 67], one specifically among YBMSM [13], and three on the same jail population that consisted primarily of MSM [62–64]. None of the studies reported specific relationships between criminal justice involvement and STIs among BTW. However, three of 7 studies specifically examined the independent association between one or more STIs and criminal justice involvement among BMSM [13, 25, 29]. One article found a significant relationship between incarceration history and syphilis seropositivity, and another between incarceration and self-reported lifetime history of STIs (including syphilis, chlamydia, gonorrhea, or herpes) [13, 29]. Nelson et al. [25] reported a significant relationship between a recent conviction and any STI in the past 6 months (aOR = 3.97, CI = [1.58, 9.94], $p < 0.05$). Contrary to the mixed findings between HIV and criminal justice involvement, these studies show that incarceration history is independently associated with a greater odds of STIs among BMSM with limited information particularly among BTW.

Key Findings Related to Criminal Justice Involvement and Sexual Risk Behaviors Among BMSM and BTW

Eleven of 47 articles (23%) assessed sexual risk behaviors [11–13, 25, 29, 36, 49, 57, 65, 66, 68]. A range of sexual risk behaviors were assessed to include the following: exchange sex, three articles [57, 65, 68]; jail sex, two articles [57, 68]; history of condomless or unprotected sexual acts (e.g., any condomless sex and condomless insertive and/or receptive anal intercourse), six articles [12, 25, 29, 49, 57, 65]; frequency of condomless or unprotected sex, four articles [36, 57, 66, 68]; age of first intercourse, one article [11]; number of sexual partners, eight articles [12, 13, 25, 29, 36, 57, 65, 68]; and gender identity of sexual partners (i.e., male, female, transgender), seven articles [12, 25, 29, 36, 57, 66, 68] with three trans-inclusive articles [36, 57, 65]. Overall, the analysis by Harawa et al. [57] was the most comprehensive assessment of sexual risk behaviors prior to entering a jail setting, but also surveyed the prevalence of sex within jail by partner gender. The analysis by Wohl et al. [68] was the most comprehensive assessment of sexual risk behaviors within a jail setting.

Only one study assessed sexual behaviors among transgender women and reported high rates (≥ 65%) of condomless sex, exchange sex, and multiple partners in the past 90 days among small CJI samples of primarily BTW [65]. None of the included studies specifically examined the direct relationship between incarceration and sexual risk behaviors among BTW. However, findings on the relationship between incarceration and sexual risk behaviors among BMSM were mixed. Two articles did not find any significant relationship between lifetime incarceration and having multiple partners or unprotected and/or condomless sex in the past 6 months among BMSM [29, 36]. Nelson et al. [25] actually reported a protective effect of lifetime incarceration for condomless receptive anal sex (aOR = 0.73, CI = [0.58, 0.91], $p < 0.05$) among BMSM. However, two articles found a relationship between more recent incarceration and unprotected sex among BMSM [29, 49], and the same article by Nelson et al. [25] reported a significant relationship between recent conviction and multiple male partners in the past 6 months (aOR = 0.56, CI = [0.33, 0.93], $p < 0.01$). Schneider et al. [13] also found a significant relationship between a history of criminal justice involvement and having a greater number of sexual partners among YBMSM (50.8% among YBMSM with a history of criminal justice involvement vs. 66.1% with no history of criminal justice involvement; $p = 0.0001$).

Interestingly, Schneider et al. [13] found that CJI YBMSM were more likely to have CJI homophily in their confidant and sexual networks such that 59% of CJI YBMSM reported at least one sexual partner who had been in jail during the past 6 months compared to 26.5% of YBMSM without a history of criminal justice involvement ($p < 0.0001$). Furthermore, network CJI history (i.e., confidants and sexual partners) was associated with greater encouragement of HIV/STI transmissible sexual behaviors [13].

Key Findings Related to Criminal Justice Involvement and Substance Use/Misuse Among BMSM and BTW

Nine studies (19.1%) assessed substance use/misuse behaviors among study participants. These ranged from three studies (6.4%) on general alcohol use [12, 56, 65], one (2.1%) on binge drinking (n=1) [65], and nine (19.1%) assessing substances such as marijuana, methamphetamine, crack/cocaine, opioids, stimulants, and multiple substances [11–13, 29, 46, 56, 57, 61, 65]. Two studies (4.3%) also assessed whether participants received an alcohol/drug treatment program during custody [29, 57]. One article utilized the Addiction Severity Index (n=1); the others did not address severity of substance use disorders [56]. Only one article had estimates focused primarily on BTW [65], finding high usage rates across a range of substances including crack/cocaine and

binge alcohol, but in limited sample sizes of 20 or less. The remaining studies reported findings based on samples of all or nearly all BMSM and did not provide separate estimates for BTW. Overall, high levels of substance use were identified among BMSM and BTW.

Several studies found an independent association between previous criminal justice involvement and substance use among BMSM with no studies examining this relationship among BTW [11–13, 29, 41]. Bland et al. [29] found that incarceration history was significantly associated with injection drug use, lifetime history of substance use, and prior substance abuse treatment in a sample of 197 BMSM, with a higher odds among those incarcerated for ≥ 90 days. Interestingly, BMSM with longer incarceration trajectories (i.e., ≥ 90 days) were more likely to use crack cocaine during sex than those with shorter incarceration histories [24]. In Brewer et al.'s [12] two papers reporting on BMSM enrolled in the HIV Prevention Trials Network (HPTN) 061 study, any alcohol or drug in the past 6 months was significantly associated with a higher odds of lifetime incarceration history, while stimulant and marijuana use was linked to a higher odds of incident incarceration [11]. Vagenas et al. [56] examined age differences between younger and older BMSM, finding no significant differences between these groups in terms of drug type and addiction severity, except for cocaine usage, which was more frequent among older BMSM. Among YBMSM, network CJI history (i.e., confidants and sexual partners) was associated with a higher likelihood of drug use [13].

Key Findings Related to Criminal Justice Involvement and Mental Health Outcomes Among BMSM and BTW

Five articles (11%) assessed mental health outcomes with no reported estimates specific to BTW even though they were enrolled in the larger cohort studies [11–13, 29, 56]. The most common condition measured were depressive symptoms using the Center for Epidemiologic Studies Depression Scale (CES-D). Two of the five papers were based on subsets of participants from the larger cohort of BMSM enrolled in the HPTN 061 study, with final analytic samples of 1278 and 1521 participants [11, 12]. In these papers, the prevalence of depressive symptoms among BMSM reporting any incarceration during study follow-up or in their lifetime was 27% and 46%, respectively [11, 12]. One article was focused on a statewide sample of 197 BMSM and found a similarly high prevalence of depression (i.e., 46%) among those incarcerated for ≥ 90 days [29]. In short, relatively high levels of depressive symptoms among BMSM were reported.

Three of the five articles examined the relationship between a history of criminal justice involvement and depression among BMSM, with only one of the studies showing a statistically significant relationship between incarceration history (≥ 90 days) and depressive symptoms (AOR = 2.76, CI = [1.22, 6.24], p = .01) [29]. In terms of differences by age group, no significant differences between younger and older CJI BMSM were observed among included studies (50% for younger vs. 58.2% for older, p=0.54) [56]. However, interesting findings were observed for the relationship between network history of criminal justice involvement and depression, such that network stability was associated with a reduction in respondent depression [13]. In summary, the findings on the relationship between criminal justice involvement and depression among BMSM remain mixed.

For other mental health outcomes, among YBMSM specifically, a higher prevalence of criminal justice involvement history among network members (i.e., confidants and sexual partners) was associated with higher levels of anxiety and distress [13]. Schneider et al. [13] concluded that network criminal justice involvement history may limit access to the types of relationships that support and maintain mental health [69] and/or create situations of instability that further exacerbate mental health problems among non-institutionalized YBMSM [70].

Key Findings Related to Criminal Justice Involvement and Other Socio-Structural Characteristics Among BMSM and BTW

Only six studies (12.8%) assessed one or more of the four other socio-structural characteristics of interest within the context of criminal justice involvement (i.e., stigma/discrimination, housing, employment, and education) [11, 13, 56, 57, 65, 66]. In terms of stigma/discrimination, among BMSM enrolled in the HPTN 061 study, incarceration during study follow-up was associated with high levels of perceived racism (aOR 1.82; 95% CI = 1.02–3.27) [11].

All six studies (12.8%) documented high instances of housing instability among CJI BMSM ranging from 28 to 62% of samples [11, 13, 56, 57, 65, 66]. Of these studies, two included estimates focused on YBMSM [13, 56]. Schneider et al. [13] found that CJI YBMSM were more likely to report unstable housing in the past 12 months compared with non-CJI YBMSM (28.9% vs 20.7%, p=0.063), though the difference was not significant. Among YBMSM, a history of criminal justice involvement was associated with housing instability. In addition, network criminal justice involvement history (i.e., confidants and sexual partners) was associated with a higher likelihood of housing instability [13]. Vagenas et al. [56] compared housing instability at baseline by age group among detained BMSM and did not find any significant differences (38.9% among younger vs. 32.7% among older, p = 0.63). Harawa et al. [57] and Li et al. [66] reported a high rate of housing instability of 62.7% in the past 12 months among post-incarcerated BMSM. Among BTW specifically, only one study reported a similarly high rate of housing instability (44%) among a small sample of 16 predominantly HIV-

positive BTW with a history of criminal justice involvement [65].

Five articles (10.6%) provided estimates of educational attainment among CJI participants, including one focused on BTW [65], two on BMSM [11, 57], one on YBMSM [13], and one comparative analysis including estimates for older BMSM and YBMSM [56]. All five articles across these various groups reported over 10% (range = 10.4–38.9%) of their samples not having completed a high school education [11, 13, 56, 57, 65]. The lowest estimate of 10.4% was in a sample of 285 CJI YBMSM, but all other estimates across groups (YBMSM, BMSM, and BTW), were ≥ 25%. Of these articles, Harawa et al. [57] specified that having a GED, high school diploma, or some college were categorized as having completed a high school–level education, while the other four articles did not delineate a classification method.

Two articles (4.3%) examined the relationship between criminal justice involvement and education level among BMSM. The study by Brewer et al. [11] showed that BMSM with less education were more likely to be incarcerated during study follow-up (aOR=1.83, CI = [1.27, 2.62], $p < 0.01$). Schneider et al. [13], however, found no significant difference in education between CJI and non-CJI YBMSM at baseline. No studies examined the relationship between criminal justice involvement and education level among BTW.

Three studies (6.4%) provided employment estimates for CJI BMSM but none were identified specifically for BTW [11, 13, 57]. All were quantitative studies with city/county (i.e., Los Angeles County and Chicago) and multi-state (i.e., six HPTN sites) samples of BMSM ranging from 212 to 1278 participants. The Chicago-specific study by Schneider et al. [13] did not find any significant differences in employment between CJI and non-CJI YBMSM at baseline which may be point to high level of need regardless of incarceration status. The multi-city HPTN study showed a greater odds of incarceration during study follow-up among men who were unemployed compared with those who were employed at baseline (OR=2.22, 1.63–3.03) [35]. Thus, unemployment is a risk factor for future incarceration among BMSM. No studies examined the relationship between criminal justice involvement and employment among BTW.

Discussion

As of the date of this review, there was a paucity of research focused on the intersection of criminal justice involvement, HIV, and associated factors among BMSM and BTW. The objective of this systematic review was to provide a comprehensive overview of the intersections between criminal justice involvement, HIV, and HIV-related characteristics among BMSM and BTW. Included studies examined a wide range of criminal justice experiences, but the most common measure of criminal justice involvement was lifetime history of incarceration with a robust non-representative national sample composed primarily of BMSM enrolled in the HPTN 061 study reporting a high (i.e., 60%) lifetime history of incarceration among BMSM with a greater likelihood of incarceration history among BTW [12].

The dearth of studies up to 2018 specifically focused on CJI BTW across all of the categories of interest is quite evident. Even though several studies enrolled BTW, specific analyses were not conducted and/or reported. A limited number of trans-inclusive published studies at the date of this review showed that criminal justice involvement may be more pronounced for BTW compared with BMSM. The geographic diversity of studies was additionally limited with most studies occurring in Los Angeles, CA and Chicago, IL. Geographic limitations may partly be explained by investigator interest and presence in those locales as well as the challenges associated with building and maintaining academic/criminal justice setting research collaborations, which may be even more pronounced during the COVID-19 pandemic [71].

Consistent with national data documenting the high prevalence of HIV among CJI persons, BMSM and BTW living with HIV had a high frequency of contact with the criminal justice system [72]. Even though we observed mixed findings as it relates to the independent association between criminal justice involvement and HIV infection, the current evidence favors no association between criminal justice involvement and HIV among BMSM with the largest cohort of BMSM to date not finding an association between recent incarceration and HIV acquisition. Findings related to the independent association between criminal justice involvement and sexual risk behaviors among BMSM were mixed. Criminal justice involvement was positively associated with substance use among BMSM with a strong network influence particularly among YBMSM such that network CJI history (i.e., confidants and sexual partners) was associated with a higher likelihood of drug use. Thus, network interventions may be appropriate for YBMSM.

In terms of STIs, we observed an independent relationship between criminal justice involvement and STI prevalence among BMSM, but inability to establish a temporal relationship precludes assessment of evidence for causality. Regardless, it is plausible that criminal justice settings provide an opportunity for increased STI testing services which are coupled with opt-out HIV testing within these settings [17]. Incarceration may also disrupt sexual relationships leading to an increase in casual sexual partnerships and associated increases in the likelihood of being exposed to STIs [25, 73]. As of the date of this review, there remains a dearth of information about the relationship between criminal justice involvement and STIs among BTW.

A limited number of studies explored the relationship between criminal justice involvement and the HIV care continuum. Criminal justice–involved settings served as an important venue for HIV testing/diagnosis for both BMSM and BTW. The relationship between criminal justice involvement and the HIV care continuum particularly among BMSM seems highly dependent upon the specific CJI measure assessed. For example, any CJI history was associated with improved HIV care outcomes across the HIV care continuum. However incident jail stays and/or more frequent incarceration events may negatively impact HIV care. Interestingly, in one study of BTW living with HIV, those who were virally suppressed had significantly lower odds of lifetime incarceration compared to those who were virally unsuppressed. This may point to the syndemic nature of health disparities production among BTW [45] and existing barriers to viral suppression within criminal justice settings for this population [74–77]. For example, a qualitative study consisting primarily of transgender women of color described a non-affirming correctional culture in which their feminine identity was not recognized and a combination of provider bias, limited provider knowledge or inexperience caring for transgender patients, and restrictive correctional policies (e.g., sex-segregated environments based on genitalia and strict rules surrounding access to transition-related medical care) limited access to needed medical care [74].

In terms of the socio-structural characteristics, only one study examined the relationship between stigma/discrimination and criminal justice involvement showing that incarceration during study follow-up was associated with perceived racism among BMSM. This is not a surprising finding given the pervasive nature of racial inequality and systemic racism in the US [78]. African Americans are more likely to be stopped by police and feel somewhat or very unsafe during their interactions with law enforcement, more likely to experience threats or use of physical force by law enforcement, and twice as likely to die from a fatal shooting by an on-duty police officer than their White counterparts [79–81]. Furthermore, BMSM's positioning at the intersection of multiple identities expose them to other forms of discrimination including homophobia [5, 82, 83].

Few studies comprehensively assessed mental health outcomes among the CJI priority populations. Depressive symptoms were the most commonly assessed outcome, with high estimates of depressive symptoms among BMSM, but inconsistent associations with criminal justice involvement among BMSM. Network stability was identified as a protective factor in terms of mental health particularly for YBMSM. This finding also highlights the importance of network factors among YBMSM.

High rates of housing instability were found among CJI BMSM and BTW, with no statistically observed differences between CJI vs. non-CJI participants. However, criminal justice history was strongly connected to housing instability particularly among YBMSM. Findings indicated that more than 10% of BMSM and BTW with CJI have not completed a high diploma or GED. However, we note that, nationally, 15% of Black men ages 25 and higher have not completed high school [84]. While we did not observe differences in education level and employment for CJI YBMSM vs. non-CJI YBMSM [13], the largest multi-site cohort of BMSM did find an independent association between criminal justice involvement and education as well as criminal justice involvement and employment, particularly as it relates to incarceration incidence [11, 12]. We note that research indicates that higher levels of both education and income offer relatively less protection against criminal justice involvement for African Americans than they do for Whites [85].

Conclusion

This systematic review provides some of the first comprehensive examinations of the burden of incarceration among Black sexual and gender minority populations as well as the intersection of criminal justice involvement, HIV, and associated factors among BMSM and BTW. Most studies were cross-sectional in nature, limiting the ability to make causal inferences between criminal justice involvement, HIV, and associated factors. Our review is limited to published scientific studies up to 2018 in the three scientific databases used. Additional studies have been published after the cutoff date used for this systematic review. For this review, we did not include studies focused on HIV pre-exposure prophylaxis (PrEP). Thus, a future research area may include examining the relationship between criminal justice involvement and PrEP outcomes among BMSM and BTW. In spite of these limitations, this analysis provides a comprehensive overview of the state of the science as it relates to criminal justice involvement, HIV, and HIV-related characteristics among Black sexual and gender minority populations in the US. It highlights the need for more focused studies on BTW to include the relationship between CJI and STIs among this population as well as the importance of CJI network dynamics particularly among YBMSM. It also underscores the importance of the intersection between criminal justice involvement and HIV in any response to Ending the HIV Epidemic in the US [86, 87].

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Declarations

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was not required for this systematic review.

Conflict of Interest The authors declare no competing interests.

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