

Effects of Incarceration on HIV Transmission in Black Men who Have Sex with Men

Men who have sex with men (MSM) account for 75% of new infections, and BMSM experience a disproportionate burden of new infections compared with white MSM.^{1,2,3} Stigma, homophobia, and/or discrimination place BMSM at risk of mental disorders and substance use;^{4,5} important HIV co-factors. Adverse social factors also may work in synergy with mental disorder and drug use vulnerability to drive BMSM risk.^{6,7}

Mass incarceration is a social force in the lives of black Americans⁸ that may drive HIV. Over the past decade, we have documented incarceration as a strong, consistent risk factor for HIV sex risk behavior, discordant partnership formation, and STI/HIV infection across numerous study populations.⁹⁻¹² In an ongoing NIDA cohort study (R01 DA028766; PI: Khan), we have found incarceration drives risk by disrupting sexual networks and contributing to psychopathology, substance use, and elevations in sex risk behaviors.¹³ Incarceration also is a risk factor for interruptions in anti-retroviral adherence and increased viral load among HIV positives.¹⁴⁻¹⁶ Incarceration may increase HIV risk among BMSM working through any of these behavioral and/or biomedical determinants. ***There has been virtually no research to date documenting the influence of incarceration on HIV risk outcomes in BMSM despite high levels of incarceration in BMSM. Specifically, members of our investigative team recently documented staggeringly high rates of incarceration among BMSM in the HPTN cohort; 60% had ever been incarcerated.^{17,18} The findings highlighted the critical need to quantify the magnitude of the effect of incarceration on HIV risk in BMSM and to delineate the pathways through which incarceration may work to drive risk in this group. Given the alarming burden of incarceration in BMSM, even modest effects would have significant ramifications at the population level.*** We propose to build from our existing research infrastructures^{17,18,19} to use HPTN 061 to systematically measure the longitudinal relationships between incarceration and HIV risk indicators including sexual risk behaviors, network factors (sex with infected partners), incident STI, viral load, and HIV infection and to describe the degree to which incarceration-related network disruption and resulting elevations in mental disorders and substance use explain the relationships between incarceration and HIV risk in BMSM (**Aim 1**).

While incarceration may drive the epidemic among BMSM, jails and prisons – paradoxically – also may constitute important infrastructures for implementing HIV prevention programs for BMSM. The best intervention approaches for BMSM involved in the criminal justice system have not been defined, in part because we lack the epidemiologic studies describing the most important drivers of sexually transmissible infection among incarcerated BMSM. Taking advantage of the large sample of BMSM with a history of incarceration (N>900) and the prospective data structure of HPTN 061 in which incident STI/HIV infection data were collected, we propose to describe the relative contribution of proximate determinants (sexual risk behavior, sexual network factors), intermediate determinants (mental disorder, substance use), and underlying factors (stigma and discrimination) to STI/HIV infection among BMSM involved in the criminal justice system (**Aim 2**). Identification of the modifiable factors most strongly linked to risk is needed to plan interventions for BMSM.

Building from Aims 1 and 2 and leveraging our team's extensive expertise in both HIV epidemiology and comparative effectiveness research methods, we propose to develop a series of mathematical models to estimate both the population-level impact of incarceration on HIV in BMSM and their extended networks and the most effective and economical HIV prevention programs for incarcerated BMSM (**Aim 3**).

Interventions effective in reducing incarceration-related HIV transmission and/or that use the criminal justice system to reach a vulnerable population that may be developed, in part, based on this research would hold the promise of reducing the race disparity in HIV and preventing substantial numbers of new infections annually.

Aim 1: Determine the temporal association between incarceration and HIV risk (sexual risk behaviors, sex with high-risk partners, STI/HIV) and mediating roles of incarceration-related network disruption, mental disorders, and substance use. *In exploratory analyses, we will assess the link between incarceration and viral load.*

Aim 2: Measure the independent effects of modifiable proximate determinants (sexual risk behavior, sexual network factors) and intermediate determinants (mental disorders, substance use) as well as the underlying factors (stigma, discrimination) on STI/HIV infection among BMSM involved in the criminal justice system.

Aim 3: Develop mathematical models to (1) estimate the effects of incarceration on the HIV epidemic in BMSM and members of their networks and (2) identify the package of HIV prevention interventions for incarcerated BMSM that would prevent the greatest number of HIV infections most economically.

Investigative Team:

This study will be conducted by Dr. Maria Khan (New York University (NYU) School of Medicine), with guidance from co-investigators Dr. Typhanye Penniman Dyer (University of Maryland at College Park), Dr. Jason Kessler (NYU School of Medicine), and Dr. Perry Halkitis (NYU Steinhardt School of Culture, Education, and Human Development) and from consultants Dr. Russell Brewer (Louisiana Public Health Institute) and Dr. Steven Shoptaw (University of California, Los Angeles).

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