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Incarceration, high-risk sexual partnerships, and sexually transmitted infections in an urban population

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Abstract

Objectives—We examined the associations between personal and partner incarceration, high-risk sexual partnerships and biologically-confirmed sexually transmitted infection (STI) in a U.S. urban population.

Methods—Data from a probability survey of young adults 15 to 35 years of age in Baltimore, MD, USA were analyzed to assess the prevalence of personal and partner incarceration and its association with several measures of high-risk sexual partnerships including multiple partners, partner concurrency, and current STI.

Results—A history of incarceration was common (24.1% among males and 11.3% among females). Among females with an incarcerated partner in the past year (15.3%), the risk of current STI was significantly increased (adjusted PR=2.3, 95% CI 1.5, 3.5). Multiple partners (5+) in the past year and partner concurrency were disproportionately high among men and women who had been incarcerated or who had sexual partner(s) who had recently been incarcerated. These associations remained robust independent of personal socio-demographic factors and illicit drug use.

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Conclusions—Incarceration may contribute to STI risk not only by influencing engagement in high-risk behaviors but also by influencing contact with partners who engage in risky behaviors and who hence have elevated risk of infection.

Keywords

Sexually transmitted infections; incarceration; high-risk sexual partnerships; population survey

Populations with a history of incarceration and members of their sexual networks more frequently engage in high-risk sexual partnerships compared to those with no exposure to incarceration.[1-12] Behaviors such as having multiple and concurrent partners influence the risk of sexually transmitted infections (STI), but social and economic instability and substance use may also contribute to increased STI risk among incarcerated populations and their partners.[1-2,13-17] Several studies have indicated that incarceration and/or incarceration of a sex partner are correlates of STI-related sexual risk behaviors independent of adverse demographic and socio-economic factors, including poverty and substance use, suggesting that incarceration itself may influence STI risk.[1-9] Incarceration may contribute to sexual risk behaviors and STIs by disrupting sexual networks, leading to increased levels of sexual partnership exchange and/or by increasing links between high and low risk individuals, resulting in increasing levels of STI-discordant partnerships.[9] Whether these associations are consistently observed in well-defined population samples, in addition to samples in prison and jail settings, needs to be evaluated.[3-5,9,16-17]

In this paper, we examine associations between personal and partner incarceration and measures of sexual risk and current STI status in a probability sample of young adults in Baltimore, Maryland, an urban community with high rates of STIs and incarceration. We analyze data from the 2006-2009 Monitoring STIs Survey Program (MSSP) a population-based behavioral survey of Baltimore residents ages 15 to 35 years that included biospecimen collection for testing of three STIs (trichomoniasis, gonorrhea, and chlamydial infection). We use these data to investigate whether individual and partner's incarceration are independently associated with multiple partnerships, partner concurrency, and biologically-confirmed STI at the population level.

METHODS

All study procedures were approved by the Institutional Review Boards (IRBs) of Research Triangle Institute, the University of North Carolina at Chapel Hill (UNC), the University of Massachusetts at Boston, and the Johns Hopkins Medical Institutions.

Study sample

The MSSP study design has been described in detail elsewhere.[18, 19] Telephone audio computer-assisted self-interviews (T-ACASI) and specimen collection kits (urine and/or vaginal swab) sent out and returned by US mail were used to estimate the prevalence of three STIs and associated risk behaviors from a probability sample of young adults residing in Baltimore, MD. MSSP interviews began in September 2006 and were completed in June 2009. A stratified, list-assisted, probability sampling design was used to maximize sample

efficiency in identifying our target population --- English-speaking males and females between 15 and 35 years of age residing in Baltimore households with landline telephones.

Survey execution

Sampled households for which we had mailing addresses were sent a lead letter describing the study. Interview staff at the Center for Survey Research of the University of Massachusetts, Boston conducted telephone screening and recruitment. Screening was completed with an adult household member. In households with more than one eligible member, one was sampled probabilistically. Minors (<18 years of age) were recruited with parental permission. Parents were informed that their child's study results were confidential.

Verbal consent was obtained for the interview; separate written consent (adult, or minor and parent) was required for specimen testing. Men and women who completed the interview were asked to provide a specimen for STI testing. Participants were informed that positive test results for gonorrhea (GC) and/or chlamydial infection (CT) would be reported to the Baltimore City Health Department and patients with positive test results would be referred for treatment, as required by law. Trichomoniasis (TV) is not a reportable disease. Because our TV assay had not received FDA clearance and to our knowledge had not been used in a large population study, participants were informed that they would not be re-contacted regarding their TV results. After further evaluation of the assay by the laboratory and in consultation with the four IRBs supervising this research, our protocol was amended in December 2007 to notify future participants whose TV assay was positive that they should seek testing and evaluation for TV infection.

T-ACASI interview

After obtaining consent, interviewers transferred respondents to a T-ACASI system.[20] T-ACASI has been shown to increase reporting of sensitive and stigmatized behaviors compared to traditional telephone surveys conducted by human interviewers.[21-24] The survey included questions on respondents' demographic characteristics, sexual behaviors, previous STIs, and other health behaviors and took 13 minutes, on average, to complete.

Specimen collection and testing

Participants who agreed to provide a specimen for STI testing were mailed a collection kit with instructions and consent form. Urine specimens were collected in containers with DNA/RNA Protect™ (Sierra Diagnostics, Sonora, CA) to prevent nucleic acid degradation without refrigeration. Participants mailed their specimen in pre-addressed postage-paid shipping cartons to the UNC Hospitals' McLendon Clinical Laboratories via U.S. Postal Service first class mail. Only specimens submitted with a signed consent form were tested.

Laboratory processing—Urine (2 mL) and vaginal swab specimens were transferred to APTIMA Combo 2 Assay specimen transport tubes (Gen-Probe, Inc., San Diego, CA) upon receipt at the UNC Hospitals laboratory. *N. gonorrhoeae* and *C. trachomatis* nucleic acids were detected using the FDA-approved APTIMA Combo2 assay (Gen-Probe, Inc., San Diego, CA). *T vaginalis* nucleic acids were detected by transcription-mediated amplification (TMA) using Gen-Probe analyte-specific reagents (ASR) using interpretive criteria

previously established with vaginal swabs.[25] Infection with either organism was defined as a repeatedly positive test result.

Sample Weighting

We constructed sample weights to adjust for the unequal selection probabilities in our sample design and for nonresponse to (1) survey and (2) specimen collection. Initial sample weights were calculated as the inverse of the probability of selection within each of four sample strata with adjustments for differing probabilities of selection within households and for different numbers of eligible individuals and/or numbers of landline telephones in the household. Post-stratification adjustments were then applied to match the sample distributions to the 2006 American Community Survey[26] for the Baltimore population by age, gender, race/ethnicity, and education. Two separate sets of adjusted weights were constructed --- one for the sample of interviewed respondents and a second for the sample of respondents who provided a biospecimen for testing.

Outcome Measures

Our outcome measures of incarceration were derived from survey questions on partner and personal incarceration. The first question asked: "Next we would like to know if any of your sexual partners have ever been incarcerated in prison, jail or a detention center for more than 24 hours?"; response categories offered: (1) "none of your partners has ever been incarcerated"; (2) "one of your partners was incarcerated in the past year"; and (3) "one of your partners has been incarcerated, but the incarceration took place more than one year ago". The subsequent question asked: "Have you ever been incarcerated in prison, jail or a detention center for more than 24 hours?" with response categories (1) "you have never been incarcerated"; (2) "you were incarcerated in the past year"; and (3) "you were incarcerated more than one year ago". Respondents selected one response to each question. We note the possibility that respondents with multiple incarcerations or multiple partners who had been incarcerated, responses 2 and 3 could apply. Such unexpected reporting is unlikely to have occurred with sufficient frequency to alter the interpretation of our results.

Statistical Analyses

We examined respondent sociodemographic characteristics and respondent and partner incarceration status – defined as incarcerated within the past year, incarcerated more than one year ago, and never incarcerated -- separately by sex, using sample weights described above. Pearson chi-square tests were calculated to assess the bivariable associations between each measure and sex. Unadjusted and adjusted prevalence ratios (PR) and 95% confidence intervals (95% CI) were estimated for the associations between measures of incarceration and indicators of high-risk sexual partnerships *within the past year*, including having five or more sexual partners, partner concurrency (defined as a partner who had other partners during the same time the respondent was having sex with that partner), and having a current STI (defined as a positive test result for GC, CT, and/or TV). For each behavioral outcome, models were estimated using Poisson regression and calculated for women and men separately. Potential confounding variables included in multivariate models included: age, race, education, employment and marital status, and recent illicit drug use (cocaine and/or

injection use in the past year). All statistical analyses accounted for the complex survey design using the *svy* algorithms of Stata, version 10.[27]

RESULTS

Survey execution

A sample of 73 318 telephone numbers was released over the survey period and 62 335 (85%) of these numbers were screened by UMASS interviewers. The majority of telephone numbers (65.6%) were determined to be non-residential , 20,435 (27.9%) were confirmed as residential, and the status of 4747 (6.5%) numbers could not be determined after repeated attempts. Of the 20,435 residential numbers, 14,199 (69.5%) were screened for eligibility and 4998 included one or more eligible household members aged 15 to 35 years. Survey interviews were completed with 2936 (58.7%) eligible respondents. Respondent refusal (28.9%), parental refusal to provide consent for a minor (1.3%), and inability to contact the eligible respondent after repeated attempts (11.1%) were major reasons that interviews did not occur.

Seventy-three percent of interviewed respondents (n=2136) provided a biological specimen for STI testing. Three specimens that were damaged and leaked during transit, one non-urine specimen, and 12 specimens without signed consent forms were not tested by the laboratory. Provision of a specimen did not vary by race, gender, age group, or marital status. However, survey respondents with less than a high school education (or who were more than two grades behind in school, if under age 20), were more likely to provide a biospecimen than more educated respondents, 81.5% v. 70.2%.

Respondent characteristics by sex

The mean age of women and men participating in the survey was 25 and 24.2 years, respectively (Table 1). Most respondents were black (66% of women and 58.4% of men), had a high school education or less (53% of women and 59.5% of men) and approximately three-fourths were never married. Approximately one-third of women (34%) and men (37.9%) were unemployed and the majority of women (76%) and men (77.7%) were never married.

Estimates of incarceration by sex

One in ten men (10.2%) reported incarceration in the past year and 14% reported incarceration more than one year ago in comparison to 3.5% and 7.8% of women, respectively ($p<0.001$). While 10.6% of men reported a sex partner with previous incarceration (4.5% within the past year and 6.1% more than one year ago), over one-third of women reported having a sexual partner who had been incarcerated (15.3% within the past year and 21.7% more than one year ago, $p<0.001$).

Incarceration and high-risk sexual partnerships in the past year

Women

Personal Incarceration: Women who were incarcerated in the past year were over five times as likely to report five or more sexual partners in the past year compared to women

with no history of incarceration (PR=5.6, 95%CI 2.5,12.4, Table 2). After adjusting for respondent's age, race, education, employment, marital status, and recent illicit drug use, the PR was 3.4 (95%CI 1.3, 8.9). The reduction in PR was primarily a result of controlling for illicit drug use: one in ten (10.6%) women who had been incarcerated in the past year also reported illicit drug use in the past year compared to 1.1% of women with no history of incarceration ($p < 0.001$). Women who had been incarcerated more than one year ago were also more likely to report recent multiple partners compared to women with no incarceration history (PR=3.7, 95%CI 1.8, 7.4). Adjustment for sociodemographic characteristics and drug use had little effect on this association (adjusted PR=3.1, 95%CI 1.5, 6.4).

Recent incarceration among women also was strongly associated with partner concurrency in the past year. Women who reported incarceration in the past year were 2.7 times (95% CI 1.9, 4.0) as likely to report a partner with concurrent sexual relationships in the past year compared to women who had not been incarcerated. After adjustment for sociodemographic variables and illicit drug use, the association between recent incarceration and partner concurrency remained robust (adjusted PR=2.4, 95%CI 1.6, 3.7).

Partner's Incarceration: Women who reported that a sexual partner had been incarcerated in the past year were three times more likely than women without an incarcerated partner to have five or more sexual partners in the past year (adjusted PR=4.7, 95%CI 2.4, 9.0) or to have a partner in the past year with concurrent sexual partners (adjusted PR=2.8, 95%CI 2.1, 3.7) in adjusted analyses. Among women whose partner(s) had been incarcerated more than a year ago, prevalence ratios were smaller, but the association with multiple partners and partner concurrency remained after adjusting for demographic characteristics and drug use (adjusted PR=3.2, 95%CI 1.6, 6.2 and adjusted PR=2.0, 95%CI 1.5, 2.7, respectively).

Men—The strong associations between personal and partner incarceration and high-risk sexual partnerships in the past year among women also were observed among men. Men who had been incarcerated in the past year or who had a partner that had recently been incarcerated were twice as likely to report multiple partners in the past year (adjusted PR=2.1, 95%CI 1.3, 3.4 and adjusted PR=4.0, 95%CI 2.6, 6.2, respectively). Likewise, men reporting personal or partner incarceration in the past year were more likely to have partner(s) in the past year with concurrent sexual partnerships compared to men who had never been incarcerated, and these associations remained significant after adjusting for sociodemographic characteristics and illicit drug use (adjusted PR=2.6, 95%CI 1.7, 4.1 and adjusted PR=3.8, 95%CI 2.4, 5.9, respectively).

Incarceration and current STI

Women and men who reported incarceration in the past year were over twice as likely to test positive for an STI (women PR= 2.1, 95%CI 1.2, 3.8; men PR=2.4, 95%CI 1.1, 5.3; Table 3). After adjustment for sociodemographic characteristics and illicit drug use the associations were reduced and were no longer statistically significant (women: adjusted PR=1.5, 95%CI 0.9, 2.7; men: adjusted PR=1.7, 95%CI 0.8, 3.9).

Among women, but not men, there was a strong association between having an incarcerated partner in the past year and a current STI. One-third (30.1%) of women reporting an

incarcerated partner in the past year tested positive for an STI (PR=3.3, 95%CI 2.2, 4.9) compared to 16% of those whose partner had been incarcerated more than a year ago (PR=1.7, 95%CI 1.1, 2.8) and 9.2% of women who never had an incarcerated partner. After adjusting for sociodemographic variables and drug use, the association between having a partner incarcerated in the past year and a current STI remained (adjusted PR =2.3, 95%CI 1.5, 3.5).

DISCUSSION

Incarceration among young men in Baltimore is common. Nearly one in four males report previous incarceration and 10.1% report being in jail, prison, or a detention center in the past year. Consequently, over one-third of young female adults in Baltimore report a sexual partner with a history of incarceration and 15.3% report an incarcerated partner(s) in the past year. High-risk sexual partnerships--including multiple and concurrent partnerships in the past year --were disproportionately high among the previously incarcerated and those whose sexual partner(s) were recently incarcerated, and these associations remained robust independent of personal socio-demographic factors and illicit drug use.

Among women, incarceration of a partner also was associated with current STI independent of confounding factors including recent substance use, highlighting the potential importance of partner's incarceration as a STI risk factor among women. It has been asserted that incarceration may influence the STI risk of partners left behind in the community. When a partner is incarcerated, new and/or concurrent partners may be sought to meet financial and emotional needs.[17] Among men, partner's incarceration was a marker for but was not an independent correlate of current STI however small sample sizes may have limited our ability to detect an effect.

These results corroborate prior studies identifying incarceration as an independent correlate of STI-related risk behaviors.[1-2, 5, 8-9] Engagement in multiple partnerships and in partnerships with high-risk partners who were involved in concurrent sexual partnerships – important determinants of STI risk -- were much more common among both men and women with a history of either personal incarceration or partner incarceration. Our findings suggest that incarceration may contribute to STI risk not only by influencing risk of engagement in high-risk behaviors but also by influencing risk of contact with high-risk partners who engage in concurrent partnerships and who hence have elevated risk of infection. Given the high prevalence of incarceration in Baltimore, this study highlights the population-level importance of incarceration's effects on sexual behaviors and STI risk. Our results suggest that public health interventions, such as STI screening and treatment in correctional settings, could have a substantial impact on community health. Further qualitative and quantitative research to better understand the causal pathways through which incarceration of a partner leads to infection among those in the community is needed.

Unfortunately, our study did not measure the duration of incarceration, the number of times incarcerated, or the reason for incarceration. Measures of incarceration, both respondent and partner, were self-reported and although the use of T-ACASI has been shown to reduce biases associated with the reporting of sensitive behaviors [21-24], our estimates may be

underestimated due to respondent recall or knowledge of partners' incarceration history. The survey did not collect detailed data on incarceration within specific partnerships or on the nature of those partnerships, a result of limitations on the length of the T-ACASI questionnaire. Our data were cross-sectional, so it is not possible to determine temporal associations between risk behaviors and timing of incarceration; however we attempted to minimize these effects by examining measures of behavioral outcomes that occurred in the past year. Finally, we note that results from the MSSP can only be generalized to the population that was sampled, and this was restricted to English-speaking households with landline telephones. U.S. Census data indicate that over 96% of the population spoke English and that 92.7% of Baltimore households were telephone accessible during the survey period.[26,28] To the extent that household instability and poverty may be associated with both the likelihood of incarceration and the absence of landline telephones, our survey may underestimate the proportion of the Baltimore population that has experienced incarceration.

Our findings highlight the marked racial and educational disparities in incarceration in Baltimore. Our results suggest that one-third of black men and one-third of men with a high school education or less had a history of incarceration, while nearly one half of black women and over four in ten women with a high school education or less reported an incarcerated sexual partner. Social policies and population-level interventions that encourage educational achievement and school completion, that address racial and income disparities in arrests and incarceration, that offer men and women equal access to resources and opportunities, and that encourage youth employment and training should be encouraged as an important goal in itself, and as a means of addressing the factors driving STI racial disparities in the U.S. population.

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Key Messages

Incarceration may increase STI risk by influencing engagement in high risk behaviors and contact with high-risk sexual partners.

Marked racial and education disparities persist in incarcerated populations.

Public health interventions, such as STI screening and treatment in urban correctional facilities, could have an important impact on community-level health.

TABLE 1

Characteristics of study respondents by sex: Monitoring STIs in the Population, 2006-09

	Women (n=1,843)		Men (n=1,093)		
	%	(n)	%	(n)	
Demographic					
Age (*yrs*)					
15-19	24.0	(427)	31.0	(348)	
20-24	25.7	(430)	21.0	(219)	
25-29	22.0	(443)	23.8	(254)	
30-35	28.4	(543)	24.2	(272)	
mean	25.0		24.2		*p=0.008*
Race					
Black	66.0	(1221)	58.4	(631)	
NonBlack	34.0	(621)	41.6	(461)	*p=0.001*
Education [a]					
Less than High School	25.4	(438)	31.7	(341)	
High school	27.6	(455)	27.8	(279)	
Some college/trade school	25.8	(468)	19.2	(207)	
College+	21.2	(480)	21.2	(264)	*p=0.002*
Employed [b]					
Full-time	45.7	(863)	45.2	(514)	
Part-time	20.3	(371)	16.8	(190)	
Unemployed	34.0	(609)	37.9	(388)	*p=0.09*
Marital status					
Never married	76.0	(1404)	77.7	(863)	
Married	19.0	(349)	19.6	(202)	
Widowed or divorced	5.0	(89)	2.7	(28)	*p=0.04*
Incarceration status					
Ever incarcerated for >24 hr					
Within past year	3.5	(55)	10.2	(103)	
Over one year ago	7.8	(125)	14.0	(136)	
Never	88.7	(1658)	75.9	(850)	*p<0.001*
Partner incarcerated for >24 hr					
Within past year	15.3	(262)	4.5	(41)	
Over one year ago	21.7	(379)	6.1	(67)	
Never [c]	63.0	(1185)	89.4	(974)	*p<0.001*

Notes: Weighted %s, unweighted sample Ns

[a] 7.2% of 15-17 year olds and 9.8% of 18-20 year olds were behind the expected grade in school.

[b] Only one quarter (24.8%) of 15-17 year olds reported full- or part-time employment. Among those aged 18 years and older, 27.6% of women and 27% of men were unemployed.

[c] Respondents reporting 0 lifetime partners recoded as having no partners incarcerated

Table 2

Association between incarceration and high-risk sexual partnerships by sex: Monitoring STIs in the Population, 2006-09

	5+ partners past year				
	%	PR	95% CI	adj PR [a]	95% CI
WOMEN					
Incarcerated for 24+ hours in past yr (n=55)	16.2	5.6	(2.5, 12.4)	3.4	(1.3, 8.9)
Incarcerated for 24+ hours >1 yr ago (n=125)	10.7	3.7	(1.8, 7.4)	3.1	(1.5, 6.4)
Never incarcerated (n=1655)	2.9	1		1	
Partner incarcerated 24+ hrs past yr (n=260)	10.6	7.0	(3.5, 13.8)	4.7	(2.4, 9.0)
Partner incarcerated >1 year ago (n=379)	6.3	4.2	(2.1, 8.4)	3.2	(1.6, 6.2)
Partner never incarcerated (n=1184)	1.5	1		1	
MEN					
Incarcerated for 24+ hours in past yr (n=103)	28.0	2.8	(1.8, 4.4)	2.1	(1.3, 3.4)
Incarcerated for 24+ hours >1 yr ago (n=136)	18.1	1.8	(1.2, 2.9)	1.5	(0.8, 2.6)
Never incarcerated (n=850)	9.9	1		1	
Partner incarcerated 24+ hrs past yr (n=41)	50.5	5.0	(3.3, 7.8)	4.0	(2.6, 6.2)
Partner incarcerated >1 year ago (n=67)	25.4	2.5	(1.5, 4.2)	2.1	(1.2, 3.5)
Partner never incarcerated (n=974)	10	1		1	
	Partner past yr had other partner(s) [b]				
WOMEN					
Incarcerated for 24+ hours in past yr (n=55)	45.5	2.7	(1.9, 4.0)	2.4	(1.6, 3.7)
Incarcerated for 24+ hours >1 yr ago (n=125)	34.0	2.0	(1.5, 2.8)	1.7	(1.2, 2.4)
Never incarcerated (n=1657)	16.6	1		1	
Partner incarcerated 24+ hrs past yr (n=262)	38.0	3.3	(2.5, 4.4)	2,6	(2.0, 3.5)
Partner incarcerated >1 year ago (n=379)	27.5	2.4	(1.8, 3.2)	2.0	(1.5, 2.7)
Partner never incarcerated (n=1184)	11.4	1		1	
MEN					
Incarcerated for 24+ hours in past yr (n=103)	32.2	3.1	(2.0, 4.7)	2.6	(1.7, 4.1)
Incarcerated for 24+ hours >1 yr ago (n=136)	23.1	2.2	(1.4, 3.4)	1.8	(1.1., 3.0)
Never incarcerated (n=850)	10.4	1		1	
Partner incarcerated 24+ hrs past yr (n=41)	48.2	4.3	(2.7, 6.8)	3.8	(2.4, 5.9)
Partner incarcerated >1 year ago (n=67)	35.9	3.2	(2.1, 4.9)	2.6	(1.6, 4.2)
Partner never incarcerated (n=974)	11.2	1		1	

[a] PR adjusted for race, age, employment, education, marital status, and illicit drug use (cocaine or injection drugs) in the past year

[b] Partner concurrency was assessed from the survey question, "As far as you know, during the past year, did any of your partners have other sexual partners during the time you were having sex with them?"

Table 3

Association between incarceration and current STI by sex: Monitoring STIs in the Population, 2006-09

	Current STI				
	%	PR	95% CI	adj PR [a]	95% CI
WOMEN					
Incarcerated for 24+ hours in past yr (n=46)	28.4	2.1	(1.2, 3.8)	1.5	(0.9, 2.7)
Incarcerated more than one year ago (n=99)	16.0	1.2	(0.7, 2.1)	1	(0.6, 1.7)
Never incarcerated (n=1175)	13.3	1		1	
Partner incarcerated 24+ hrs past yr (n=206)	30.1	3.3	(2.2, 4.9)	2.3	(1.5, 3.5)
Partner incarcerated >1 year ago (n=282)	16.0	1.7	(1.1, 2.8)	1.3	(0.8, 2.1)
Partner never incarcerated (n=825)	9.2	1		1	
MEN					
Incarcerated for 24+ hours in past yr (n=72)	14.4	2.4	(1.1, 5.3)	1.7	(0.8, 3.9)
Incarcerated more than one year ago (n=114)	6.9	1.2	(0.5, 2.8)	1.2	(0.5, 3.1)
Never incarcerated (n=610)	6.0	1		1	
Partner incarcerated 24+ hrs past yr (n=30)	16.1	2.5	(0.8, 7.6)	1.6	(0.5, 5.3)
Partner incarcerated >1 year ago (n=52)	8.7	1.4	(0.6, 4.0)	1.3	(0.4,3.6)
Partner never incarcerated (n=709)	6.4	1		1	

Note: Current STI indicates infection with trichomoniasis, chlamydial infection, and/or gonorrhea.

[a] PRs adjusted for race, age, education, employment status, marital status, and illicit drug use in the past year.