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## Time Since Release from Incarceration and HIV Risk Behaviors Among Women: The Potential Protective Role of Committed Partners During Re-entry

**Lauren E. Hearn, Nicole Ennis Whitehead**

Department of Clinical and Health Psychology, College of Public Health and Health Professions, University of Florida, 1225 Center Drive, P.O. Box 100165, Gainesville, FL 32610-0165, USA

**Maria R. Khan,**

Department of Epidemiology, College of Public Health and Health Professions, University of Florida, 1225 Center Drive, P.O. Box 100165, Gainesville, FL 32610-0165, USA

**William W. Latimer**

Department of Clinical and Health Psychology, College of Public Health and Health Professions, University of Florida, 1225 Center Drive, P.O. Box 100165, Gainesville, FL 32610-0165, USA

### Abstract

After release from incarceration, former female inmates face considerable stressors, which may influence drug use and other risk behaviors that increase risk for HIV infection. Involvement in a committed partnership may protect women against re-entry stressors that may lead to risky behaviors. This study measured the association between time since release from incarceration (1–6 months ago, and >6 months ago *versus* never incarcerated) and HIV risk behaviors and evaluated whether these associations differed by involvement in a committed partnership. Women released within the past 6 months were significantly more likely to have smoked crack cocaine, used injection drugs and engaged in transactional sex in the past month compared to never-incarcerated women and women released more distally. Stratified analyses indicated that incarceration within the past 6 months was associated with crack cocaine smoking, injection drug use and transactional sex among women without a committed partner yet unassociated with these risk behaviors among those with a committed partner.

### Keywords

Incarceration; Drug use; HIV; Committed partner

### Introduction

Women with an incarceration history represent a vulnerable population for HIV infection, with HIV rates five to fifteen times that of the general U.S. female population [1]. Drug-related offenses and transactional sex are the leading causes of women's incarceration and

are also strong determinants of HIV infection [2–7]. Among individuals with an incarceration history, most HIV infections are acquired in the community rather than in correctional settings [8]. Given that many incarcerated women are in jail or prison as a result of drug use and/or drug trade, it is not surprising that high levels of drug use have been observed among former female inmates following release from incarceration [9]. Additionally, high rates of repeated arrests have been reported among women who engage in transactional sex [10]. While the behaviors that lead to women’s arrest and incarceration are well documented, the HIV risk behaviors of former female inmates in the community remain poorly understood.

Though evidence suggests that time since release from incarceration may influence HIV risk behaviors, these studies have been primarily conducted in men. Some studies report that the first weeks and months in the community are characterized by high levels of substance use and risky sexual behavior followed by a decline in prevalence, while other studies suggest that the prevalence of these behaviors may remain steady or increase in the months after release [9, 11, 12]. There is a need for additional research on the time frame when risk of engaging in HIV-related risk behaviors is greatest after release from incarceration and the degree to which incarceration itself may increase risk of these behaviors among women.

Upon returning to the community, former female inmates face considerable stressors that may contribute to HIV-related drug use and sexual risk behaviors. Former inmates have immediate needs for food, clothing, safe housing and medical care [13]. Among women who used drugs prior to incarceration, few women enter or maintain participation in treatment programs after release [12, 13]. Job prospects of former female inmates are often diminished by limited work experience and low educational attainment, and many receive low levels of financial and emotional support from friends and family [14–16]. Therefore, women may return to drugs to help meet financial challenges and to cope with the stresses of reentry [9].

Social support needs for former female inmates may be higher than that of men [17]. Models of women’s psychological health have asserted the importance of relationships and interpersonal connections to women’s health, suggesting that women often turn to substance use to initiate or maintain connections with others, and to cope with feelings of stress and isolation [18–20]. Despite overall low levels of social support documented for female inmates, male romantic partners appear to represent a prominent source of social support for these women, and they may influence a woman’s risk of drug use and sexual risk behaviors following release from incarceration. For some women, involvement in a partnership during re-entry may increase drug risk, as empirical evidence suggests that marriage or cohabitation with a male partner may increase the likelihood of illicit drug use [21, 22]. A partner may also increase risk of sexual transmission of HIV; women may acquiesce to her partner’s desire for unprotected sex in order to maintain harmony in the relationship [23]. However, low social support has been associated with more frequent post-release drug use [24]. Hence, absence of a partner, potentially due to incarceration-related disruption of partnerships, may lead to lower tangible and emotional support among former inmates and to increased risk taking. No studies to our knowledge have examined the potential for involvement in a committed partnership to influence HIV risk behaviors among recently released female offenders.

Therefore, to better understand risk and protective factors in the post release period, this study explored HIV-related drug use and sexual risk behaviors after release from incarceration and the potential moderating effect of a committed partner on post-release risk behaviors. For the purposes of this study, the experiences jail and prison were both regarded as disruptive, stressful life events that destabilize individuals' economic opportunities, health, and social ties [25, 26]. Using data from female respondents of NEURO-HIV Epidemiologic Study, a study of non-injection and injection drug users in Baltimore, MD, we investigated associations between time since release from incarceration and past-month: binge drinking, crack cocaine smoking, injection drug use, transactional sex, lack of condom use, alcohol use before or during sex, and drug use before or during sex. The drug use behaviors included in the study have been linked to heightened HIV risk; alcohol reduces inhibitions, impairs judgment and has been associated with unprotected sexual encounters and multiple sex partners [27, 28]. Crack cocaine has also been associated with impulsivity and risky sexual behaviors, while injection drug use directly facilitates virus transmission [29–31]. Alcohol and drug use before or during sex have been associated with unprotected sexual encounters and risky sexual partners [32–34]. Condom use behavior was assessed by condom use at last sex, which is considered a valid indicator of typical condom use behaviors over longer periods of time [35]. Additionally, we explored whether involvement in a committed partnership, a relationship lasting at least three months and where the partners cohabitate or are married, affected these associations.

## Methods

### Study Population

The current study used the baseline data from a subset of the 479 female participants included in the NEURO-HIV Epidemiologic Study [36, 37]. The study was approved by the University of Florida's Institutional Review Board and has received annual renewals.

The present analyses were conducted on baseline data. The final sample size for these analyses ( $n = 450$ ) was reached after excluding participants who were missing data on their incarceration history ( $n = 15$ ) or their partnership status ( $n = 3$ ). Additionally, participants that reported a release date within the past month were excluded ( $n = 11$ ) to ensure that the behaviors of interest occurred in the community. Sample characteristics are presented in Table 1.

## Measures

### Measure of Incarceration

Participants were asked if they had ever in their lifetime spent time in juvenile detention, jail, or a correctional facility and were asked the date of their last release. The current study limited the definition of incarceration to individuals who reported serving time in jail or a correctional facility. Participants who reported no lifetime history in either institution were assigned to the *Never incarcerated* group. Among participants with an incarceration history, the reported last release date was subtracted from the date of the interview to determine length of time since release. Participants with an incarceration history were assigned to

*Released 1–6 mo ago* or *Released >6 mo ago*. Previous studies have defined recent incarceration as occurring within the past 6 months [24, 38].

### Measure of Partnership Status

In the baseline assessment, participants were asked their marital status, who they live with, if they had a steady male sexual partner within the past 3 months, and if so, how long that partnership had lasted. The current study defined a *Committed partnership* as a relationship with a main partner lasting at least 3 months and one in which the couple either cohabitates or is married. Participants were assigned to *No committed partner* if their present partnership did not meet the *committed* criteria or if they did not report a steady sexual partner in the past 3 months. The required duration of the partnership (3 months) and the additional requirement of marriage or cohabitation were applied to capture a context where both individuals have expressed commitment to, and potentially support for, the other. A 3-month duration is an accepted length of steady sexual partnerships in previous studies of risk behaviors within the context of a steady sexual partner [39, 40].

### Measure of Past-Month Drug Use

The following drugs were examined due to their association with heightened risk of HIV acquisition: binge drinking, smoked crack cocaine and injection of any drug. Participants were asked how many days over the past 30 days they had consumed alcohol, and approximately how many drinks they consumed each occasion that they drank. In this study, binge drinking was defined according to the National Institute of Alcohol Abuse and Alcoholism guidelines as four or greater alcoholic beverages per occasion for women [41]. Participants were asked (yes/no) if they had smoked crack in the past 30 days and if they had injected any of the following drugs in the past 30 days (yes/no): amphetamines, ecstasy, heroin, cocaine, GHB, ketamine, LSD, methamphetamines, PCP, or prescription narcotics. In this study, “injection drug use” encompassed injection of any drug, and injection drugs were not examined separately due to emphasis on the injection behavior as posing HIV risk. Additionally, we examined sharing injection equipment in the past month (yes/no), which encompassed sharing needles, cookers, cottons, and/or rinse water.

### Measure of Past-Month Sexual Risk Behaviors

We examined report of the following behaviors in the past month (yes/no): transactional sex, alcohol use before/during sex, drug use before/during sex, and condom use at last sex.

### Sociodemographic and Other Potential Confounding Variables

Characteristics that were examined as potential confounders in the analyses included race (dichotomized as Black or non-Black), self-reported history of psychopathology (an emotional/behavioral condition that was treated by a psychologist/psychiatrist), educational level (dichotomized to those with <a high school diploma or GED equivalent, and those with at least a high school diploma or equivalent), lifetime number of years incarcerated, and past six-month employment history (dichotomized as employed at a regular or temporary job, or no regular or temporary employment).

## Statistical Analysis

The primary goals of this study were to: investigate the main effect of incarceration history on past-month HIV risk behaviors, and to explore the potential effect of partnership status on this relationship. We first examined associations between the socio-demographic and other potentially confounding variables with incarceration history and past-month drug use using the Chi square test. The odds ratio and 95 % confidence interval (CI) for the main effect of incarceration history on past-month risk behaviors was then calculated for each of the drug outcomes using binary logistic regression. This regression was re-run, stratifying by partnership status to illustrate the relationship between incarceration history and risk behaviors in partnered and unpartnered women. To obtain the adjusted odds ratios, sociodemographic variables that were associated with incarceration history ( $p < 0.05$ ) were entered in the model to control for potential confounding effects. Covariates that were significantly related to incarceration history included: age, history of psychopathology, and educational attainment. Standardized  $\beta$ , Wald statistic and  $p$  values were calculated for each variable. For each model, the Hosmer and Lemeshow test and Nagelkerke R-square values were reported.

## Results

### Incarceration History

The majority of the sample had spent time in either jail or prison, with 17 % of the sample released 1–6 months ago (Table 2). Fifty-seven percent of the sample was released more than six months ago. The two groups of previously-incarcerated women did not differ in lifetime total years spent incarcerated,  $t(329)0.02$ ,  $p = 0.90$ .

### Associations Between Incarceration History and Past-Month Drug Use

Recent incarceration was strongly associated with past-month crack smoking [odds ratio (OR) = 2.86, 95 % confidence interval (CI) 1.56–5.23]. There was also a trend towards significance for the association between recent incarceration and binge drinking ( $p = 0.08$ ) and for the association between recent incarceration and injection drug use ( $p = 0.082$ ). After adjusting for confounding variables, the pattern of significance remained unchanged for crack smoking. Sharing injection equipment had a very low prevalence in the sample (2.4 %) and thus was excluded from analyses.

### Associations Between Incarceration History and Past-Month Sexual Risk Behavior

Recent incarceration was associated with past-month transactional sex (OR = 11.30, 95 % CI 4.05–31.5). However these analyses are considered exploratory due to the low prevalence of this behavior reported in the sample. The other sexual risk behaviors (lack of condom use, alcohol use before/during sex, and drug use before/during sex) did not differ significantly based on incarceration history.

### Interaction with Partnership Status

The sample was stratified by committed partnership status, and the adjusted odds ratios are presented in Table 2. Recently-released women without a committed partner were more

likely to smoke crack (AOR = 2.55, 95 % CI 1.22–5.32) and engage in injection drug use (AOR = 2.66, 95 % CI 1.18–6.01) than partnered women who were never incarcerated. Additionally, they were more likely to engage in transactional sex (AOR = 11.3, 95 % CI 3.65–34.9), though this result should be interpreted with caution due to the low overall prevalence of the behavior in the sample. Among those with a committed partner, no significant differences were observed between never- and recently-incarcerated women for smoked crack, injection drug use, and transactional sex.

## Discussion

Consistent with previous research, this study highlights the months following release from incarceration as a high-risk period for drug use and sexual risk behaviors [11, 42–45]. Women in this sample released from incarceration 1–6 months ago were more likely to have engaged in illicit drug use and transactional sex than women who were never incarcerated or released more distally.

This elevated rates of drug use and transactional sex following release from incarceration appeared to diminish with time, as women with more distal exposure to incarceration reported past-month behavior patterns that did not differ significantly from women who were never incarcerated. Longitudinal studies of released jail inmates and prisoners have found a trend of reduced drug use and risk behaviors at one year post-release [45–47]. This trend may reflect a gradual shift towards successful reintegration and social stability with time. Further, emotional reactions to the stress of reintegration may have eased, resulting in a greater ability for some women to resist drug use.

Community re-entry is a period characterized by instability and stressors that may trigger substance use and high-risk sexual behaviors. Former inmates often face unstable housing, homelessness and unemployment and may resort to drugs to cope with emotional distress from a disrupted life [48, 49]. They may also engage in transactional sex to meet financial and material needs [50, 51]. At the same time, many women experience a lack of social support as they attempt to repair and resume relationships with friends and family. Between 60 and 70 % of incarcerated women have at least one child under 18, and custody and childcare issues present a significant stressor after release [52, 53]. Mental health and substance treatment needs often remain unaddressed, and women may continue to engage in transactional sex to provide for a drug dependency or due to untreated mental illness [47, 54, 55]. At the same time, many women experience a diminished social network as they reenter the community due to strained relationships with friends and family. Consistent and positive social support reduces many re-entry challenges and has been associated with less drug use and risky sexual behavior in the first six months following prison release among males [24]. Among males, those who resumed behaviors characteristic of those prior to their arrest, such as illicit drug use and multiple sex partners, were less likely to have a steady sexual partner than those who more successfully reintegrated.

In this sample, the potential effect of a committed partner on recently released women's HIV risk behaviors was noteworthy. Among those with a committed partner, an increase in drug use was not observed in the first six months following release from incarceration. Women

without a committed partner had a higher use prevalence of crack smoking and injection drug use. The low prevalence of transactional sex in the sample does not allow us to draw any conclusions about this behavior. When examining the general pattern of results for transactional sex, recently-released women without a committed partner appeared more likely to engage in transactional sex, while a corresponding increase was not found among recently-released women that reported a partner.

All except one recently-released woman with a committed partner reported that their partnership was greater than six months in duration. Therefore, it is likely that partnered women released from incarceration within the past six months were in a relationship with their partner at the time of their release. The presence of a committed partner may have served as a source of emotional or instrumental support and protected against the stressors of re-entry that can lead to substance use and transactional sex. Alternatively, women with committed partners may have been less likely to engage in HIV risk behaviors than other women. However, past-month drug use did not differ significantly between women with and without committed partners in the overall sample, though there were significant differences in sexual risk behaviors in the overall sample based on partnership status. These findings related to sexual risk behaviors are consistent with previous studies showing that some risky sexual behaviors, such as inconsistent condom use, may be more likely to occur in the context of a steady sexual partnership [7, 56, 57]. Previous research suggests that a romantic partner provides an important source of social support for female inmates. In a sample of female jail inmates, most reported low perceived social support in general and from friends and family. However, three-fourths of the sample reported emotional support and comfort from significant others [58]. Miller's Relational Model suggests that women's psychological health, sense of well-being, and ability to cope with adversity rely heavily on relationships [19]. While some suggest women use drugs and engage in sexual risk taking to maintain connections, loneliness or an ended relationship can also trigger substance abuse to cope with strong feelings of distress [59–62]. This study did not obtain information on the partners' substance use patterns, the level of HIV risk that they posed to the women, or how much their habits affected the women's risk behaviors. However romantic partners, even substance-abusing partners, may provide critical support when friends or other family members pull away due to frustration or bitterness over a woman's ongoing substance problems and arrests [63]. In a study of female ex-offenders in drug treatment, 63 % named a partner as a main source of support. Over half of the partners actually tried to help the women stop using, though 39.6 % supported the woman while also enabling her drug use. The women described family and friends as much less likely to help them stop using [64]. In another study of former female inmates, negative partner influences were not significantly associated with drug use [65]. The relationship complexities of female former inmates who abuse substances or engage in transactional sex are considerable. This represents an important area for research in order to situate interventions in the context of a woman's relationships [66].

It should be pointed out that this sample does not capture women who were re-arrested, and the reduced prevalence of risk behaviors observed among women released greater than six months ago may reflect those who avoided risk behaviors and more successfully reintegrated. Recent estimates suggest that one-third of female jail inmates are rearrested

within a year of their release [67]. Additional limitations include the cross-sectional nature of the data, limiting the ability to draw a causal connection between the presence of a committed partner and reduced drug use. This study did not verify self-reported incarceration, demographic variables, partner status or past-month drug use and sexual risk taking information. It is possible that recall bias or social desirability bias created inaccuracies in the data. Despite these limitations, the prevalence of risk behaviors and incarceration experiences were consistent with previously reported figures [38, 68, 69]. Lifetime history of psychopathology among individuals in this sample with an incarceration history was similarly high compared to previously reported values among female jail detainees [70]. While the experience of jail and the experience of prison were both regarded as disruptive and stressful life events, differences between the facilities with respect to length of sentences, location (i.e., county jail vs. state prison), treatment services and transition programs may affect post-release behaviors. The impact of these institutional differences on outcomes should be further explored in future studies.

## Conclusion

While acknowledging these limitations, the current study sheds light on women's patterns of drug and alcohol use and sexual risk behaviors after release and highlights the potential protective influence of a committed partner on drug use during the risky community re-entry period. With high rates of relationship dissolution during incarceration, the potential protective influence of an intact relationship upon release is particularly noteworthy. Future studies should investigate the qualities of relationships that may help women resist substance use following release. Additionally, factors that allowed the relationship to remain intact should be explored.

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Demographic, drug use, and sexual risk behavior comparisons by incarceration history (*n* = 450)<sup>a</sup>

Table 1

Variable	Entire sample		Never incarcerated		Released 1–6 months ago		Released >6 months ago		Test statistics	
	M or N	SD or %	M or N	SD or %	M or N	SD or %	M or N	SD or %	$\chi^2$ or F	p value
N	450		120	26.7	75	16.7	255	56.7		
Age	35.89	9.31	32.43	10.96	35.72	7.99	37.56	8.37	13.04	<0.001
Race/ethnicity										
Black	319	70.9	82	68.3	46	61.3	191	74.9	9.2	0.056
Non-black	131	29.1	38	31.7	29	38.7	64	25.1		
Education									13.56	0.001
<High school	212	47.1	39	32.8	39	52.0	134	52.5		
High school or GED	237	52.7	80	67.2	36	48.0	121	47.5		
Partnership status									10.61	0.005
Committed partner	167	37.1	36	30.0	20	26.7	111	43.5		
Lifetime total years incarcerated	1.62	3.55	-	-	2.27	4.14	2.35	4.06	0.02	0.90
History of psychopathology	290	64.4	67	55.8	53	70.7	170	67.2	5.99	0.05
Employed past 6 months	153	34.0	50	41.7	25	33.3	78	30.7	4.38	0.11
HIV+	36	8.0	9	8.8	2	3.2	25	13.0	5.21	0.074
Past 30 day sex risk behaviors										
Transactional sex	46	10.2	6	5.0	24	32.0	16	6.3	46.66	<0.001
Lack of condom use	300	66.7	77	63.6	50	64.3	173	67.7	0.6	0.74
Used alcohol before/during sex	91	20.2	22	18.3	19	25.3	50	19.6	1.54	0.46
Used drugs before/during sex	158	34.0	45	37.5	34	45.3	79	31.0	5.65	0.059
Past 30 day drug use										
Binge drinking	110	24.4	28	23.5	26	35.1	56	22.5	5.04	0.08
Smoked crack	160	35.6	33	27.5	39	52.0	88	34.5	12.37	0.002
Injection drug use	123	27.3	32	26.7	29	38.7	62	24.3	6.05	0.049
Risky injection practice	11	2.4	2	1.7	0	0	9	3.5	-	-

<sup>a</sup> N may vary slightly according to missing data

**Table 2**

Logistic-regression-analysis adjusted odds ratios (AOR) and 95 % confidence intervals (CI) for relations of incarceration history to past-month smoked crack, injection drug use and transactional sex, by partnership status ( $n = 450$ )

Risk behavior	Entire sample					No committed partner					Committed partner							
	$\beta$	SE	$\beta$	AOR <sup>a</sup> (CI)	$\chi^2$	$p$	$\beta$	SE	$\beta$	AOR <sup>a</sup> (CI)	$\chi^2$	$p$	$\beta$	SE	$\beta$	AOR <sup>a</sup> (CI)	$\chi^2$	$p$
Smoked crack					25.59	<0.001					17.24	0.004					9.52	0.09
Never incarcerated				Referent						Referent								
Released >6 months ago	0.14	0.26	1.14	(0.69, 1.91)		0.59	0.03	0.32	0.97	(0.52, 1.80)		0.93	0.55	0.49	1.74	(0.65, 4.54)		0.35
Released 1–6 months ago	0.96	0.32	2.61	(1.39, 4.87)		0.003	0.94	0.38	2.55	(1.22, 5.32)		<0.001	0.94	0.64	2.56	(0.73, 8.92)		0.14
Injection drug use																	5.89	0.32
Never incarcerated				Referent		0.001				Referent		0.003				Referent		
Released >6 months ago	0.02	0.27	1.02	(0.60, 1.74)		0.94	0.08	0.38	1.08	(0.74, 2.28)		0.83	0.35	0.43	0.71	(0.31, 1.63)		0.41
Released 1–6 months ago	0.64	0.33	1.90	(0.99, 3.63)		0.052	0.98	0.42	2.66	(1.18, 6.01)		0.02	0.12	0.60	1.12	(0.35, 3.60)		0.85
Transactional sex																	6.25	0.28
Never incarcerated				Referent		<0.001				Referent		<0.001				Referent		
Released >6 months ago	0.52	0.52	1.68	(0.60, 4.71)		0.32	0.37	0.61	1.45	(0.44, 4.74)		0.54	1.30	1.15	3.65	(0.39, 34.65)		0.26
Released 1–6 months ago	2.42	0.52	11.30	(4.05, 31.5)		<0.001	2.43	0.58	11.3	(3.65, 34.9)		<0.001	2.04	1.32	7.66	(0.54, 102.1)		0.12

<sup>a</sup> Adjusted for age, education and history of psychopathology

<sup>b</sup> Chi square statistic for the difference in  $-2$  Log likelihood of the null model and the full predictive model, with 5 degrees of freedom