

Unprotected Sex Among HIV-Positive Injection Drug-Using Women and Their Serodiscordant Male Partners: Role of Personal and Partnership Influences

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Summary: We investigated the characteristics of human immunodeficiency virus (HIV)-positive injection drug-using women who reported unprotected vaginal and/or anal sex with HIV-negative or unknown serostatus (serodiscordant) male partners. Of 426 female study participants, 370 were sexually active. Of these women, 39% (144/370) and 40% (148/370) reported vaginal and/or anal sex with serodiscordant main and casual partners, respectively. Sixty percent of women inconsistently used condoms with their serodiscordant main partners, whereas 53% did so with casual partners. In multivariate analysis, during sex with main partners, inconsistent condom users were less likely to feel confident about achieving safe sex (self-efficacy), personal responsibility for limiting HIV transmission, and that their partner supported safe sex. Inconsistent condom use was also more likely among women who held negative beliefs about condoms and in couplings without mutual disclosure of HIV status. Regarding sex with casual partners, inconsistent condom users were more likely to experience psychologic distress, engage in sex trading, but they were less likely to feel confident about achieving safe sex. These findings suggest that there are widespread opportunities for the sexual transmission of HIV from drug-using women to HIV-uninfected men, and that reasons vary by type of partnership. Multifaceted interventions that address personal, dyadic, and addiction problems are needed for HIV-positive injection drug-using women.

Key Words: HIV, serodiscordant, sexual risk behavior, injection drug user, condom use, women

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In countries such as the United States, where incidence of the human immunodeficiency virus (HIV) is relatively low

and the availability of highly active antiretroviral treatment can prolong life, focusing prevention efforts on HIV-positive persons to limit HIV transmission may be a more efficient strategy than directing prevention efforts toward those at risk. Community acceptance of such an approach is growing, and recent national guidelines articulate ways to work with those who are already HIV positive.^{1–3} This new prevention paradigm, along with an HIV epidemic among injection drug users (IDUs) that may be increasingly fueled by unsafe sex,^{4,5} means that prevention with HIV-positive individuals should, correspondingly, include a focus on the sexual behaviors of IDUs.

By 2001, in the United States, HIV transmission via IDU or heterosexual contact accounted for half of all HIV infections among those people living with HIV, and IDUs were estimated to be the second largest risk group among those living with AIDS.⁶ Although the likelihood of acquiring HIV during heterosexual contact is much higher for women than men, HIV can be sexually transmitted to men.^{7,8} In addition, HIV-positive drug-using women are less likely than non-drug-using women to be receiving highly active antiretroviral treatment⁹ and therefore are more likely to have advanced disease and higher viral loads, which in turn increases the risk of HIV transmission.¹⁰

Studies of the sexual behavior of HIV-positive women with serodiscordant male partners suggest that these encounters present opportunities for HIV transmission as condom use is insufficient and anal sex is not rare.^{7,11,12} The few studies involving HIV-positive drug-using women suggest that whereas condom use is more frequent among HIV-positive than HIV-negative women, it remains insufficient^{13–16} and may be even less likely among IDU women.^{17–19} Other studies suggest that IDU women may feel less responsible for protecting their partner after disclosing their HIV status²⁰ and highlight challenges faced by women in convincing their male partners to use condoms.^{21,22}

Relationship dynamics may also influence HIV risk. Among HIV-positive women, unprotected sex is more likely with male partners who are also HIV positive,^{11,13,16,23} varies by whether a partner is considered a main or casual partner,¹¹ and is more likely when the male partner desires children.^{24,25} The impact that other relationship dynamics, such as disclosing HIV status, have on sexual risk is not clear.^{20,26} Thus, it is important to understand both personal and relationship aspects as these may shape sexual risk. In the present analysis, we characterized the sexual behavior of HIV-positive IDU women during encounters with HIV-negative or unknown serostatus

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male partners. We identified how 3 domains of women's lives—individual, relationship, and social—were associated with inconsistent condom use.

METHODS

Study Sample

Baseline data were analyzed from the Intervention for Sero-Positive IDUs—Research and Evaluation (INSPIRE) study, a randomized trial of a 10-session behavioral intervention to reduce risky sexual and injection behaviors and improve health care use and adherence among HIV-positive IDUs. The study, described in detail elsewhere,²⁷ enrolled 1161 men and women in Baltimore, Miami, New York, and San Francisco. Individuals were eligible for the study if they were at least 18 years old, able to communicate in English, confirmed as HIV positive by means of an oral specimen (OraSure, OraSure Technologies, Inc., Bethlehem, PA), and reported both IDU in the past 12 months and sex with an opposite sex partner in the past 3 months. Of the 426 women enrolled, 86.8% (370/426) were sexually active at baseline; of these, 35.9% (133/370) had sex exclusively with HIV-positive men and are not analyzed here. We performed analyses for 144 and 148 women who had sex with main and casual partners, respectively, who were of negative or unknown HIV serostatus. Fifty-three women had both types of partners. Some women ($n = 45$) had sex with both men and women; however, given homogeneity with respect to the outcome and other correlates, modeling was done without adjustment for this distinction.

Dependent Variable

Since this analysis was concerned with HIV transmission, the dependent variable was self-reported vaginal and/or anal sex acts with male partners who were known to the participant as HIV negative or of unknown serostatus (herein referred to as serodiscordant). The analysis was separately conducted for main versus casual partners because condom use may vary by this dimension. A main partner was defined as a boyfriend, spouse, or significant other. Casual partners were defined as a friend, acquaintance, or a stranger who was not a commercial sex partner. The dependent variable was dichotomized into women reporting either inconsistent (at least 1 episode of condom-unprotected vaginal and/or anal sex) or consistent condom use (referent group). This cut point was used because only consistent condom use is associated with reduced HIV transmission among serodiscordant pairs.⁷ This approach also made it possible to identify characteristics of women most in need of support for limiting the sexual spread of HIV. To facilitate comparison with other reports,²⁸ we also present data on the proportion of vaginal and anal sex acts that were protected with condoms.

Independent Variables

All variables were collected via self-report through audio-computer-assisted-structured interviewing (ACASI) (Questionnaire Development System, NOVA Research Company, Bethesda, MD). The recall period for all behaviors was 3 months prior unless otherwise noted. Individual-level variables evalu-

ated included demographics (age, race/ethnicity, education, income, employment, incarceration, sexual orientation), sexual activity (number of partners, frequency of sex), years since HIV diagnosis and injecting drugs, illicit drug use (crack/cocaine; heroin, both crack/cocaine and heroin, other, none), sharing of injection paraphernalia (yes/no), the use of alcohol or drug during sex (always/usually, sometimes, never), and whether a woman had traded sex for money or drugs (yes/no).

We also considered 5 psychologic constructs. For these variables, no referent timeframe was specified except where noted. Psychologic distress experienced in the week before interview was measured using the sum of the anger (6 items), depression (7 items), and hostility (5 items) subcomponents of the Brief Symptoms Inventory (higher score indicated greater distress; Cronbach alpha—a measure of a scale's reliability—was 0.91).²⁹ Self-efficacy for safe sex was assessed via a 9-item scale, which inquired about participants' confidence to use condoms during different situations (higher score indicated greater self-efficacy; Cronbach alpha among women with their main and casual partners were each 0.95). Women were asked the self-efficacy scale questions with respect to each of her sexual partner(s). Among women with multiple partners, scale scores among women's main and among casual partner(s) were positively and highly correlated. Given this, mean scale scores for each partner type were used. Condom beliefs were measured using the 4-item, hedonistic outcomes expectancies scale (higher score indicated more negative beliefs about condoms; Cronbach alpha = 0.88).³⁰ Personal responsibility was measured via a 7-item scale that inquired about perceived responsibility to limit the spread of HIV during a variety of situations (higher score indicated greater responsibility; Cronbach alpha = 0.83).³¹ The construct of empowerment was assessed using a 28-item scale measuring perceived ability to influence one's environment generally, not specific to partner nor context (higher score indicated greater empowerment; Cronbach alpha = 0.76).³²

The 4 relationship-level variables evaluated were partner specific. For women with more than 1 partner within a category (ie, 2 casual partners), scores were correlated within partner type and mean scale score was used for each partner type. Mutual disclosure was categorized into whether both partners in a coupling revealed their HIV status (yes) versus not. Disclosure patterns among women with multiple casual partnerships were inconsistent, and therefore this variable was not considered for the casual partner models. Partner norms about condom use was measured by inquiring whether women (1) perceived her partner thought a condom should be used and (2) felt it was important to adhere to that expectation. Combined, these measured normative beliefs about condom use within the partnership (higher score indicated stronger normative beliefs supporting condom use).³³ Expected partner reactions were measured via 8 questions asking whether one's partner would be mad, supportive, distrustful, or want to break up the relationship in response to a request for condom use (higher score indicated more favorable reactions to requests for condom use; Cronbach alpha = 0.82 and 0.73 for main and casual partner(s), respectively). Physical violence was measured using women's reports of victimization by her male partner

with the Conflict Tactics Scale (higher score indicated greater victimization; Cronbach alpha = 0.85).³⁴ This scale was only administered in reference to steady partner(s).

Social-level variables included women’s perception of peer support for condom use with her partners, which was measured by questions similar to perceived partner support (normative beliefs variable). Although this variable was asked in reference to each partner, it did not measure whether peers knew the HIV status of the subject or her partner(s). Social support was measured using 5 items adapted from the Barerra method for assessing social support in community settings (higher score indicated greater perceived social support; Cronbach alpha = 0.87).³⁵ Domains included intimate interaction and directive guidance (ie, listened to personal problems and gave advice), positive social interaction, and instrumental support (ie, would lend money or help).

Statistical Analysis

Bivariate associations between independent variables and the outcome were assessed using χ^2 and *t* tests, as applicable. There was no association between the dependent variable and recruitment city in bivariate or multivariate analysis, nor did inclusion of recruitment city affect other variables in the model. Therefore, final models did not include recruitment city. Logistic regression models were separately built to examine the outcome among sex with main versus casual partners because some women had both partner types, and because reasons for condom use may vary by partner type.²⁸ Modeling was performed by first considering demographic variables, then variables significant at *P* < 0.15 were added in groups starting first with individual-level variables, then those at the relationship-level variables, and finally the social-level variables. We used the -2 log-likelihood value and the deviance statistic to guide modeling decisions. We obtained the model of best fit by first obtaining a final set of individual-level variables, and then considered whether each successive set of variables (relationship; social) improved the fit.

RESULTS

Women in this sample were typically impoverished minorities with an average age of 40 years (Table 1). Most women had an annual income under \$5000, a history of incarceration, and most were unemployed; about three quarters were self-identified as heterosexual and one fifth as bisexual. On average, women had known they were HIV positive for 8 years and had injected drugs for 17.5 years.

One hundred forty-four women reported sex with at least 1 serodiscordant main partner and 148 women with at least one such casual partner. Among these couplings, 64% and 47% of women knew the HIV status of their main and casual partners, respectively. Women had an average of 1 main and 2 casual serodiscordant partners (Table 1). Women engaged in a variety of sexual behavior with these partners: all but 1 had vaginal sex, about two thirds had received oral sex whereas 30% and 40% had anal sex with their main and casual partners, respectively. Most women engaged in a variety of sexual acts: 28% engaged in all 3 types of sex and

40% in 2 types of sex (data not shown in table). Regarding vaginal and/or anal sex, on average condoms were used half

TABLE 1. Demographic Characteristics and Sexual Behaviors of HIV-positive IDU Women With Serodiscordant Male Partners by Partner Type: INSPIRE Study, 2001–2004

	Steady Partners* N = 144	Casual Partners* N = 148
Recruitment City: % (n)		
Baltimore	34.0 (49)	23.0 (34)
Miami	28.5 (41)	38.5 (57)
New York	18.1 (26)	16.2 (24)
San Francisco	19.4 (28)	22.3 (33)
Age: mean (median)/ min-max	40.0 (40.0)/23–55	39.9 (39.0)/25–56
Race/ethnicity: % (n)		
White	12.7 (18)	13.8 (20)
African American	66.2 (94)	63.5 (92)
Hispanic	14.8 (21)	17.9 (26)
Other	6.3 (9)	4.8 (7)
Education: % (n)		
<High school	46.9 (67)	55.5 (81)
High school or Equivalency Degree	29.4 (42)	21.9 (32)
Some college or more	23.6 (34)	22.3 (33)
Annual income: % (n) <\$5,000	60.9 (84)	60.1 (86)
Employment: % yes (n)	4.2 (6)	2.0 (3)
Ever incarcerated: % yes (n)	63.6 (91)	62.3 (91)
Sexual orientation: % (n)		
Heterosexual	71.3 (102)	70.1 (103)
Homosexual	0.7 (1)	1.4 (2)
Bisexual	22.4 (32)	24.5 (36)
Unsure/none of the above	5.6 (8)	4.1 (6)
Years since HIV diagnosis: mean (min-max)	8 (0.1–19)	8 (0.1–18)
Years injecting: mean (min-max)	17.4 (0.1–39)	17.5 (0.1–36)
Sexual partners in prior 3 months: mean (median)/ min-max	1.1 (1.0) 1.0–3.0	1.9 (2.0) 1.0–3.0
Frequency of vaginal and/or anal sex in prior 3 months: mean (median)	40 (12)	27 (9)
Type of sex reported by women in prior 3 months: % (n)		
Vaginal	100.0 (144)	99.3 (147)
Anal	29.9 (43)	40.5 (60)
Received oral (from a male partner)	61.8 (89)	68.2 (101)
Mean percent of condom- protected vaginal and/or anal sex†	50.5	66.1
Percent of women reporting inconsistent condom use during vaginal and/or anal sex: % (n) of women†	59.6 (84/141)	52.6 (71/135)

All variables listed, except vaginal sex, were examined for their associations with the dependent variable.

*Data in columns are not mutually exclusive as 53 women had both types of partners. Data within cells do not always sum to column total due to missing data.

†Condom use data were missing for 3 women with steady partner(s) and 13 with casual partners(s).

of the time with main partners and two thirds of the time with casual partners; 60% of women were inconsistent condom users during vaginal and/or anal sex with their serodiscordant main partners, and 53% were so with their casual partners.

In bivariate analysis, inconsistent condom use with main partners was associated with alcohol or drug use during sex, greater psychologic distress, lower self-efficacy to use condoms, more negative beliefs about condoms, and lower sense of personal responsibility to protect others from HIV (Table 2). Additionally, all of the relationship and social-level variables examined were associated with inconsistent condom use with main partners (Table 3). Regarding serodiscordant casual partners, inconsistent condom use was associated with greater psychologic distress and lower self-efficacy for using condoms, personal sense of responsibility for limiting HIV transmission, normative support for condoms within the partnership, and perceived social support (Tables 2 and 3).

In multivariate analysis, 3 individual-level and 2 relationship characteristics remained associated with inconsistent condom use with serodiscordant main partners (Table 4). Compared with consistent condom users, inconsistent condom users had lower self-efficacy to use condoms, more negative beliefs about condoms, and believed they had less responsibility for limiting the spread of HIV to others. Women who believed their main partners were unsupportive of condoms were more likely to be inconsistent condom users. Inconsistent

condom use was also more likely in relationships without mutual disclosure of both partners' HIV status. Regarding serodiscordant casual partners, 3 personal characteristics were associated with inconsistent condom use. Women with lower self-efficacy for condom use, higher psychologic distress, and those who had traded sex for money or drugs were more likely to be inconsistent condom users with casual partners.

DISCUSSION

This analysis indicated that there are widespread opportunities for the sexual transmission of HIV from women who inject drugs to at-risk men. Women in this sample had known they had HIV for almost a decade, were having sex about twice a week, and at least half had unprotected with at-risk men. Also of note, and in contrast to other reports,³⁶ was the large proportion of women engaging in anal sex with casual partners. That 40% of this sample had anal sex outside steady partnerships is troubling given the potential that multiple partnering may have on the risk of spreading disease.³⁷ The present analysis is one of only a few to specifically evaluate condom use during heterosexual couplings while taking into account the serostatus of both partners. Focusing on at-risk partners is important because sexual behaviors may differ by partner serostatus²⁴ and because it is these discordant sexual encounters that propagate

TABLE 2. Associations Between Individual-level Correlates of HIV-positive IDU Women and Condom Use During Vaginal and/or Anal Sex With Serodiscordant Men

	Main Partners			Casual Partners		
	Consistent Condom Use	Inconsistent Condom Use	P	Consistent Condom Use	Inconsistent Condom Use	P
Proportion of Women*	40% (57/141)*	60% (84/141)		47% (64/135)*	53% (71/135)	
Drug use in past 3 months (%)						
Crack/cocaine only	1.7	10.7		9.4	14.1	
Heroin only	5.3	6.0		4.7	1.4	
Heroin and crack/cocaine	57.9	60.7		59.3	60.6	
Other	24.6	19.1		21.9	15.5	
None	10.5	3.8	0.14	4.7	8.5	0.51
Shared injection equipment (% yes in prior 3 mos)	29.8	29.3	0.94	37.5	42.9	0.59
Alcohol or drug use during sex (% in prior 3 mos)						
Always or usually	40.4	61.9		15.6	8.5	
Sometimes	19.3	21.4		28.1	26.8	
Rarely or never	40.4	16.7	0.006	56.3	64.8	0.39
Traded sex for money/drugs (% yes in prior 3 mos)	36.8	48.8	0.17	71.9	84.5	0.09
Psychological distress—higher score = greater distress in prior week: Mean (min-max)	1.9 (1.0–5.0)	2.2 (1.0–4.6)	0.05	1.9 (1.0–3.9)	2.5 (1.0–5.0)	<0.01
Self efficacy for condom use—higher score = greater self efficacy Mean (min-max)	4.5 (2.1–5.0)	3.1 (1.0–5.0)	<0.01	4.5 (3.3–5.0)	3.4 (1.2–5.0)	<0.001
Personal beliefs about condoms—higher score = more negative beliefs Mean (min-max)	2.0 (1.0–4.8)	3.1 (1.0–5.0)	<0.01	2.5 (1.0–5.0)	2.8 (1.0–5.0)	0.08
Personal responsibility for limiting spread of HIV—higher score = greater responsibility: Mean (min-max)	4.4 (3.6–5.0)	4.1 (1.4–5.0)	<0.01	4.4 (1.3–5.0)	4.0 (1.1–5.0)	<0.01
Personal sense of empowerment—higher score = greater empowerment: Mean (min-max)	2.9 (2.2–3.5)	2.8 (2.1–3.5)	0.17	2.8 (2.0–3.4)	2.7 (2.0–3.3)	0.26

*Condom use data were missing for 3 women with steady partner(s) and 13 with casual partner(s).

TABLE 3. Associations Between Relationship and Social Correlates of HIV-positive IDU Women and Condom Use During Vaginal and/or Anal Sex With Serodiscordant Men

	Main Partners		Casual Partners		P
	Consistent Condom Use	Inconsistent Condom Use	Consistent Condom Use	Inconsistent Condom Use	
	40% (57/141)	60% (84/141)	47% (64/135)	53% (71/135)	
Proportion of women*					
Relationship-level characteristics					
Mutual disclosure of HIV status within couple† (% yes)	79.0	44.1	—‡	—‡	0.01
Normative beliefs about condom use within partnership—higher score = stronger support: Mean (min-max)	5.8 (-3.0-10.0)	-0.3 (-10.0-10.0)	2.8 (-2.0-10.0)	-0.86 (-10-10)	0.01
Expect partner reactions to condom use—higher score = expect positive reaction: Mean (min-max)	4.4 (2.1-5.0)	3.5 (1.3-5.0)	3.9 (2.3-5.0)	3.4 (1.6-5.0)	0.09
Physical violence from partner—higher score = greater violence in prior 12 months: Mean (min-max)	0.2 (0-2.0)	1.2 (0-7)	—‡	—‡	
Social-level characteristics					
Perceived peer norms for condom use—higher score = greater peer support: Mean (min-max)	4.8 (-8.0-10.0)	2.7 (-10-10.0)	4.4 (-3.0-10.0)	2.3 (-4.0-10.0)	0.09
Perceived social support—higher score = greater support: Mean (min-max)	4.3 (1.6-5.0)	3.9 (1.0-5.0)	4.0 (1.0-5.0)	3.6 (1.6-5.0)	0.04

*Condom use data were missing for 3 women with steady partner(s) and 13 women with casual partner(s).

† Three women with multiple steady partners were not included. Variations in disclosure patterns among women with multiple casual partners precluded use of this variable among casual partners.

‡ Questions were not asked in reference to casual partners.

the sexual transmission of HIV. This is only the second study to specifically focus on HIV-positive IDU women with their serodiscordant partners and the first study to include a substantial number of women. A better understanding of sexual risks among IDUs is important because IDUs often feel vulnerable to HIV from their injection, but not their sexual behaviors.³⁸ Yet as evidenced here and in other reports, sexual risk taking among IDUs continues and is contributing to the spread of HIV among IDUs.^{39,40}

Condom use and selective partnering are 2 strategies for reducing the risk of HIV transmission. Whereas the amount of condom use in the present sample was higher than that observed among other samples of at-risk women,¹⁸ it was on par with that reported from other studies of HIV-positive people.⁴¹ Another secondary prevention strategy that HIV-positive people have used is to couple with other HIV positives, but we saw that only one third of women in this sample exclusively did so. The present study echoes the need to find innovative ways to help a substantial proportion of HIV-positive women engaged in protected sex for the many years they live with HIV infection.

In this sample, factors associated with inconsistent condom use differed by partner type. Condom use in steady partnerships was influenced by attitudes and beliefs of the HIV-positive woman and, to some extent, by her partner. Consistent with the literature,^{31,42-44} women who felt confident about their ability to use condoms during a variety of challenging situations, who felt a greater personal responsibility to limit HIV transmission, and who held fewer negative beliefs about condoms were 2 to almost 4 times more likely to use them. In addition, most women felt responsible for limiting HIV transmission, and this sentiment was associated with safer sex behavior indicating that HIV-positive IDU women may be receptive to messages encouraging them to play a greater role in curbing HIV transmission. The strongest predictor of inconsistent condom use in steady partnerships was whether each member in the couple had disclosed their HIV status. We were unable to determine how patterns of disclosure (ie, she told/he did not or vice versa) were associated with condom use. Further, it is unclear from this cross-sectional analysis whether it is the act of sharing information that helps to reduce risk, or whether disclosure is a marker for a safer type of relationship. Nevertheless, we do know that most of women in this sample had disclosed their HIV status to their steady male partner (data not shown), indicating that when men are informed of risk, they may be more likely to use a condom. Further, prospective investigation into the dynamics of disclosure is warranted as current literature does not provide a clear understanding of how it relates to sexual risk.^{20,26}

In contrast to experiences with steady partners, women's behavior with casual partners was not influenced so much by beliefs as it was by women's personal situations. For example, psychologic distress and trading sex for money or drugs were strongly associated with inconsistent condom use. Together these characteristics suggest that women's need to support their addictions, and attendant distress associated with such a lifestyle, may have trumped the potentially protective effect of social support that has been found in other studies.⁴⁵⁻⁴⁷ Our

TABLE 4. Multivariate Analysis for Factors Associated With Inconsistent Condom Use Between HIV-Positive IDU Women and Their Serodiscordant Male Sexual Partners by Relationship Type

	OR (95% CI)	P
Sex with a steady partner*		
Self efficacy for safer sex (higher scale score = greater self-efficacy)	0.26 (0.11–0.64)	0.004
Personal beliefs about condoms (higher scale score = more negative beliefs about condoms)	2.13 (1.23–3.70)	0.007
Personal responsibility for limiting spread of HIV (higher score = greater personal responsibility)	0.36 (0.14–0.81)	0.02
Perceived partner support for safe sex (higher scale score = greater partner support)	0.88 (0.77–1.01)	0.07
Mutual disclosure of HIV status within couple		
Yes	—ref—	0.004
No	5.62 (1.73–18.29)	
Sex with casual partner(s)*		
Self efficacy for safer sex (higher scale score = greater self-efficacy)	0.15 (0.07–0.30)	<0.0001
Psychological distress (higher scale score = greater distress)	1.67 (1.03–2.71)	0.04
Traded sex for money or drugs in prior 3 months	2.87 (0.84–9.75)	0.09

findings underscore the importance of more immediate life priorities in determining HIV risk behavior.⁴⁸ Our findings also suggest that interventions addressing the life circumstances of HIV-positive women may be necessary for reducing HIV risk to their casual partners.

Several study limitations should be noted. These findings derive from a convenience sample of women recruited from clinic and community sources in 4 US cities; hence, generalizations to other IDU women cannot be made with certainty. In particular, the present findings cannot be generalized to HIV-negative IDU women, who likely have more risky sexual and drug-using behaviors.¹⁵ However, the multicenter sample and use of a sample derived from treatment- and community-based sources extends information from other studies. Whereas veracity of self-report among IDUs is a common concern,⁴⁹ this study used computerized data collection methods which have been shown to enhance reporting of sensitive risk behaviors among IDU samples.⁵⁰ We used means of scale data collected across multiple partnerships, which may have attenuated statistical power. However, many scaled measures produced statistically significant associations, which diminished this concern. We had only limited measures available to assess relationship and social factors, and thus we were unable to comprehensively evaluate their impact on the outcome. Of particular note was our inability to assess the impact of disclosure on condom use among casual partnerships. Finally, the analysis was cross sectional; hence, time order could not be established. Strengths of this study were the use of psychometric scales⁵¹ that performed well among the present sample⁵² and the ability to focus on sexual encounters with partners known or suspected to be at risk for HIV.

As medications enhance and extend HIV-positive people's lives, the need intensifies to identify innovative, effective, and realistic prevention strategies to help HIV-positive people limit the sexual transmission of HIV. Realistic efforts are those that acknowledge the life-long commitment HIV-positive people must make in altering their sexual behavior. The present study suggests that prevention efforts focused on HIV-positive IDU women need to address personal factors and the contextual aspects of sex.

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