

Correlates of Lending Needles/Syringes Among HIV-Seropositive Injection Drug Users

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Summary: Among HIV-positive injection drug users (IDUs), we examined the correlates of lending needles/syringes with HIV-negative and unknown status injection partners. HIV-positive IDUs (N = 738) from 4 cities in the United States who reported injection drug use with other IDUs in the past 3 months participated in an audio computer-assisted self-administered interview. Eighteen percent of study participants self-reported having lent their needles to HIV-negative or unknown status injection partners. Multivariate analyses showed that 6 variables were significantly associated with this high-risk injecting practice. Older IDUs, high school graduates, and those reporting more supportive peer norms for safer drug use were less likely to lend needles/syringes. Admission to a hospital for drug treatment in the past 6 months, having injected with >1 person in the past 3 months, and having more psychiatric symptoms were all associated with more risk. These findings underscore the need for a continued prevention focus on HIV-positive IDUs that recognizes the combination of drug use, mental health factors, and social factors that might affect this high-risk injecting practice, which could be associated with HIV and hepatitis C transmission.

Key Words: HIV, injection drug use, injection drug use equipment, injection risk behavior, seropositive

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Injection drug use continues to contribute to the global HIV epidemic, including in the United States, where approximately one third of all new HIV cases are related to injection

drug use.^{1,2} Injection practices associated with HIV transmission among injection drug users (IDUs) include sharing of needles/syringes and drug use equipment such as cookers, cottons, and rinse water. Researchers have focused on the correlates of these risk behaviors since the beginning of the epidemic in the United States in cross-sectional studies with HIV-negative and HIV-positive injectors^{3–6} and in cohort studies that examined risk factors for seroincidence for HIV and other infectious diseases.^{7–10} Factors associated with unsafe injection practices include individual characteristics, drug use history, psychosocial characteristics, and health care services factors.^{11–15} Age^{16–18} and type of drug injected have also been demonstrated as risk factors for HIV seroconversion in previous cohort studies with IDUs.¹⁹

Fewer studies have specifically focused on lending needles/syringes with HIV-negative and unknown status partners. The studies conducted have shown that after an HIV-positive test result or an AIDS-related illness, IDUs tend to reduce their injection risk behaviors but that some continue to engage in high-risk behaviors.^{20–28} For HIV-positive IDUs, the most serious injection risk behaviors are those that involve lending needles/syringes with HIV-negative and unknown status partners. In a series of cross-sectional studies conducted in New York City from 1990 to 2001, Des Jarlais and colleagues²⁹ reported that IDUs who knew they were HIV-positive were significantly less likely to report lending of needles/syringes than their HIV-negative counterparts. The authors characterized this behavior as “informed altruism.” They also found that when there were not sufficient needles and syringes for everyone in a group setting, the HIV-negative individuals were allowed to inject first, followed by the HIV-positive individuals.

Unfortunately, there may be a sizeable number of HIV-positive IDUs who are aware of their HIV-positive serostatus, but continue to engage in lending needles/syringes to HIV-negative and unknown status partners. Within this context, the present study examined the correlates of HIV-positive persons who engaged in high-risk injection practices (ie, lending needles/syringes to HIV-negative and unknown status partners). Individual, drug use, psychosocial, and health services factors potentially associated with these behaviors were investigated.

METHODS

This analysis used baseline data from a randomized controlled trial of a 10-session HIV prevention intervention designed for HIV-positive IDUs (Intervention for Seropositive

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Injectors—Research and Evaluation [INSPIRE]).³⁰ Participants were recruited from a variety of community settings, including AIDS service organizations, medical clinics, methadone clinics, the street in 4 cities in the United States (Baltimore, Miami, New York, and San Francisco), from August 2001 through September 2004. All research activities were approved in advance by institutional review boards at the collaborating sites and by the Centers for Disease Control and Prevention.

Individuals were eligible for the study if they were at least 18 years old, confirmed to be HIV-positive by testing of an oral specimen, reported injection drug use in the past 12 months, and reported having sex with an opposite-gender partner in the past 3 months. A total of 1161 participants were enrolled in the study and completed an audio computer-assisted self-interview (ACASI) to answer questions regarding sexual and drug-using behaviors, utilization of health care, and adherence to HIV medications. Participants were reimbursed \$30 for their time and effort after completing the baseline protocol. A more detailed description of the INSPIRE project and its methodology has been reported elsewhere.³⁰

This present analysis is based on 738 participants who reported injection drug use in the past 3 months in the company of other IDUs, and thus had the opportunity to engage in injection behaviors that might put others at risk. The dependent variable examined in this analysis was defined as lending needles/syringes to an HIV-negative and/or unknown status partner in the past 3 months. We examined the lending of needles/syringes rather than the reuse of needles/syringes by the HIV-positive participants because we were interested in behaviors that might be associated with transmission of HIV or other blood-borne pathogens to HIV-negative and unknown status partners. All participants included in the analysis were HIV-positive within the past 3 months before the interview.

Independent Variables

The potential correlates of lending needles/syringes that were examined consisted of individual characteristics, drug use history, psychosocial characteristics, and health care services factors. Variables associated with these 4 domains were selected because previous research has shown that correlates of syringe-sharing behaviors are not exclusively characteristics of an individual, but also include psychosocial and environmental factors.³¹

Individual background variables included demographic and socioeconomic characteristics: age, gender, race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, and other), education (high school graduate [yes/no]), income (\$5000 or more per year vs. <\$5000 per year), currently employed (yes/no), homeless in past 12 months (yes/no), and ever incarcerated (yes/no).

Drug use variables consisted of use of any noninjected stimulant drugs (crack, cocaine, or amphetamines) in the past 3 months, living with an IDU partner, age of first injection (years), number of injections in the past 3 months, and the number of people injected with (>1 vs. 1).

Health care services variables included whether participants were currently in HIV care (self-report of any primary health care visit for HIV in the past 6 months vs. no health care visit), currently receiving highly active antiretroviral therapy

(HAART vs. no HAART), ever obtained needles/syringes from a needle exchange program, and recent drug treatment experience as measured by 3 variables (any admission to a hospital for drug treatment in the past 6 months, received any outpatient drug treatment in the past 6 months, and currently in a methadone maintenance program).

Psychosocial indices included the following measures.

“Responsibility to protect others from HIV infection” is derived from 7 items designed to assess the respondent’s beliefs about the responsibility of HIV-positive persons to protect others from infection in the context of sexual practices. Participants indicated agreement with each item using a scale ranging from 1 to 5, and a higher score denotes stronger agreement with responsibility ($\alpha = 0.83$ per INSPIRE data).³²

“Self-efficacy for safer drug use” was quantified from 6 items that were developed for the INSPIRE study and assessed how sure participants were that they could practice safe injection drug practices in the context of lending and/or sharing injection paraphernalia. A higher score (range: 1 to 5; $\alpha = 0.85$) indicates greater self-efficacy.

“Peer norms for safer drug use” was developed for the INSPIRE study and reflects what close friends think about drug risk behavior and how important their opinions are to the respondent. The construct was assessed using 4 questions with a range of 5 responses each: (1) 2 questions on whether the participant thought friends lent needles or shared paraphernalia (normative belief) and (2) 2 questions on whether the participant thought it was important to comply with friends’ expectations (motivation to comply). The normative belief score (range: -2 to 2) was multiplied by the motivation score (range: 1 to 5) to create 2 subscores (range: -10 to 10): a subscore for lending needles and a subscore for sharing paraphernalia. These 2 scores were then averaged. A higher score indicates a more supportive norm for safer drug use ($\alpha = 0.65$). For the multivariate logistic model, the score was converted to a *z* score.

“Self-efficacy for talking to others about safer drug use” (developed for the INSPIRE study) was derived from 5 items that asked the respondent to assess how sure he or she is that he or she can talk with others about safe injection drug practices in terms of lending needles/syringes and/or sharing injection paraphernalia. A higher score (range: 1 to 5, $\alpha = 0.87$) indicates greater self-efficacy.

The “Empowerment” measure was assessed using a 28-item positively scored scale to measure perceived ability to influence one’s environment. A higher score indicates more self-perceived empowerment (range: 1 to 4, $\alpha = 0.76$).³³ Examples of such items include “I see myself as a capable person” or “I am usually confident about the decisions I make.”

“Psychiatric Symptoms” were assessed with 3 subscales (depression, anxiety, and hostility) of the Brief Symptom Inventory,¹³ which queries symptoms in the past 7 days. Higher scores indicate greater symptomatology ($\alpha = 0.83$ to 0.88 for the 3 scales, range: 1 to 5 for each item). The 3 scales were combined to represent a measure of psychiatric symptoms.

Statistical Analysis

The aim of the analysis was to describe the associations between a selective set of theoretically important variables and

lending practices. Associations were assessed using χ^2 tests of independence for nominal-level independent variables and *t* tests for continuous and interval-level independent variables. Multivariate logistic regression modeling was conducted as outlined by Hosmer and Lemeshow.³⁴

Independent variables with *P* values ≤ 0.25 in bivariate associations were included in the initial model. Collinearity was also assessed during the variable selection process. Parsimonious models were then developed by retaining a set of demographic variables (age, gender, race/ethnicity, and education) and excluding variables that exceeded *P* = 0.05 in a stepwise fashion by backward elimination. There were no multicollinearity problems or any significant interactions. Continuous independent variables were assessed for linearity in the (log odds) logit of the dependent variable; there is a linear relation between age, peer norms for safer drug use, and the Brief Symptom Inventory scale and the logit of lending needles/syringes.

RESULTS

Tables 1 through 3 describe the characteristics of the respondents in this analysis and the bivariate associations of these characteristics with lending needles/syringes to HIV-negative and unknown status partners. Fully 18% of participants reported lending needles/syringes to HIV-negative/unknown status injection partners. Sharing paraphernalia was more common than lending needles/syringes (40% and 18%, respectively). Among those who reported lending needles/syringes, more than half of study participants (53%) reported lending needles/syringes only to HIV-unknown status injection partners, 34% reported lending behaviors with only HIV-negative injection partners, and 14% reported lending behaviors with HIV-unknown status and HIV-negative injection partners.

Respondents were predominantly male and non-Hispanic black. The mean age was 42 years, and this was consistent among gender and race/ethnicity categories. Overall, education achievement was relatively low (only 58% graduated from high school), and approximately half (47%) of all respondents had an annual income $< \$5000$. Most were unemployed (95%) and had a history of incarceration (71%). Many had been homeless in the past year (36%). Most participants had known their HIV-positive status for > 5 years (76%), and 6% of participants had been diagnosed for < 2 years.

Most (79%) respondents reported use of noninjected stimulant drugs in the past 3 months, and 36% reported having been admitted to a hospital for substance abuse treatment in the past 6 months. Almost 80% reported a primary health care visit for HIV in the past 6 months.

Several significant bivariate correlates of lending needles/syringes were identified. Demographic and socioeconomic factors associated with risk included younger age, lower education level, less income, and homelessness in the past year. Lending needles/syringes was also associated with years since HIV diagnosis and injecting with > 1 person in the past 3 months. Health care services correlates included having been admitted to the hospital for drug treatment (more likely to engage in risky behavior) and use of HAART (less likely to engage in risky behavior). Psychosocial factors associated with high-risk injecting practices were lower responsibility scores, lower perceived peer norms for safe drug use, lower empowerment scores, and more psychiatric symptoms.

Table 4 presents the multivariate logistic regression describing the significant correlates of lending needles/syringes while controlling for age, gender, race/ethnicity, and education. Regarding demographics, older respondents and those who had graduated from high school were less likely to lend needles/syringes. Four other variables were significantly associated with lending needles/syringes. A more supportive peer norms score was associated with a lower rate of risky injection practices (odds ratio [OR] = 0.697 for each SD increase in the score). Admission to a hospital for drug treatment in the past 6 months (OR = 1.623), having injected with > 1 person in the past 3 months (OR = 2.899), and the mental health summary scale (OR = 1.325 for each point on a scale [range: 1 to 5]) were all positively associated with lending needles/syringes.

DISCUSSION

At a time when many epidemiologists discuss that injection drug use is contributing less to HIV incidence in the United States² and when behavioral scientists suggest that it is easier to change injection risk behaviors compared with sexual risk behaviors,^{35,36} the present study's findings are alarming. Almost one fifth (17.8%) of the 738 HIV-positive IDUs in this analysis self-reported having lent their needles/syringes to HIV-negative or unknown status injection partners. Sharing of paraphernalia was more common than lending needles/syringes, which is consistent with the findings of other studies

TABLE 1. High-Risk Injecting (eg, Lending Needles and/or Sharing Used Injection Equipment) in the Past 3 Months Among HIV-Positive IDUs Who Recently Injected With Others; INSPIRE Study Baseline Data, 2001 to 2005

Lent syringe after use to HIV-negative and/or unknown status injection partners (n = 738)	17.8%
Lending according to partner serostatus among those lending to negative and/or unknown serostatus (n = 131)	
Lent to unknown only	52.7%
Lent to negative only	33.6%
Lent to both negative and unknown	13.7%
Shared paraphernalia with HIV-negative and/or unknown status injection partners (n = 734)	39.9%
Lent syringe and/or shared paraphernalia with HIV-negative and/or unknown status injection partners (n = 735)	41.9%

TABLE 2. High-Risk Injecting (Lending Needles in the Past 3 Months) Among HIV-Positive IDUs Who Injected With Other IDUs in the Past 3 Months by Respondent Characteristics; INSPIRE Study Baseline Data, 2001 to 2005

Respondent Characteristic	N	Respondents Engaged in High-Risk Injecting	P*
Gender			0.798
Female	255	17.3%	
Male	483	18.0%	
Race/ethnicity			0.308
Non-Hispanic white	78	12.8%	
Non-Hispanic black	467	19.5%	
Hispanic	117	13.7%	
Other	56	17.9%	
City			<0.001
Baltimore	204	23.5%	
Miami	206	22.8%	
New York	139	9.4%	
San Francisco	189	12.2%	
High school graduate			<0.001
No	308	24.4%	
Yes	428	12.9%	
Income			0.008
≥\$5000 per year	339	13.6%	
<\$5000 per year	379	21.1%	
Currently employed			0.999
No	703	17.6%	
Yes	34	17.7%	
Currently homeless			<0.001
No	465	13.8%	
Yes	265	24.2%	
Ever incarcerated			0.617
No	211	16.6%	
Yes	518	18.2%	
Years since HIV diagnosis			0.167
<2	43	25.6%	
2 to <5	134	22.4%	
5 to <10	242	15.3%	
10+	319	16.6%	
Used any noninjected stimulant drugs in the past 3 months			0.335
No	157	20.4%	
Yes	580	17.1%	
Used noninjected heroin and/or other opiates in the past 3 months			0.872
No	325	17.5%	
Yes	400	18.0%	
Specific injection drug use in the past 3 months			0.705
Cocaine or crack alone			
No	488	17.4%	
Yes	237	18.6%	
Heroin alone			0.025
No	286	14.0%	
Yes	439	20.5%	

(continued on next column)

TABLE 2. (continued) High-Risk Injecting (Lending Needles in the Past 3 Months) Among HIV-Positive IDUs Who Injected With Other IDUs in the Past 3 Months by Respondent Characteristics; INSPIRE Study Baseline Data, 2001 to 2005

Respondent Characteristic	N	Respondents Engaged in High-Risk Injecting	P*
Heroin and cocaine together			0.077
No	349	15.5%	
Yes	375	20.5%	
Amphetamines alone			0.287
No	620	18.4%	
Yes	100	14.0%	
Heroin and amphetamines			0.743
No	679	17.8%	
Yes	35	20.0%	
Street methadone			0.400
No	685	18.0%	
Yes	26	11.5%	
Other injected drug			0.825
No	697	17.8%	
Yes	15	20.0%	
Lives with injection partner			0.719
No/no partner	560	18.0%	
Yes	178	16.9%	
Injected with more than 1 person in the past 3 months			<0.001
No	198	7.6%	
Yes	540	21.5%	
Any primary health care visit for HIV in the past 6 months			0.401
No	151	19.9%	
Yes	555	16.9%	
Currently receiving HAART			0.038
No	380	20.5%	
Yes	342	14.6%	
Ever used a needle exchange program			0.577
No	292	16.8%	
Yes	446	18.4%	
Any admission to a hospital for drug treatment in the past 6 months			<0.001
No	468	13.5%	
Yes	265	25.3%	
Admitted to outpatient drug treatment program in the past 6 months			0.736
No	421	17.3%	
Yes	317	18.3%	
Currently in methadone maintenance program			0.358
No	522	18.6%	
Yes	216	15.7%	

* χ^2 test of independence; Pvalue for differences in high-risk injecting among categories for each respondent characteristic.

of risk practices among IDUs.^{37,38} This difference in rates of needle lending compared with sharing of paraphernalia may reflect misunderstandings of the risks associated with the sharing of injection paraphernalia. More than half of study

TABLE 3. Comparison of HIV-Positive IDUs Who Recently Injected With Others and Who Did and Did not Engage in High-Risk Injecting (Lending Needles in the Past 3 Months): INSPIRE Study Baseline Data, 2001 to 2005

	Total	Overall Mean (SD)	No High-Risk Injecting (n = 607) Mean (SD)	High-Risk Injecting (n = 131) Mean (SD)	P*
Age (years)	738	42.1 (6.68)	42.5 (6.6)	40.2 (6.8)	<0.001
Years since HIV diagnosis	738	9.2 (4.93)	9.4 (4.9)	8.4 (5.0)	0.035
Age of first injection	707	21.9 (7.59)	22.0 (7.9)	21.2 (6.1)	0.280
No. injections in the past 3 months	738	87.9 (132.91)	85.0 (128.7)	101.1 (150.8)	0.211
Responsibility to protect others from HIV infection	732	4.2 (0.69)	4.3 (0.7)	4.1 (0.7)	0.039
Self-efficacy for safer drug use	734	3.6 (1.03)	3.6 (1.1)	3.4 (0.9)	0.135
Peer norms for safer drug use	736	1.2 (3.34)	1.4 (3.4)	0.3 (2.9)	0.001
Self-efficacy for talking to others about safer drug use	737	3.7 (0.82)	3.7 (0.8)	3.6 (0.8)	0.070
Empowerment	729	2.0 (0.79)	2.8 (0.3)	2.8 (0.3)	0.043
Brief Symptom Inventory	720	2.8 (0.28)	2.0 (0.8)	2.2 (0.8)	0.005

* *t* Test for difference in means.

participants who engaged in these high-risk injecting practices reported that they did not know the HIV status of their injection partners. Previous research has reported that HIV-positive IDUs who engage in high-risk behaviors frequently assume that their injection and sex partners are also HIV-positive.³⁹ Thirty-four percent of study participants report lending their needles/syringes to injection partners who they knew were HIV-negative, however. These data are of high concern and also deserve attention in that it is possible for HIV-positive IDUs to transmit drug-resistant HIV to their injection partners.^{40,41} Additionally, another concern is related to hepatitis C virus (HCV), because most HIV-positive IDUs are HCV-positive and HCV is much easier to transmit compared with HIV.⁴² HIV-positive IDUs who perceived peer norms that were supportive of safe drug use were less likely to engage in lending/sharing injection behaviors with their HIV-negative and unknown status partners. This is encouraging and supports the importance of conducting group, peer-based, and

social network interventions with HIV-positive IDUs to emphasize safe injection practices and to help change peer norms. One of the foci for these interventions could be on increasing knowledge and teaching new skills related to the sharing of drug paraphernalia, including cookers, cottons, and rinse water. Previous research has shown that placing IDUs in the pro-social roles of peer educator or community outreach worker heightens and reinforces their awareness of their own risk behaviors, ultimately leading to decreases in sexual and drug risk behaviors.^{43,44} Intervention strategies addressing peer norms for safe drug use might also consider intervening with close friends and sexual partners of IDUs. Previous studies have shown that IDUs tend to engage in higher risk behaviors when their shooting partners are also sex partners or close friends.^{31,45}

Having >1 injection partner was strongly associated with HIV-positive IDUs lending/sharing needles/syringes and paraphernalia with their HIV-negative and unknown status injection partners. This finding is consistent with those of previous studies showing that IDUs were more likely to engage in unsafe injection behaviors if they are members of large social networks of IDUs.^{45,46} Injecting with more people is a risk behavior in and of itself; therefore, it is not surprising that those who inject with more people are also less safe with regard to potential HIV transmission practices. Reducing the number of injecting partners is an important prevention message that should be conveyed to IDUs who are infected or at risk for HIV. Additionally, targeting HIV-positive IDUs who are in large and dense networks may be an effective strategy for prevention with HIV-positive IDUs vis-à-vis the importance of peer norms for safe drug use.

Psychiatric symptoms were significantly associated with risky behavior, which is consistent with previous studies showing psychiatric comorbidity to be associated with needle-sharing behaviors.⁴⁷⁻⁵¹ The finding that psychiatric symptoms are related to risky behaviors with HIV-negative and unknown status partners underscores the fact that mental health should be evaluated and treated in HIV-positive persons.

One drug use and 2 background/demographic variables were associated with lending/sharing risk behaviors. First,

TABLE 4. Multivariate Logistic Regression Model of High-Risk Injecting (Lending Needles/Syringes in the Past 3 Months), INSPIRE Study Baseline Data, 2001 to 2005 (n = 703)

	OR	95% CI
Age (years)	0.947	(0.917 to 0.979)
Male	1.293	(0.820 to 2.038)
Race/ethnicity		
Non-Hispanic white	0.775	(0.284 to 2.120)
Non-Hispanic black	1.211	(0.555 to 2.640)
Hispanic	0.455	(0.176 to 1.175)
Other	1.000	
High school graduate	0.468	(0.307 to 0.715)
Any admission to a hospital for drug treatment in past 6 months	1.623	(1.065 to 2.473)
Injected with more than 1 person in the past 3 months	2.899	(1.599 to 5.256)
Peer norms for safer drug use (z scores)	0.697	(0.556 to 0.873)
Brief Symptom Inventory	1.325	(1.029 to 1.708)

CI indicates confidence interval.

IDU participants who were admitted to the hospital for drug treatment were more likely to engage in high-risk behaviors. Although it is important to recognize that we do not know the nature of the hospital-based treatment, it is possible that these individuals had the most severe drug abuse problems, and thus were more likely to engage in high-risk behaviors. This result suggests the importance of integrating HIV prevention programs for HIV-positive persons into drug treatment programs. Although approximately half of drug treatment programs offer HIV voluntary counseling and testing to their drug abuse clients,⁵² HIV-positive IDUs are often excluded from counseling because they are already HIV-positive and these programs may not offer more extensive prevention services for HIV-positive persons. Finally, consistent with previous studies, younger IDUs were more likely to engage in high-risk injecting behaviors^{16–18,53–55} and those with less than a high school education¹⁸ were more likely to engage in these injecting risk behaviors than other groups.

Several study limitations should be recognized. First, these data are from a convenience sample of HIV-positive IDUs recruited from clinic and community venues in 4 large urban areas; thus, generalizations to other IDUs in urban and rural areas or other countries should be made with caution. Using a multisite sample with multiple recruitment venues strengthens potential generalizability, however. Second, these data are based on self-report. Thus, the reporting of stigmatized behaviors such as lending needles/syringes with HIV-negative and unknown status injection partners may have been underreported. Also, the reports of injection drug use may be underreported because of socially desirable response biases. To diminish this concern, we used computerized data collection methods that have been shown to enhance reporting of sensitive risk behaviors among IDU samples.⁵⁶ Nevertheless, it should be noted that any underreporting bias would suggest that the estimates of risk behavior reported in this study may be low. Finally, the analysis was cross-sectional; thus, time order could not be established. Strengths of this study were the large numbers of HIV-positive injectors recruited from 4 cities in the United States, the use of psychometric scales that performed well with the present sample, and the ability to focus on lending practices by HIV-positive IDUs with HIV-negative and unknown status partners.

Despite these limitations, the high levels of continued unsafe injection practices shown in this analysis suggest that intervention strategies are needed to address continued injection risk behaviors among HIV-positive IDUs. Intervention strategies should focus on not lending/sharing needles and paraphernalia with HIV-negative and unknown status partners and reducing the number of sharing partners. Within the counseling context, it would be important to recognize that lending needles/syringes is not only related to characteristics of the individual, but is influenced by their peer injectors and mental health characteristics. Additionally, intervention strategies addressing HIV prevention needs of HIV-positive IDUs should focus on sexual risks among IDUs; previously published analyses from the INSPIRE study showed that approximately one third of HIV-positive male IDUs and more than half of HIV-positive female IDUs reported having engaged in unprotected vaginal and/or anal sex with HIV-negative or

unknown status opposite-gender partners.^{57,58} Finally, counseling and community-level intervention messages could try to build on Des Jarlais and colleagues' notion of informed altruism by emphasizing peer and societal norms related to safe injection drug use.²⁹ An advantage of this approach is that it emphasizes the protection of family members and friends in addition to protecting oneself. This approach may be more appropriate in working with HIV-positive IDUs.

In summary, these findings demonstrate that there are considerable injection risk behaviors practiced by this sample of HIV-positive IDUs in 4 cities in the United States. These behaviors are of utmost concern because lending needles/syringes may transmit HIV and other blood-borne pathogens to HIV-negative and unknown status individuals. At a time when there is more concern about HIV transmission through sexual risk behaviors, it is important not to forget the need to continue intervention strategies that address injection risk behaviors with HIV-positive IDUs.

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