Correlates of Needle Sharing among Injection Drug Users

ABSTRACT

Objectives. The sharing of contaminated injection equipment is the primary mode of human immunodeficiency virus (HIV) transmission for injection drug users. This study examined demographic factors, life events, and drug use practices that are potential risk factors for sharing injection equipment.

Methods. Between February 1988 and March 1989, 2921 active injection drug users were interviewed and questioned about their backgrounds, life-styles, and patterns of injection drug use.

Results. Of 2524 participants who reported injecting drugs within the 6 months prior to study enrollment, 70.4% reported recent needle sharing. A multivariate analysis found needle sharing to be more frequent among those with a history of arrest and lower socioeconomic status, even after accounting for other demographic and drug use variables. In addition, recent needle sharing was higher in male homosexual or bisexual men than in their heterosexual counterparts.

Conclusions. These data suggest that injection drug users have an economic motive to share needles and that the availability of free and legal needles may reduce levels of needle sharing. (*Am J Public Health.* 1994;84:920–923)

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Introduction

Injection drug users are at increased risk for human immunodeficiency virus (HIV) infection. The primary mechanism for transmission of HIV infection among injection drug users is sharing contaminated needles and syringes.[1–4] Education about risk reduction and distribution of bleach for disinfecting needles have been important strategies against HIV infection in this population.[5,6] However, in one study, 98% of active injection drug users knew that HIV was transmitted through sharing needles, yet 70% reported sharing needles prior to the knowledge interview[7]; these data suggest that education is necessary but insufficient to effect behavior change. More recently, a study of the effectiveness of bleach on HIV seroconversion noted a modest protective effect for needle disinfection as it was being practiced in the field.[8] These results and others[9,10] underscore the need to study factors that contribute to needle sharing practices in order to identify characteristics that might lead to rational preventive interventions.

Information about risk factors for needle sharing is limited, and most of the information comes from participants in drug abuse treatment programs.[9,10] However, only a small proportion of injection drug users are in treatment at any given time, and characteristics of injection drug users in treatment differ from those of users who are not in treatment.[11] Corresponding information about factors associated with needle sharing is needed for the latter group. In 1988 and 1989, a large sample of injection drug users not in treatment was recruited through extensive community outreach techniques for a study of the natural history of HIV infection; we report here the correlates of needle sharing at time of entry into the study.

Methods

Study Population

The rationale, organization, and methods for the AIDS Link to Intravenous Experiences (ALIVE) Study have been described in detail elsewhere.[12] Briefly, between February 1988 and March 1989, injection drug users were recruited through extensive community outreach techniques. Brochures about the study were distributed at local drug abuse treatment programs, sexually transmitted disease clinics, emergency rooms, state parole and probation offices, homeless shelters, and subsidized housing projects. In addition, outreach workers from a local community health education organization distributed brochures, and study participants informed eligible contacts through word of mouth. Eligibility criteria were age older than 17 years, history of drug injection any time during the previous 10 years (to correspond to the interval when HIV was surmised to be present in the community), and no diagnosis of acquired immunodeficiency syndrome (AIDS) at baseline (as this was a longitudinal outcome).

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Data Collection

After pretest counseling, informed consent, and venipuncture, participants underwent face-to-face interviews with a trained interviewer in a private room within the study clinic. The interviewer gathered information on medical history, drug use, and sex practices, as described elsewhere.[13] For this analysis we used sociodemographic information for the 10 years prior to interview, sexual orientation, and drug use practices during the 6 months prior to last use. Drug use practices included type and frequency of drug used, duration of injection drug use, the practice of "splitting" drugs (drawing up drugs in one syringe and squirting half into a second syringe, which is a practice used when two or more people with their own syringes buy drugs together). Needle sharing was defined by the question "With how many different people did you share a needle in the past 6 months?"; a response of zero defined a nonsharer and a response of one or more defined a needle sharer.

Following the interview, participants received risk reduction counseling, an appointment to return in 2 weeks for HIV antibody test results, and $10 compensation for time spent in the study. The study procedures were reviewed and approved by the Institutional Review Board of The Johns Hopkins School of Hygiene and Public Health.

Statistical Analyses

The binary variable, needle sharing, was cross-tabulated with other study variables; odds ratios were generated with 95% confidence intervals to guide interpretation. To simultaneously adjust for potentially confounding variables, we used logistic regression procedures.[14]

Results

Of the 3375 individuals who registered for the study, 378 (11.2%) did not qualify because they were younger than 18 years of age or did not report injection drug use in the previous 10 years. An additional 76 (2.5%) were excluded because of duplicate registration or disqualifying information obtained by further investigation. Of the 2921 eligible and consenting participants, 2597 (88.9%) reported using injection drugs within the 6 months prior to initial enrollment in the study; 2524 had complete information available. Characteristics of the 2524 with complete information and the 73 with at least one variable missing were statistically similar (data not shown).

TABLE 1—Demographic Factors Associated with Needle Sharing during 6 Months prior to Last Injection, Baltimore, Md, February 1988 through January 1990 (n = 2524)

	No. Participants	% Who Shared	Univariate OR (95% CI)	Adjusted OR (95% CI)[a]
Age				
18–44 y	2013	71.2	1.19 (0.96,1.46)	1.41 (1.12,1.77)
45+ y	511	67.1		
Race				
Non-Black	244	73.0	1.14 (0.85,1.54)	1.11 (0.81,1.52)
Black	2280	70.2		
Sexual orientation				
Female	473	69.3	0.99 (0.80,1.23)	1.05 (0.93,1.19)
Male bisexual	196	81.6	1.95 (1.33,2.83)	1.72 (1.17,2.53)
Male heterosexual	1855	69.5		
Education				
9 y	203	79.3	1.67 (1.17,2.37)	1.56 (1.08,2.25)
9+ y	2321	69.7		
Legal income (last year)				
$5000	1873	69.1	0.92 (0.76,1.11)	1.07 (0.87,1.33)
≤$4999	651	70.9		
Currently unemployed				
Yes	1983	71.6	1.28 (1.04,1.56)	1.08 (0.86,1.35)
No	541	66.4		

Note. OR = odds ratio; CI = confidence interval.
[a]From logistic regression model presented in text, which controlled for demographic, life event, and drug involvement variables.

The risk factor analyses presented here are based on the sample of 2524 individuals who were active injection drug users in that they reported at least one intravenous injection in the 6 months prior to their initial visit to the study and who had no missing data. This group can be characterized as young (80% were between the ages of 25 and 44 years), male (81%), Black (90%), and currently unemployed (79%), with a history of imprisonment (66%) and homelessness in the past 10 years (49%), and often with no experience of treatment for drug abuse (48%) (Tables 1 and 2).

The subjects examined were active injection drug users: 40% injected at least daily and an additional 35% injected at least once a week; only 8% injected less often than once a month. Nearly one third attended shooting galleries (i.e., clandestine locations where needles and syringes are rented repeatedly). The predominant drug of choice for injection was cocaine (92%), although 77% used multiple drugs. Of the men, 9.6% engaged in homosexual or bisexual behavior and two thirds of these individuals, 6.4% of the men, had engaged in receptive anal intercourse within the last 10 years.

In univariate analysis (Tables 1 and 2), needle sharing was associated with almost all demographic (age and education), life-style (employment, public assistance, arrest), and drug involvement variables (drug of choice, frequency of injection, duration of use, experience of withdrawal symptoms, and participation in drug treatment). In particular, needle sharing was associated with younger age; users older than 45 years of age were less likely to share needles. Needle sharing was also associated with less education, current unemployment, and a history of having experienced homelessness, arrest, or imprisonment in the previous 10 years. The homosexual/bisexual male group had the highest proportion of individuals who had recently shared needles (81.6%). However, needle sharing was not statistically associated with either race or gender.

All variables examined in univariate analysis were entered into a logistic regression model to estimate the adjusted relative odds associated with that variable's contribution to needle sharing. After adjustment for all other variables, the only demographic variables that remained associated with needle sharing were younger age and education. Older and more educated individuals were less

TABLE 2—Life History Factors Associated with Needle Sharing during 6 Months Prior to Last Injection, Baltimore, Md, February 1988 through January 1990 (n = 2524)

	No. Participants	% Who Shared	Univariate OR (95% CI)	Adjusted OR (95% CI)[a]
Life events				
Public assistance last 10 y				
Yes	1765	73.3	1.55 (1.29,1.86)	1.41 (1.15,1.73)
No	759	63.9		
Arrested last 10 y				
Yes	1934	73.0	1.64 (1.35,1.99)	1.39 (1.13,1.72)
No	590	67.5		
Homeless last 10 y				
Yes	1227	73.5	1.33 (1.12,1.58)	1.09 (0.91,1.32)
No	1297	67.5		
Drug involvement				
Drug use				
Cocaine	2332	71.6	1.92 (1.42,2.59)	1.74 (1.27,2.39)
Other	192	56.8		
Frequency of injection				
≥ Daily	1008	77.1	1.73 (1.44,2.07)	1.44 (1.18,1.74)
Daily	1516	66.0		
Year started use				
1985 or before	2095	71.7	1.42 (1.14,1.77)	1.08 (0.85,1.37)
1986 or later	429	64.1		
Split drugs				
Yes	323	78.9	1.67 (1.26,2.21)	1.50 (1.12,2.01)
No	2201	69.2		
Experienced serious withdrawal				
Yes	717	80.5	2.08 (1.69,2.56)	1.73 (1.39,2.16)
No	1807	66.5		
Treatment last 10 y				
Ever	1326	74.4	1.49 (1.25,1.77)	1.20 (0.99,1.45)
Never	1198	66.1		

Note. OR = odds ratio; CI = confidence interval.
[a]From logistic regression model presented in text, which controlled for demographic, life event, and drug involvement variables.

likely to share needles. Among life-style variables, after adjustment for other variables, history of arrest in the previous 10 years, being on public assistance, and male–male sexual behavior remained significantly associated (i.e., the confidence interval excludes 1) with needle sharing. The variables describing current involvement with drugs (i.e., cocaine use, daily use, splitting drugs, and having experienced serious drug withdrawal symptoms) continued to demonstrate elevated odds for needle sharing after statistical adjustment. However, duration of injection drug use and history of treatment for drug abuse were not statistically associated with current needle sharing in the multivariate analysis.

Discussion

The primary mechanism for transmission of HIV infection among injecting drug users, needle sharing, has traditionally been viewed as a ritual firmly embedded within a subculture that is highly hesitant to change.[15] More recent study has suggested a pragmatic view that drug users also have an economic motivation to share needles.[10] The economic motivation is that drug users have limited funds and their priority is to obtain drugs. The findings of this study, which noted a higher proportion of needle sharing among the more economically disadvantaged drug users, are consistent with this pragmatic interpretation of needle sharing.

In addition to economic motivation, the finding of an association between needle sharing and history of involvement with the criminal justice system is consistent with a legal motivation to share needles. In particular, these data support findings of ethnographic studies that reported that drug users are hesitant to possess injection equipment that puts them at risk for arrest on charges of drug paraphernalia possession; prior experience with arrest and incarceration might serve as a deterrent to carrying injection equipment.[16,17] If so, the laws prohibiting possession of paraphernalia appear to have limited impact on illicit drug use per se, but they may have contributed to conditions that facilitate transmission of HIV infection. At the time paraphernalia laws were enacted, it is unlikely that this result was anticipated.

An alternate interpretation of the findings reported here is that persons who share needles are less socially competent and have fewer resources than those who do not share needles. Homelessness and being on public assistance can be considered as indicators of a seriously limited ability to function in society. Arrest is associated with lesser competence as a criminal. Such marginal individuals might be more dependent on others for access to drugs and injection equipment. The positive association of needle sharing and splitting drugs (a common practice among those who purchase drugs jointly with other users) could be consistent with this interpretation. Thus, needle sharing might to some degree be a marker of limited social competence. The public health implication is that resources are needed to engage this population.

The positive association between needle sharing and being a homosexual or bisexual injection drug user is disturbing. This finding suggests that this dual-risk group served as an important bridge for transmission of HIV infection to the injection drug–using community earlier in the epidemic.[18] Especially within minority communities, homosexual and bisexual men are relegated to lower status and therefore may be less able to control the conditions under which they use drugs. Although considerable efforts have been expended to establish prevention programs separately for homosexual men and injection drug users, additional special efforts are needed for homosexual and bisexual male injection drug users.

The positive association between needle sharing and higher frequency of injection and cocaine injection is indicative of the interrelatedness between intensity of drug use and risky injection practices. This interrelatedness underscores the importance of targeting interventions toward those with the highest levels of involvement with illicit drug use.

The findings of this study complement those of earlier studies that noted that needle sharing is frequent among injection drug users. Injection behavior is typically learned from more experienced

users.[19,20] A user's first drug injections are usually not planned[21] and typically require borrowing needles and taking instruction from a more experienced user who models the behavior. This initial joint use establishes early in the drug career a norm of sharing needles; continued needle sharing probably supports a social bond within injection drug–using groups. However, this study suggests that continued needle sharing is probably due also to pragmatic factors, including economic and legal motivations. Although the model for understanding needle sharing is likely to be complex, the results of this and other studies offer a basis for public health intervention. Recent studies of injection drug users show concern over personal health and intent to change high-risk practices[22,23]; trends in risk reduction have been observed.[24] Barriers to further change need to be addressed. Legal and economic barriers are reduced by needle exchange programs that offer unrestricted free and legal access to needles and syringes as part of a comprehensive HIV prevention program.[25] These data provide additional support for expanding needle exchange programs to provide a variety of outreach services to injection drug users. □

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