

# SEXUAL CONTACTS OF INTRAVENOUS DRUG ABUSERS: IMPLICATIONS FOR THE NEXT SPREAD OF THE AIDS EPIDEMIC

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A scarcity of knowledge exists regarding the sexual behavior of intravenous drug abusers (IVDAs) despite their potential role in the heterosexual transmission of acquired immunodeficiency syndrome (AIDS). Using a standardized questionnaire of drug and sexual practices, 96 patients enrolled in methadone maintenance treatment in New York City were interviewed anonymously.

Over one half of the 767 sexual contacts reported by this sample were non-IVDAs. Male IVDAs, compared with female IVDAs, reported a significantly greater percentage of heterosexual non-IVDA contacts ( $P < .001$ ). Participating in needle-sharing behavior or being younger than 35 years of age was also associated with a significant probability ( $P < .001$ ) of having a non-drug-using sex partner. Female IVDAs, as compared with male IVDAs, were at greater risk for human immunodeficiency virus (HIV) infection from sexual contacts with male IVDAs and their own parenteral drug use. Black and Hispanic

IVDAs, in contrast to white IVDAs, reported a statistically insignificant greater percentage of non-IVDA sex partners.

These findings suggest that aggressive health education campaigns targeted for IVDAs and sexually active female non-IVDAs are sorely needed to reduce HIV-exposing sexual behaviors, especially in communities where intravenous drug use is prevalent.

Parenteral drug use continues to account for the second largest transmission category for the contraction of the acquired immunodeficiency syndrome (AIDS).<sup>1,2</sup> Among women and children, intravenous drug abuse is the single most frequent behavior associated with the development of AIDS, particularly among ethnic and racial minorities.<sup>3,4</sup> Further, sexual contact with intravenous drug abusers (IVDAs) infected with the human immunodeficiency virus (HIV) is the predominant mode of transmission for US-born heterosexual cases of AIDS<sup>1,5</sup> among non-IVDAs.

While epidemiologic surveys of IVDAs have focused frequently upon needle sharing and other drug-use-related behaviors associated with HIV infection,<sup>6-8</sup> knowledge about the sexual behavior of the IVDA is scarce. Because IVDAs represent the major vehicle for the epidemic spread of HIV to the heterosexual community, more information about the sex-

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ual behavior patterns of the IVDA is essential to the development of interventions.

The purpose of the following study was to examine the propensity of IVDA's to affiliate sexually with other IVDA's and persons who do not participate in parenteral drug use.

## METHODS

The study population was derived from randomly selected patients enrolled in the methadone maintenance clinics of the Addiction Research and Treatment Corporation (ARTC) in New York City. Admission to ARTC is predicated on the demonstration of at least one year of opiate addiction.

Using a standardized questionnaire, drug use and sexual behavior practices during the period 1977 to 1985 were obtained by trained interviewers with experience in drug treatment and skills in obtaining sexual histories. Drug-use questions included items on the types of drugs used, frequency of use, duration of use, and extent of needle sharing. The types of sex acts, frequency of sex, number of sexual contacts (and whether these partners also used drugs intravenously), and participation in selling or buying sex for money or drugs were among the sexual behaviors investigated.

Study subjects were informed that their identities would remain anonymous, and that none of their responses would have any relationship to their drug treatment. Further, the trained interviewers had no involvement in any aspect of the drug treatment of the study subjects. The data were analyzed using chi-square and Student's *t* tests to determine statistical significance.

## RESULTS

Ninety-six patients volunteered to be participants in this study during the period of September 1, 1986, to October 31, 1986. The mean age of the study participants was  $34.98 \pm 0.79$  (SEM) years; 59 percent were men, 41 percent were women, 54 percent were black, 35 percent were Hispanic, and 11 percent were white. All of the study subjects admitted to a history of intravenous drug abuse. Heroin had been used intravenously by all subjects, while intravenous cocaine was used by 91 percent (87/96) of the sample. The mean duration of illicit drug use (of any type and by any route of administration) and the mean duration

of treatment enrollment were  $12.4 \pm 0.33$  years and  $23 \pm 1.4$  months, respectively. The study population did not differ in any statistically significant way in age, sex distribution, ethnicity, or enrollment duration from ARTC's 2,100 patient population. Twenty-five additional subjects were not interviewed as a result of recurring scheduling difficulties or refusal to participate. These subjects were statistically indistinct from the study population in age, race, or sex distribution.

Ninety-five percent of the sample (56 men and 35 women) reported only heterosexual contacts between the period 1977 to 1985. One man and two women admitted bisexual contacts; homosexual contacts were reported by one man and one woman during the same period.

While 767 sexual partners were reported by the study subjects, only 10 percent of the sample admitted to having more than one sexual partner at the same time during the study period. Thirty-seven (15 men and 22 women) participants reported having only one sexual contact between 1977 and 1985. Of those participants claiming only heterosexual contacts, women were more likely than men (61 vs 26 percent) to have had a single sex partner during the eight-year period under question. Twenty-eight percent of the men had sexual contact with more than 12 persons during this eight-year period; however, only one woman indicated this number of partners, and she admitted to prostitution. Three of the five persons who admitted to either homosexual or bisexual contacts claimed to have had approximately 50 sexual contacts. As the number of study subjects reporting homosexual or bisexual contacts was small, no assessment could be made of the impact of the sexual preferences of the study subjects in relationship to their sexual promiscuity.

Only 13 percent of the study sample admitted to the use of condoms during the targeted eight-year period. Of this number, condoms were used, on the average, only on 5 percent of the occasions in which subjects engaged in any form of sexual intercourse. No significant differences in the use of condoms could be determined on the basis of race, sex, or age.

Over one half (65 percent) of the sexual contacts of the study participants were reported as being non-intravenous drug users (Table 1). Female subjects admitted that 63 percent of their sexual contacts used drugs intravenously, while only 32 percent of the sexual contacts of male subjects were reported to use

**TABLE 1. INTRAVENOUS DRUG USING BEHAVIOR AMONG THE SEXUAL CONTACTS OF INTRAVENOUS DRUG ABUSERS**

	Intravenous Drug Use			
	Yes		No	
	No.	(%)	No.	(%)
Male sexual contacts				
Black	122	(41)	176	(59)
Hispanic	56	(19)	235	(81)
White	26	(37)	45	(63)
Total	204	(31)	456	(69)
Female sexual contacts				
Black	54	(69)	24	(31)
Hispanic	8	(32)	17	(68)
White	3	(75)	1	(25)
Total	65	(61)	42	(39)

injectable substances. This difference between the sexes was highly significant ( $P < .0001$ ), but remained so only for those study subjects under 35 years of age. Sixty-five percent of the sexual contacts of black and Hispanic IVDA were not reported to be intravenous drug users, as compared with 61 percent of the sexual contacts of white IVDA. This difference between the ethnic-racial groups in the prevalence of parenteral drug use among the sexual contacts did not reach statistical significance. Evaluating the study population, irrespective of race or sex, those respondents younger than 35 years of age were significantly ( $P < .001$ ) more likely to have non-drug-using sex partners than study subjects older than 35 years.

Nearly 73 percent of the 96 subjects reported abstinence from the use of any injectable drug between 1977 and 1985. Of the 26 subjects reporting intravenous drug use during this period, 23 admitted to needle sharing. The tendency to share needles by the subjects did not differ significantly by sex, age, or ethnicity. Approximately 26 and 77 percent, respectively, of the sexual contacts of needle-sharing male IVDA and female IVDA also used drugs parenterally. This difference was statistically significant ( $P < .001$ ). No statistically significant difference was observed in the prevalence of intravenous drug use among the sexual contacts of male and female IVDA who denied the sharing of needles during the eight-year period under study.

**TABLE 2. INTRAVENOUS DRUG USING BEHAVIOR AMONG THE SEXUAL CONTACTS OF MALE INTRAVENOUS DRUG ABUSERS (IVDA)**

	Intravenous Drug Use			
	Yes		No	
	No.	(%)	No.	(%)
Sexual contacts of needle-sharing IVDA				
Black	2	(4)	54	(96)
Hispanic	6	(55)	5	(45)
White	24	(43)	32	(57)
Total	32	(26)	91	(74)
Sexual contacts of non-needle-sharing IVDA				
Black	120	(50)	122	(50)
Hispanic	50	(18)	229	(82)
White	1	(7)	13	(93)
Total	171	(32)	364	(68)

Intravenous drugs were used by 26 percent of the sexual contacts of needle-sharing male IVDA. In contrast, parenteral drug use was prevalent in 32 percent of the sexual contacts of male IVDA who denied the sharing of needles (Table 2). Needle-sharing behavior in male IVDA, as a whole, was not associated with intravenous drug use in their sexual contacts. Needle-sharing black men, white men, and men older than 35 years of age were significantly more likely ( $P$  values of less than .001, .05, and .001, respectively) than their non-needle-sharing counterparts to have sexual contacts who abused drugs parenterally.

Among female IVDA, sharing needles was significantly associated with sexual contact with intravenous drug-using persons. As demonstrated in Table 3, the prevalence of intravenous drug use among the sexual contacts of female IVDA who shared needles was significantly greater ( $P < .001$ ) than that reported by women who did not. This association was sustained, despite controlling for age, in the female subjects. This level of statistical significance was also maintained within the black female IVDA population, but was not observed within the white or Hispanic female IVDA, in part due to the small number of these members in the study.

Finally, the propensity for HIV exposure (by sexual contact with an IVDA or needle-sharing behavior be-

**TABLE 3. INTRAVENOUS DRUG USING BEHAVIOR AMONG THE SEXUAL CONTACTS OF FEMALE INTRAVENOUS DRUG ABUSERS (IVDAs)**

	Intravenous Drug Use			
	Yes		No	
	No.	(%)	No.	(%)
Sexual contacts of needle-sharing IVDAs				
Black	48	(83)	10	(17)
Hispanic	1	(20)	4	(80)
White	1	(50)	1	(50)
Total	50	(77)	15	(23)
Sexual contacts of non-needle-sharing IVDAs				
Black	6	(30)	14	(70)
Hispanic	5	(28)	13	(72)
White	2	(100)	0	(0)
Total	13	(33)	27	(67)

tween 1977 and 1985) was related to the sex of the study subject. Over one half (58 percent) of the study sample had some form of HIV-exposing behavior over the eight-year period. Women were significantly more likely than men ( $P < .0001$ ) to have experienced HIV exposure through sexual contact with an IVDA or by needle-sharing behavior.

## DISCUSSION

These results, demonstrating that over one half of this sample reported sexual contacts with non-intravenous-drug abusers, provide support that sexual affiliations with IVDAs may figure prominently in the transmission of HIV infection outside the drug-using community. The potential for HIV infection in the sexual contacts of these study subjects is heightened by two factors. One, the study sample is derived from a population found previously to have an overall HIV seroprevalence of 57 percent.<sup>9-11</sup> Two, the prevalence of condom use among these study subjects was low.

Additional factors associated with potential HIV transmission between IVDAs and their non-IVDA sex partners are suggested by this study. Male sex, being younger than 35 years of age, or participating in needle-sharing behavior was associated with a sig-

nificant probability of having a non-intravenous drug-abusing sex partner. Unfortunately, the study design did not allow for a more comprehensive review of the drug-use behavior of the sex partners of the study subjects or for the validation of the sexual behavior of the study subjects.

The differences between the sexes were especially intriguing. The finding that male IVDAs reported a greater percentage of non-intravenous drug-using sexual contacts than female IVDAs is consistent with previous investigators.<sup>12</sup> This finding suggests that male IVDAs represent the greater potential for the sexual transmission of HIV infection to the general population. Another important corollary was the dual route of HIV infection experienced by female IVDAs: sexual contact with male IVDAs and their own parenteral drug use. This may, in part, explain the higher HIV-infection rate experienced by female IVDAs in many seroprevalence studies.<sup>9-11</sup>

The prevalence of prostitution (for drugs or monetary compensation) among narcotics addicts has been estimated by some investigators to be as high as 50 percent.<sup>13</sup> Also, HIV-infection rates are higher in prostitutes who are IVDAs than in those who are not.<sup>14</sup> Thus, the larger potential for HIV exposure among female IVDAs, coupled with their propensity for prostitution, may also serve as a bridge of HIV infection from IVDAs to the general community.

The present investigation is distinguished by the finding that only one of the 96 IVDAs admitted to prostitution during the eight-year period of inquiry. While this finding may appear to be surprisingly low for a sexually active population, there may be important explanations for the differences between the prevalence of prostitution in this study as compared with other investigations. For one, the sexual practices of the drug addicted have not been well investigated. Despite significant advances in unraveling the physiologic effects of various illicit drugs, many questions remain. For example, are the resultant sexual behaviors a consequence of the drug itself or of the lifestyle (including poor health maintenance) associated with the use of the psychotropic agent. Anecdotal accounts abound of the influences of various drugs on sexual practices. It is reasonable to expect that sexual function and behavior in the drug addicted are the product of the pharmacologic effects of the drugs abused as well as those drug-seeking behaviors involved in procuring the drugs.

Another reason for the low prevalence of self-reported prostitution in this study might be the population selected for investigation. It is possible that those subjects who were not able to be interviewed would have influenced dramatically the prevalence of prostitution in the results of this study. Even so, IVDAs are not a homogeneous population, and considerable variations exist in education, health, and economic status. Epidemiologic studies of the prevalence of parenteral drug use among prostitutes may provide different impressions of the level of prostitution among IVDAs than investigations of IVDAs enrolled in drug treatment. The relative stability of the study subjects in drug treatment may contribute to less promiscuity and the consequences of promiscuous behaviors. This may suggest an important role of drug treatment in reducing HIV-exposing behaviors in IVDAs. It should be emphasized that this study addresses only an eight-year period; the addiction histories of this study population significantly exceeded eight years.

Of particular interest was the finding that the sexual contacts of the study population posed a greater potential for HIV exposure than their own needle-sharing behaviors. Twenty-four percent of the study subjects admitted to sharing needles, as compared with 35 percent reporting a sexual contact who used injectable drugs. While the efficiency of sexual HIV transmission is still undefined, the frequency of parenteral drug use (and needle sharing) may explain the higher infection rate of HIV than other types of sexually transmitted diseases among IVDAs in the northeastern United States.

Were sexual transmission, as compared with parenteral drug use, a more efficient mechanism for HIV infection, one might expect to see a different picture in the epidemiology of AIDS among heterosexual adults. In inner-city areas, such as the one in which this study was conducted, sexual activity and sexually transmitted diseases are quite prevalent. Given the sexual activity of IVDAs and the high rate of HIV infection among IVDAs in the New York metropolitan area, one might expect rates of heterosexually acquired AIDS or HIV infection at levels similar to infection rates of other sexually transmitted diseases. Further, excluding individuals for whom homosexual/bisexual behaviors are associated with HIV infection, the ratio of male to female cases of AIDS might also be closer to unity.

Currently, case reports of AIDS patients do not approach the level of the prevalence of cases of other sexually transmitted infections. While sexual HIV transmission from male to female is felt to be more efficient than from female to male, it is not clear that every HIV infected person has the same potential to transmit the virus sexually. The level of viremia, the frequency of exposure, the extent of mucosal integrity, the type of sexual act, and other still to be clarified factors may play considerable roles in determining the probability of infection. Nonetheless, prudent public health policy demands wide dissemination of information to reduce the risk of sexual transmission of the HIV virus.

Finally, this investigation provided some interesting ethnic-racial trends. A higher percentage of sexual contacts, who did not use intravenous drugs, was reported by black and Hispanic IVDAs combined than by white IVDAs. This finding, however, did not reach statistical significance. Nonetheless, this is especially interesting given the overrepresentation of blacks and Hispanics in heterosexually associated cases of AIDS.<sup>3-5</sup>

Despite its limitations, the present study offers one of the few examinations of the sexual behaviors of the intravenous drug abuser. Further investigations, particularly those which include the study of the sex partners and which incorporate HIV serology, are of paramount importance to a clearer understanding of the pivotal role that IVDAs play in the epidemiology of sexually acquired HIV infection. This study does suggest that aggressive measures are needed to encourage IVDAs to reduce HIV-exposing sexual behaviors, including the use of condoms. More important, the need for well-designed health educational interventions, targeted for sexually active, female non-IVDAs, cannot be overemphasized. These interventions are especially crucial in communities where intravenous drug use is prevalent.

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