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Drug Users' AIDS-Related Knowledge, Attitudes, and Behaviors Before and After AIDS Education Sessions

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Synopsis

The investigators interviewed 100 drug users in a detoxification facility before and after they received information about acquired immunodeficiency syndrome (AIDS) and human immunodeficiency virus (HIV). The drug users already had a considerable amount of information about AIDS and HIV transmission modes before they received the information. However, 79 percent of them reported never having used condoms. Fifty percent of intravenous drug users acknowledged having shared needles during the previous year.

Subjects exhibited psychological denial in appraising the riskiness of their personal sexual and needle-sharing behaviors, which they rated as less risky than those activities in general. Following their participation in an AIDS and HIV education program, their knowledge concerning modes of transmission and disease progression increased. Subjects became more aware of their personal risk for HIV infection, and their faith in condom effectiveness and their intent to use them increased. Intravenous drug users reported increased determination to stop their drug use. The results suggest that AIDS education efforts can be useful in programs to help prevent HIV transmission among drug users.

INTRAVENOUS DRUG USERS are the second largest group with acquired immunodeficiency syndrome (AIDS) in the United States. Of all adult AIDS cases, 25 percent have intravenous drug (IV) use as a risk factor (*1*). New York City has the greatest concentration in the country of IV drug users who are HIV seropositive; their rate of infection is 50 to 60 percent (*2–4*).

While AIDS education programs have been shown to induce pronounced changes in the health-related behaviors of gay and bisexual men (*5*), the same level of change has not been observed among IV drug users, although many drug users appear to be aware of the major methods of transmission (*6–8*). IV drug users report such erroneous beliefs as thinking that one can identify an HIV-infected person by sight, that AIDS can be transmitted through casual contact and by mos-

quitoes, and that one cannot contract HIV through heterosexual or oral-genital sex.

A drug user's mistaken belief in being able to identify by sight someone who has AIDS has implications for the user's willingness to engage in unsafe behavior with infected but asymptomatic sexual or needle-sharing partners. The erroneous belief that AIDS infection can be transmitted by mosquitoes and through various forms of casual contact may reinforce a drug user's feelings of powerlessness over the disease and encourage a disregard of protective behavior. Erroneous beliefs, such as that a person cannot contract AIDS through heterosexual or oral-genital sex, also may lead to unsafe behavior.

IV drug users often are unable or unwilling to alter their ill-founded beliefs because the beliefs are part of their efforts to rationalize needle sharing and unprotected sex. Educational programs that try to correct misconceptions by giving full and accurate information about AIDS may help drug users break their pattern of denial and encourage them to take action to protect themselves.

Subjects

For this study, we interviewed 100 users of drugs other than alcohol entering the detoxification service at Beth Israel Medical Center in New York City during August and September, 1988. We assessed their level of AIDS-related knowledge, attitudes, and behaviors before and after they participated in AIDS education programs provided to all patients. The second interview was conducted to observe how effective the educational program had been in improving the subjects' understanding of the disease and in changing their attitudes toward protective behaviors.

Shortly after patients were admitted to the detoxification unit, we asked them if they would participate in a study to help evaluate the hospital's AIDS education program. The only criteria used in choosing subjects was whether the patient expected to remain at the hospital long enough to complete the study. Subjects were told that the investigators were not part of the staff of the detoxification service, that their participation in the study was optional, and that if they did participate, their personal information would be available only to the investigators.

Seventy-two percent of those approached agreed to participate in the study and signed an informed consent form. All 100 subjects were users of drugs other than alcohol, and some were alcohol abusers as well. They were 71 men and 29 women, of whom 38 were black, 32 were white, and 29 were Hispanic. One declined to identify her racial or ethnic origin.

Sixty-one subjects were active IV drug users. The remaining 39 were undergoing detoxification for cocaine smoking or snorting, heroin use, or both, or for alcohol abuse. Their period of drug use ranged from less than 1 to 33 years, with a mean of 13.2 years.

The mean of their ages was 35 years, ranging from 20 to 64 years. Their educational attainment ranged from 5 to 19 years of school, with a mean of 12.5 years.

Method

After agreeing to participate in the study, subjects were assigned randomly to participate in one of three schedules. The first schedule consisted of two sessions with large groups, 25 to 30 people, viewing a 30-minute film and participating in a 30-minute discussion.

The second schedule was two sessions of a small discussion group, a maximum of eight persons, at which no audiovisual material was shown. Discussion was in a support-group, information-sharing format, with the facilitator guiding the group in order to cover all relevant information. The small group was geared to offer participants a forum in which to express personal fears and anxieties that might have increased their resistance to behavioral changes.

The third schedule was a large group followed by a small group session.

A checklist was used to ensure that all the required information was covered in each group. The films used were "AIDS: Changing the Rules," and "AIDS: What Your Family Needs to Know." Both provide thorough AIDS-related information, cover common misconceptions about the disease, and give practical advice for self-protection.

Before they participated in the group sessions, patients were scheduled for a 25-minute interview. A questionnaire was given orally, consisting of open-ended questions about AIDS etiology, symptoms, and disease progression (for example, the difference between being HIV-positive and having AIDS); modes of HIV transmission; HIV testing; methods of protection; subjects' past risk-related behaviors; and subjects' feelings about themselves, the possibility of contracting HIV, and their degree of control over contracting HIV.

Following the open-ended questions, subjects were asked to agree or disagree with a set of statements concerning AIDS and HIV etiology, symptoms, modes of transmission, treatment, and protection. This section was used as a validity check and to ensure that information the subjects had but did not volunteer for the open-ended questions would be included. Subjects were asked to rate the likelihood of contracting AIDS through various behaviors, and the riskiness of their

Table 1. Activities mentioned by subjects in interviews before group sessions as possible modes of HIV transmission and subjects' opinions of the risk of infection resulting from that activity[1]

Route of transmission	Percent of subjects mentioning activity	Risk rating
Sharing needles	96	4.5
Sharing works	19	4.1
Sexual activity	96	3.7
Heterosexual activity	...	3.2
Homosexual activity	...	4.0
Anal-genital sex	30	4.6
Oral-genital sex	28	3.9
Deep kissing	15	2.7
Blood transfusion	30	2.5
Blood-to-blood contact	26	3.5
Casual contact	16	2.6
Perinatal transmission	4	4.0

[1]Risk was rated on a scale of 1 to 5, with 5 being most risky.

Table 2. Assessments by 61 IV drug users and 39 non-IV-type drug users of the riskiness of needle sharing and sexual activity, in general and from their own activities, before group sessions[1]

Subjects	Needle sharing risk		Sexual risk	
	General	Own	General	Own
IV drug users	4.5	2.1	3.6	1.6
Non-IV-type drug users	4.5	1.2	3.8	1.0

[1]Risk was rated on a scale of 1 to 5, with 5 being most risky.
NOTE: Needle sharing and sexual risk rating pairs were significantly different at $P < 0.001$.

Table 3. Percentage of 100 drug-using subjects agreeing with attitudinal statements about HIV, before group sessions

Statement	Percent
Eventually there will be a cure for AIDS	68
Everyone who gets AIDS will die	66
People have control over whether or not they get AIDS	72
Getting AIDS is a matter of bad luck	29
Sometimes I can't deal with thinking about AIDS	42
If I were infected with HIV, my biggest worry would be infecting others	77
If you get AIDS, people will shun you	86

past behaviors, using a 5-point scale, 1 being low likelihood or riskiness, and 5 being high likelihood or riskiness. Additionally, subjects were asked to rate the effectiveness of different modes of protection against AIDS as well as the consistency with which they had taken steps to protect themselves.

Seven days after the subject participated in group sessions, the same interviewer conducted a similar interview to measure any changes in the subject's knowledge about HIV disease, his or her feelings about being able to control HIV transmission, and reported changes in attitude toward drug use and safer sexual practices. Subjects were asked for feedback information concerning the group sessions they had attended.

The data was analyzed using the computer program Statistical Package for the Social Sciences (SPSS-X) (*A*). When comparing subjects' responses to two different items or when comparing presession values to postsession values, *t*-tests for dependent measures were used. Effect sizes were calculated if appropriate. Data from the three types of group sessions were compared using one-way analyses of variance, with Scheffe post-hoc tests.

Findings Before Education Sessions

Knowledge. As reported, nearly all drug users have been found to be aware of AIDS and the main methods of transmission (*6–8*). Ninety-six percent of the subjects in our study, interviewed before the educational session, agreed that AIDS is caused by a virus, and 94 percent knew about a test for HIV. Table 1 lists the modes of transmission that subjects mentioned and the average of the riskiness ratings assigned by the individual subjects to each behavior.

The riskiness ratings were generally realistic, except for those 16 persons who mentioned casual contact, such as using public toilets, sharing eating utensils or a toothbrush, or shaking hands, as possible means of transmission, giving these activities unwarrantedly high riskiness ratings.

Ninety-one persons mentioned the use of condoms as a way of protecting against HIV, giving them a mean effectiveness rating of 3.7 on a 5-point scale. The second most frequently mentioned method of avoiding sexual transmission was that of being careful whom you have sex with. Twenty-seven persons said that they could identify a person with AIDS by sight. Of the 100 subjects, 76 said that, to stay healthy longer, persons who are HIV positive need to protect themselves from reinfection with the virus.

Behavior. Fifty-six (92 percent) of the IV drug users admitted to having shared needles at some time. Fifty percent reported having done so within the past year. Ten persons said that they were aware of having shared needles with persons who had AIDS or were HIV positive, and four said that they had had sex with such persons. Seven persons said that they were HIV positive. Thirty-nine (64 percent) of the IV drug users said that in the past 5 years they had placed themselves in some danger through their drug use. The others said that they had not shared needles in the last 5 years or that they had never shared needles.

The subjects' perceived level of riskiness of their own drug related activities (a mean of 1.8 on a 5-point

Table 4. Effects of educational sessions on subjects' AIDS knowledge, attitudes, and behaviors (percentages)

Concept	Pre-education (N = 100)	Post-education (N = 67)
Knew the difference between AIDS and asymptomatic HIV seropositivity[1]	47	56
Knew that one cannot identify an HIV-infected person by sight[2]	73	87
Mentioned oral-genital sex as a mode of HIV transmission[1]	26	48
Mentioned anal-genital sex as a mode of HIV transmission[1]	31	46
Knew that AIDS is not spread by mosquitoes[3]	50	80
Intended to use condoms[1]	21	51

[1] $P < 0.01$. [2] $P < 0.05$. [3] $P < 0.001$.

scale) was significantly lower ($P < 0.001$) than the values assigned by the subjects to drug use in general (a mean of 4.5), suggesting that psychological denial was present.

As shown in table 2, lower values for personal behaviors hold true for IV drug users ($P < 0.001$), as well as for drug users not using IV drugs ($P < 0.001$), non-IV-type drug users being realistically regarded by the subjects as at lower risk.

Table 2 shows the subjects' estimate of the riskiness of sexual behaviors in general, and of the riskiness of their own behaviors. The same pattern apparent in appraising drug-related risk was seen in appraising risk from sexual activity. IV drug users' and non-IV-type drug users' appraisals of their own risks were significantly lower ($P < 0.001$) than their ratings for risks from sexual activity in general.

Eighty-five percent of the IV drug users reported having made some drug-related behavioral changes in order to avoid AIDS, but many said that they were unable to protect themselves because of the power of their addiction.

"I know better, but when I'm sick I rationalize that a needle is safe...at that moment all you're interested in is relief," was a typical comment.

Seventy-five percent of the subjects said that they had made some changes in their sexual behavior, such as having sex with fewer different partners and being more discriminating in their choice of partner. The use of condoms was infrequently mentioned; although 91 subjects volunteered the information that condoms are a way of protecting against infection, only 21 said that they actually used condoms, and only 6 reported doing so consistently. Knowledge about condoms or belief in the effectiveness of condoms were not correlated with condom use.

Attitudes. As shown in table 3, a majority of the subjects believed that eventually there would be a cure for AIDS. A majority also believed that those now infected would not be around for that cure. Most denied that getting AIDS is a matter of bad luck and agreed that one has control over the spread of HIV.

Those who agreed that one has control over the spread of the infection were more likely to endorse the use of condoms ($r = 30$, $P < 0.01$), although they were not more likely to use condoms themselves. Condoms were likely to be considered uncomfortable and an undesirable interruption of sex.

Nearly half of the subjects said that they were very frightened of AIDS, and more than two-thirds were concerned with the possibility of infecting loved ones. Many were afraid of rejection by family, friends, employer, or society, as well as of physical suffering.

Effects of Education Sessions

Of the 100 subjects interviewed before the group sessions, 67 were reinterviewed afterwards. Of the remaining 33, 31 were not reinterviewed because they were discharged early, and 2 refused to participate in a second interview. There were no significant differences between the responses of those attending the different types of sessions. For this reason, the presession, post session differences for the three groups are presented collectively. Table 4 shows some of the findings.

Knowledge. After attending sessions, more subjects than before said that they understood the differences between HIV infection and AIDS (56 percent compared with 47 percent before sessions [$r = 0.35$, $P < 0.05$]) and that a person could not tell that someone was HIV-infected by looking at him or her (87 percent compared with 73 percent before sessions ($r = 0.37$, $P < 0.03$). Subjects already knew about the main ways of transmitting HIV, that is, sexually and through use of infected needles. However, when asked whether they had learned anything new in the group sessions, 93 percent of subjects stated that they had. At the end of the group sessions, subjects were more aware of the proportions of the epidemic and of the riskiness of their behavior.

Subjects were asked to estimate the percentage of IV drug users in New York City who are infected with HIV. The mean of the estimates before the interview was 54.5 percent, and 61.1 percent at the reinterview ($P < 0.004$). IV drug users' estimates of the extent to

Table 5. Percentages of 100 drug-using subjects agreeing with attitudinal statements about HIV, before group sessions, compared with 146 subjects interviewed in 1985 study

Statement	1985[1]	1988
Using condoms during sex can help prevent AIDS	52	93
AIDS is caused by a virus	85	97
There is an HIV blood test for AIDS	16	94
AIDS can be spread by casual contact	40	16
Have changed own sexual behavior to avoid AIDS	48	75
Have changed drug use to avoid AIDS	60	80

[1]Reference 6.

which they had put themselves at risk in the past 5 years increased from a mean rating of 2.0 to a mean rating of 2.6 ($r = 0.76$, $P < 0.004$) following the sessions. Subjects' appraisals of their past sexual risk increased significantly ($r = 0.49$, $P < 0.003$). More subjects after the sessions mentioned oral-genital sex as a means of transmission of HIV (48 percent) than before the sessions (26 percent, $r = 0.35$, $P < 0.01$). More subjects after the sessions mentioned anal-genital sex as a means of transmission (46 percent) than before the sessions (31 percent) ($r = 0.41$, $P < 0.006$). The subjects' already low assessment of the chances of HIV transmission through casual contact did not significantly decrease ($P = 0.29$). However, many were dissuaded of the belief that AIDS could be transmitted by mosquitoes (33 percent before sessions and 16 percent afterwards) ($r = 0.33$, $P < 0.001$).

Attitudes. After hearing about the various available experimental treatments for HIV and HIV-related diseases, the subjects became more optimistic about an eventual cure for AIDS ($r = 0.49$, $P < 0.03$). However, the general opinion that almost everyone presently infected with HIV would die of it (mean 4.1) did not change.

Behaviors. In response to a question concerning the extent to which they expected to make changes in their own behavior as a result of attending the sessions, subjects gave a mean rating of 3.6 on a 5-point scale (1 being no behavioral change, 5 being extensive change).

Concerning self-protection in the area of sexuality, subjects' faith in the effectiveness of condoms in preventing HIV transmission increased (r 0.32, $P <$ 0.006) following sessions. The number of subjects who said that they would use condoms in order to protect against HIV transmission rose from 21 percent to 51 percent ($r = 0.37$, $P < 0.002$).

The number of subjects who said that as a result of the sessions they now had increased determination to stop using drugs increased significantly ($r = 0.41$, $P <$ 0.001).

Discussion

Baseline. Selwyn and coworkers interviewed 146 patients in the spring of 1985 in a methadone clinic in New York City concerning their knowledge and attitudes about AIDS (*6*). As shown in table 5, knowledge about various AIDS-related issues has improved over the 1985 findings. Change was seen in the percent of persons who knew about the value of condoms, about the blood test for the HIV antibody, and about the fact that HIV cannot be spread through casual contact.

Forty-eight percent of the subjects in Selwyn's study, compared with 75 percent of the subjects in this study, reported having made changes in their sexual behaviors to try to avoid infection. While this is an improvement, as far as condom use is concerned, with only 21 percent reporting using condoms (and most not consistently), more change is needed to protect drug users and their sexual partners.

Sixty percent of Selwyn's subjects, as opposed to 80 percent of the IV drug users in this study, reported having made some drug-related behavioral changes in order to avoid HIV infection. However, 50 percent of the IV drug users in our study reported having shared needles within the past year.

More behavioral change is clearly needed; reducing, rather than eliminating, risky behavior may be an ineffective strategy with such an easy method of transmission, in a population in which 50 to 60 percent are already infected.

The role of education. The fact that there were no significant differences among the subjects' responses according to the type of session attended could be attributed to the fact that factual information was equally well conveyed in each type of session. The changes in attitudes toward self-protection, expected for the small discussion groups, were not found, perhaps because there was not enough time for measurable psychological changes to occur, such as elevated self-esteem or increased sense of personal control over infection.

Changes in group leaders during the study could have diluted some of the effects relevant to the type of session. The group leader for most of the small discussion groups (attended by all subjects in the two small groups type and some in the large group-small group type), had a more directive and less empathetic approach than the other group leaders. His personal style may not have been as conducive to anticipated changes for the discussion groups as the other leaders'.

Subjects' reports that they had learned new information and intended to change their behavior as a result of what they had learned need to be considered in terms of what is known of self-reported data, and in particular of IV drug users' distrust of the establishment (*7*) and their consequent tendency to give desired but not always truthful responses. However, knowledge in certain areas was improved, and perhaps more importantly, the educational process penetrated some of the so-called optimistic bias (*9*), or underestimation of their risk, that IV drug users were strongly exhibiting before the sessions. There is considerable evidence that perceptions of vulnerability to a disease play a central role in health protection behavior (*10–12*); being forced to face their risk may prompt IV drug users to take more definite actions to protect themselves.

Simply stripping IV drug users of their denial is an incomplete effort, as they need some way of psychologically defending a risky lifestyle, as long as they are in it. Many drug users know that there is a good chance of their already being HIV-infected, but do not want to find out, afraid that they wouldn't be able to handle knowing. The issue of control came up often in group discussions, whether it had to do with stopping drug use, not sharing needles, or using condoms. Many subjects expressed an acceptance of the uncontrollability of their sexuality and drug-related behavior. Sometimes there were discussions in which a group member challenged the others to attempt to exert more control. There possibly was a change towards safer behavior in these groups, although change could not be determined with the quantitative analyses used.

One method of dealing with drug users' feelings of powerlessness and lack of control may be therapy to change such feelings, but a change is unlikely to happen while a person is addicted to a drug. Drug addiction finally is being recognized in this country for the problem that it is, and much work is being done to combat physiological and psychological addiction. But an effective, universal cure for drug addiction is not likely to be found soon. In the meantime, drug addicts need help to protect themselves from HIV infection.

Des Jarlais (*1*) applies Bandura's (*13*) social learning theory to this problem. The theory states that in order for a desired behavior to occur, three conditions must be met: the behavior has to be learned, the possibility of performing the behavior has to exist, and there has to be continuous reinforcement of the behavior. In the case of protecting oneself from HIV transmission, one needs to know how to go about it (that is, to receive education about not sharing needles and using condoms), to have readily available the necessary resources for performing self-protective behaviors (for example, condoms and clean needles), and to receive reinforcement of the behaviors. Providing free clean needles, or methods of disinfecting used needles, may be part of a solution. Condoms are easily available already, but their availability has not been sufficient to induce major behavioral changes.

Cognitive self-reinforcement (*14*), the knowledge that one is avoiding HIV by safe behavior, may not constitute enough of an incentive. A more tangible reinforcement would be approval from one's peers; Friedman and coworkers (*7*) write about the sharing of needles and works as being an intrinsic part of the drug user culture, a way of obtaining friendship and belonging. This may be less true today, but more change has to occur in the drug-using culture toward prohibiting AIDS-risk behavior. Collective organizations such as the New York-based Association for Drug Abuse Prevention and Treatment (ADAPT), formed by ex-drug addicts, may be effective. Within such organizations, members can give each other support for safe behavior, and ex-drug addicts can serve as role models for stopping drug use among those they are educating.

The educational program described in this report was helpful in lowering drug users' denial concerning their risk for HIV. Our data suggest that denial is a major stumbling block for AIDS education in the drug-using population. We recommend that high fear messages no longer be used, as they are likely to increase denial rather than promote behavior change. Further, educational films and lectures should focus more on the reality of possibly being infected with HIV. They should cover ways of dealing psychologically with this knowledge, such as knowing about possible medical treatments, strengthening one's immune system through healthy living and discontinuing drug use, and adopting safer sexual practices to avoid infecting others or becoming re-infected.

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Equipment

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Sentinel Surveillance of HIV Infection Among New Inmates and Implications for Policies of Corrections Facilities

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Synopsis

Seroprevalence surveys of incoming inmates provide useful sentinel information on human immunodeficiency virus (HIV) infection rates among groups that practice HIV-associated high-risk behaviors. In addition, such data are beneficial to corrections officials in the formulation of institutional policies to prevent HIV infection.

Inmates entering the Michigan corrections system from December 1987 to March 1988 participated in blind, anonymous serosurveys for HIV infection. Eight of 802 entering inmates (1.0 percent) were seropositive: most seropositive persons reported intravenous drug use. The most common risk behaviors reported by study participants were intravenous drug use (20.0 percent), multiple sexual partners (37.1 percent), and infrequent (that is, never or seldom) use of condoms (82.6 percent). Women reported the highest rates of intravenous drug use (35.1 percent) and needle-sharing (19.4 percent).

Results from this study indicate that in spite of widespread HIV-associated risk behaviors, the extent of HIV-serospositivity among incoming inmates in Michigan is relatively low. Such data suggest that there is still time to impact the course of the AIDS epidemic among high-risk groups in States where the prevalence of HIV infection is relatively low. The data also indicate that the potential for HIV spread in correctional facilities is noteworthy and that HIV prevention education and substance abuse treatment services are needed in corrections facilities.

PRISONS ARE VALUABLE sites for sentinel surveys of human immunodeficiency virus (HIV) infection. Because incoming inmates are probably more likely to practice behaviors associated with risk of HIV, especially intravenous drug use, than the general population, seroepidemiologic surveys at correctional intake facilities provide an opportunity to measure HIV infection rates among persons who engage in high-risk behaviors associated with HIV infection. An increase in HIV seroprevalence among incoming prisoners could alert public health officials to an escalation of HIV infection among groups at risk, particularly intravenous drug users, in the general population.

Another benefit of HIV seroepidemiologic surveys of incoming inmates is that they provide corrections officials with data upon which to formulate policies and programs to prevent HIV infection. Moreover, surveys of inmate cohorts can be repeated at intervals to deter-