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**The Context of  
HIV Risk Among  
Drug Users and  
Their Sexual  
Partners**

143



# **The Context of HIV Risk Among Drug Users and Their Sexual Partners**

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# A Contextual Perspective on HIV Risk

*Robert J. Battjes, Zili Sloboda, and William C. Grace*

For over a decade, acquired immunodeficiency syndrome (AIDS) has been identified as a major public health epidemic and a research priority of the National Institute on Drug Abuse (NIDA), the National Institutes of Health (NIH), and other components of the U.S. Public Health Service. Since the early years of the epidemic, needle and syringe sharing among injecting drug users (IDUs) has been recognized as a major vector for spread of the human immunodeficiency virus (HIV). Sexual transmission among IDUs, and from IDUs to non-IDU sexual partners, also has been a longstanding concern, as has perinatal transmission to their children. The number of IDUs diagnosed with AIDS continues to expand in the second decade of the epidemic, as does the number of related cases in IDUs' sexual partners and their children. Approximately one-third of AIDS cases are associated with injecting drug use (Centers for Disease Control and Prevention 1993).

The potential contribution of non-IDUs to HIV transmission and disease progression also has been of concern. For example, drug intoxication may lessen inhibition and facilitate engagement in sexual risk behaviors. Involvement in drug-using social networks may promote sexual contact between noninjectors and IDUs, increasing risk of HIV exposure. Some non-IDUs also engage in sex to obtain drugs or money to buy drugs. Recently, it has been recognized that crack cocaine users who engage in sex to obtain their drugs may be at especially high risk for HIV infection (Inciardi et al. 1992, 1993; Ratner 1993).

Considerable progress has been made in identifying risk behaviors that contribute to HIV transmission and in enumerating the extent of injecting and sexual risk behaviors, especially for IDUs. However, much less progress has been made in clarifying the factors that may explain risk behaviors and barriers to risk reduction.

To review research on drug-using and sexual behaviors of drug users that are associated with HIV transmission and to develop a research agenda for future research on risk behaviors, NIDA convened a technical review entitled *The Context of HIV Risk Among Drug Users and Their Sexual*

*Partners.* The review was held April 22 and 23, 1993, in Bethesda, Maryland. This monograph contains the papers presented at the technical review and recommendations emanating from it.

The technical review on HIV risk behaviors evolved from an earlier meeting that NIDA convened in January 1992 as part of a planning process to develop NIDA's 5-year plan for AIDS research. A number of areas for future research emerged from this planning meeting, with three priority areas identified for emphasis:

- Impact of the social context on drug injecting and drug-related sexual behaviors;
- Situational and temporal variations in injecting behaviors, especially considering the continuum of injection initiation, maintenance, risk reduction, and relapse; and
- Sexual behaviors and changes in sexual relationships in relation to developmental stages over time and in diverse interpersonal situations.

These recommendations provided the foundation and framework for the technical review. The technical review considered injection-related risk behaviors of IDUs, sexual risk behaviors of IDUs and their sexual partners, and sexual risk behaviors associated with drug use in non-IDUs. The intent was to focus on the context of risk behaviors in order to clarify factors that contribute to or protect against risk and to thereby advance the knowledge base for future HIV-prevention strategies.

In addressing the context of risk behaviors, authors were asked to consider situational, temporal, and developmental variation in risk behaviors, to consider differences based on level of risk (i.e., differences among individuals based on high, moderate, and low-risk behaviors), and the effects of competing risks (e.g., risks of withdrawal and overdose versus risk of HIV infection). Authors also were asked to consider psychological status, the dyad or social grouping in which behavior occurs, social networks, community context, culture, economic conditions, individual's serostatus, and community AIDS prevalence.

The monograph is organized into five sections. The first section, introduced by Needle, contains chapters on HIV risk behaviors of

heterosexual male drug users, with Stephens and Alemagno addressing IDUs and Inciardi addressing non-IDUs.

The second section, introduced by Hartel, contains chapters on HIV risk behaviors among women. Allen addresses drug-using women, and O'Leary addresses sexual partners of IDUs.

The third section, introduced by Battjes, includes chapters on homosexual and bisexual male drug users. Ostrow addresses drug use associated with sexual risk behaviors, and Waldorf addresses male prostitution and drug use.

The fourth section, introduced by Smeriglio, focuses on adolescent drug users. Boyer and Ellen address HIV risk behaviors among mainstream adolescents (i.e., those who can be accessed through schools), while Rotheram-Borus and colleagues address homosexual and bisexual adolescent males who are-involved in a range of drug-using and sexual risk behaviors, including injecting drug use and male prostitution.

The fifth section, introduced by Sloboda, concentrates on measurement issues in HIV risk behavior research. Brunswick sets forth a multidimensional conceptual framework to guide research in the area. Koester discusses the importance of qualitative research in gaining a better understanding of both the micro and macro contexts of these behaviors of interest. Gibson and Young examine the reliability and validity of self-reports of these risk behaviors.

During the technical review, Agar, Des Jarlais, and Robles served as reactors to the formal presentations and, thereby, focused group discussion and the formulation of research recommendations. The final monograph chapter contains recommendations for future research based on the formal papers and discussion.

## REFERENCES

- Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report. Vol. 5, No. 3, 1993.
- Inciardi, J.A.; Chitwood, D.D.; and McCoy, C.B. Special risks for the acquisition and transmission of HIV infection during sex in crack houses. *J Acquir Immune Defic Syndr* 5:951-952, 1992.

Inciardi, J.A.; Lockwood, D.; and Pottieger, A.E. *Women and Crack-Cocaine*. New York: Macmillan, 1993.

Ratner, M.S., ed. *Crack Pipe as Pimp: An Ethnographic Investigation of Sex-for-Crack Exchanges*. New York: Lexington Books, 1993.

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# HIV Risk Behaviors of Heterosexual Male Drug Users

*Richard H. Needle*

Since reporting of acquired immunodeficiency syndrome (AIDS) cases began in the United States, over 325,000 persons have been reported as having been diagnosed with AIDS, and more than 200,000 deaths have occurred. Approximately 30 percent of AIDS cases in the United States have been injecting drug users (IDUs), and most of these AIDS classified cases (80 percent) are among heterosexual IDUs. More AIDS cases have been reported among heterosexual male IDUs (about 75 percent) than among female IDUs (Centers for Disease Control and Prevention 1993). Available surveillance data on AIDS cases do not permit tracking of trends in heterosexual male or female crack users who have become human immunodeficiency virus (HIV) infected or acquired AIDS through sexual transmission.

In this monograph, Stephens and Alemagno review the injection and sexual risk behaviors of male heterosexual IDUs, and Inciardi reports on HIV/AIDS risks among male heterosexual non-IDUs who exchange crack for sex. Stephens and Alemagno focus on HIV risk-taking behaviors of IDUs related to the multiperson use of contaminated needles and other drug injection paraphernalia, their sexual risk practices, and the potential for acquiring or transmitting HIV. Their review reveals that individual behavioral patterns and risks of HIV exposure depend on a number of factors, many of which are beginning to be recognized as contextual. These factors include community prevalence, availability of syringes and paraphernalia, availability of drugs, presence of shooting galleries and needle exchanges, and availability of condoms (both female and male). They also review some newly emerging data on indirect needle-sharing practices, such as frontloading and backloading, and on the use and nonuse of condoms, sexual behaviors, and other sexual risk practices. While their review focuses on heterosexual male IDUs and emphasizes sharing of needles and other injection paraphernalia among IDUs as the major mode of HIV transmission, that practice is clearly not the only mode for acquiring or transmitting HIV infection. Stephens and Alemagno's review of sexual practices of male heterosexual IDUs

highlights the critical importance of researchers' awareness of the increasing percentage of AIDS cases among women who have had sex with IDUs.

Stephens and Alemagno also reviewed the growing literature on the effectiveness of intervention programs targeted at changing behaviors related to HIV/AIDS. They review data from the National AIDS Demonstration Research (NADR) program sponsored by the National Institute on Drug Abuse (NIDA) and discuss changes in HIV risk-taking behaviors of the IDU population. While many drug users reported reducing their HIV risk behaviors, others continued to practice high-risk behaviors. NADR data, and more recently the Cooperative Agreement (CA) for AIDS Community-Based Outreach/Intervention Research Program data, suggest that it is very important to begin to focus more on IDUs' sexual risk practices to help prevent the spread of HIV.

Far less is understood about HIV risk-taking behaviors of male heterosexual non-IDUs, particularly crack users who engage in sexual practices that put them at risk for acquiring or transmitting HIV infection. The crack epidemic emerged during the mid-1980s, years after the first AIDS case was reported to the Centers for Disease Control and Prevention (CDC). Most of the HIV epidemiology focused on the modes of transmission in the high prevalence groups of gay/bisexual men and male and female IDUs. To date, only 7 percent of AIDS cases are attributable to heterosexual exposure, and the percentage of AIDS cases among male heterosexual non-IDUs is very low (Centers for Disease Control and Prevention 1993). There is no separate CDC category to classify men or women who are noninjecting crack users, have had sex with HIV-infected men or women, and attribute their HIV/AIDS status to sexual transmission and noninjection drug use. These cases would be classified in the exposure category of heterosexual contact, and more specifically classified as sex with an HIV-infected person, risk not specified (Centers for Disease Control and Prevention 1993).

Inciardi developed his chapter on crack, sex, and secondary spread of HIV by relying on literature related to the efficiency of female-to-male transmission; cofactors in female-to-male transmission of HIV; and the small, but rapidly growing, ethnographic literature on bartering of sex for crack cocaine. The chapter reviews explanations for the documented higher rates of female-to-male infections in Africa and Europe than in the United States. While the epidemiologic data are not adequate to permit estimates of cases attributable to crack-using heterosexuals who have sex

with an HIV-infected individual, it is clear that the context of crack use greatly increases the likelihood of sexual risk behaviors and of HIV infection.

Relying on ethnographic studies of crack, sex, and HIV, Inciardi describes the context of exchanges and clearly illustrates the association of crack and HIV. Though there are few studies that separate out crack users without a history of injection drug use, NIDA data from the CA research program has found about a 6-percent seroprevalence rate among crack users without any history of injection. For male crack users without a history of injection drug use, a 5-percent seroprevalence rate has been found (National Institute on Drug Abuse 1994).

Both chapters in this section have contributed to the understanding of contextual factors influencing HIV risk behaviors and the relationship between risk behaviors and the likelihood of acquiring and transmitting HIV infection. The context or setting where behaviors occur, such as crack houses, shooting galleries, or even public places, affects the risks of practicing behaviors that expose individuals to HIV infection. The presentations and discussion suggest that understanding about the future of this epidemic will improve dramatically if researchers begin to shift their thinking from examining risk behaviors from an individual perspective to examining risk behaviors as behavioral transactions between individuals (dyads), triads, and groups, focusing on the context in which multiperson use of equipment and sexual risk-taking behaviors occur. Both chapters raise new research questions that require attention if researchers are to respond effectively and prevent further tragic consequences of the AIDS epidemic.

## REFERENCES

- Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report. Vol. 5, No. 3, 1993.
- National Institute on Drug Abuse. *Cooperative Agreement for AIDS Community-Based Outreach/Intervention Research Program: Quarterly Database Fact Sheet*. Rockville, MD: National Institute on Drug Abuse, 1994.

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# Injection and Sexual Risk Behaviors of Male Heterosexual Injecting Drug Users

*Richard C. Stephens and Sonia A. Alemagno*

## INTRODUCTION

For male, heterosexual injecting drug users (IDUs), the greatest risk for human immunodeficiency virus (HIV) infection is associated with injection risks such as sharing contaminated needles. Though difficult to quantify, the risk that male heterosexual IDUs incur through unsafe sexual practices—even with other IDUs—is almost certainly secondary. This chapter focuses on studies published in the last 5 years or so in the areas of injection and sexual risk behaviors. While there is a rather large, but not too detailed, literature on needle-related behaviors (e.g., Agar 1973; Hanson et al. 1985), many of these studies were conducted before the age of acquired immunodeficiency syndrome (AIDS). Very little can be found on the sexual behavior of male IDUs in the early literature; only since the spread of AIDS has this topic drawn the attention of drug abuse researchers.

The chapter presents a representative, although not exhaustive, review of recent topics that could lead to the development of future research agendas regarding HIV prevention strategies for male heterosexual IDUs. While some studies reported here have focused exclusively on this target population, other studies reviewed have presented analyses on broader IDU samples that control for sexual orientation and are, therefore, relevant to this review. Several studies focus on relapse to risk behaviors among homosexual males.

Sharing of needles and other drug injection paraphernalia among IDUs is well established as the major mode of HIV transmission (Des Jarlais and Friedman 1987; Nemoto et al. 1990). The epidemiology of sexual transmission of HIV associated with injecting drug use has focused largely on transmission from IDUs to their noninjecting sexual partners. The extent to which HIV is spread sexually among heterosexual IDUs remains unconfirmed (Haverkos and Edelman 1988).

Blower and colleagues (1991) have presented a data-based mathematical model formulated to assess consequences of heterosexual, injecting drug use in order to provide qualitative and quantitative insights into the HIV epidemic in New York City. The results demonstrated the significance of the dynamic interaction of heterosexual and IDU transmission. In the early stages of the epidemic, IDU transmission is often more important than heterosexual transmission; however, the relative importance of heterosexual transmission increases as the epidemic spreads from the IDU community to the heterosexual, non-IDU community. Results also indicated that the effect of the heterosexual transmission risk factor on increasing the risk of HIV infection depends on the level of injecting drug use risk. Results demonstrate that the addition of the heterosexual transmission risk factor does not increase an individual's risk of HIV infection among individuals with very high risk IDU activity (such as needle sharing with strangers). However, the addition of the same heterosexual risk factor for an individual with lower risk activity (such as sharing needles with a buddy) can significantly increase the individual's risk for infection. Confidence intervals on the prediction estimates of future cumulative number of AIDS cases are extremely wide. The authors suggest that long-term precise estimates of the future number of AIDS cases will only be possible once the values of key variables such as gender, needle sharing, and sexual behaviors have been evaluated accurately.

Battjes and colleagues (1990) have explored heterosexual transmission by comparing HIV seropositivity among IDUs who have IDU sexual partners with rates of seropositivity among IDUs with no IDU sexual partners. The hypothesis for this analysis was that if sexual transmission is contributing substantially to the spread of HIV among heterosexual IDUs, then prevalence of HIV infection should be greater among IDUs with IDU sexual partners than among IDUs with no IDU sexual partners. In bivariate analysis, results indicated that heterosexual IDUs who reported having IDU sexual partners were more likely to be seropositive than IDUs who reported no IDU sexual partners. Yet, IDUs with IDU sexual partners also reported more drug-using practices that placed them at greater risk for HIV infection. Controlling for drug use and demographic characteristics, having IDU sexual partners was no longer associated with increased risk for HIV infection. Thus, the apparent increased risk for HIV infection found in bivariate analysis may have been due to differences in drug use practices, not to additional risks resulting from sexual HIV transmission among heterosexuals.

Battjes and colleagues' (1990) finding is contrary to the findings of Schoenbaum and colleagues (1989), who found heterosexual contact with other IDUs to be an independent risk factor for HIV infection when drug use and demographic factors were controlled statistically. Other predictors of seropositivity included the number of injections per month, the percentage of injections with used needles, the average number of cocaine injections per month, and the percentage of injections with needles shared with strangers. These studies may have divergent findings as a result of differences in target groups studied. Battjes and colleagues (1990) studied recent drug injectors on admission to methadone treatment; Schoenbaum and colleagues (1989) studied a methadone in-treatment sample, some of whom had stopped injecting some time earlier. Schoenbaum found sexual risk stronger among former injectors compared with current injectors.

Battjes and colleagues point out that the heterosexual transmission of HIV may be relatively more important for younger IDUs who are more sexually active and engage in lower levels of drug-using HIV risk behaviors. The relative roles of needle sharing and sexual transmission may differ depending on the seropositivity level of the community. As IDUs increasingly adopt safer needle-using practices, sexual transmission can be expected to play an increasingly more important role in the spread of HIV among heterosexual IDUs, unless corresponding changes in high-risk sexual behaviors are also made.

A recent study in Sydney conducted by Ross and colleagues (1992) has reported significant differences across sexual orientation in HIV serostatus for IDU males, with homosexual men having the highest HIV seroprevalence rate (35 percent), bisexual men intermediate (12 percent), and heterosexual men lowest (3 percent).

## **INJECTION RISKS**

Currently, injecting drug use continues to be the second most common risk behavior associated with AIDS in the United States (CDC 1993; Des Jarlais and Friedman 1988; Lewis et al. 1990). Many studies have reported the increased risk for infection for IDUs who share needles and syringes (Chaisson et al. 1987; Chitwood et al. 1990; Hopkins 1988; Magura et al. 1989; Schoenbaum et al. 1989).

Even in areas with low seroprevalence rates, needle sharing can be common (Metzger et al. 1991). It is, however, by no means a universal practice of IDUs. Not all IDUs share needles, and some IDUs have begun to seek new needles (Guydish et al. 1990). Nevertheless, it may be possible to identify those variables that increase the risk of HIV through injection behaviors.

Many studies have described the situational nature of needle sharing. An addict who has the drugs and his or her own outfit will not share. Needle sharing is related to the supply of needles available. Many studies have reported that the availability of needles and the problems associated with procuring them play a major role in needle sharing (Murphy 1987; Murphy and Waldorf 1991; Power et al. 1988; Waldorf and Murphy 1989; Watters 1988). Qualitative work has pointed to the issue of availability of clean needles as the main factor for needle sharing. It will be interesting to determine the impact of needle exchange programs on needle sharing.

Dolan and colleagues (1987) have identified several variables that discriminated needle sharing among drug abusers admitted to a 30-day inpatient drug treatment program. Compared with other injecting drug abusers, needle sharers were more likely to engage in polydrug use, were more likely to use a shooting gallery, and had higher scores on a drug use severity test. No demographic or personality variables, such as age, race, education, or any of the 24 Minnesota Multiphasic Personality Inventory (MMPI) scores, discriminated needle sharers from nonsharers. Guydish and colleagues (1990) have found that needle sharing is predicted by earlier time of admission to drug treatment, cocaine use, and being younger in age. This is supported by a study performed by Kleinman and colleagues (1990), who report that new drug users (persons who had been using drugs for only 1 or 2 years) are significantly less likely than others to practice risk-reduction measures and are less likely to have salient knowledge about AIDS transmission.

Magura and colleagues (1989) reported that needle sharing is related to peers' injecting drug use, economic motivation to share, not owning injection equipment, and fatalism about developing AIDS. Factors that did not predict needle sharing are also of interest. Knowledge of AIDS risks, knowing someone with AIDS, gender, age, ethnicity, marital status, and time in methadone treatment were not associated with sharing. In this sample, in which knowledge of AIDS risks was high, needle sharing could not be attributed to ignorance about the consequences of such

behavior or how to protect oneself and others against infection. Needle sharers did not deny the dangers of their behavior; most claimed they borrowed injection equipment only in what they considered emergencies. Addicts were more likely to share in order to avoid withdrawal symptoms or if they believed their friends would be insulted if they refused to share. This study strongly supports the idea that peer behavior heavily influences needle-sharing behavior.

This peer dimension has been explored by other researchers who have studied the extensive network of IDUs. Siegal (1990) described how IDUs in the Dayton and Columbus, Ohio, areas, where shooting galleries are not the typical location for drug use, interact primarily within their own network. The usual sites for drug use for these IDUs are private residences where only persons well-known to each other are present. It is rare for users to violate these network boundaries, which are constructed along social and sociogeographic lines. However, preliminary ethnographic reports suggest that IDUs who are very frequent crack users are transcending these boundaries.

Metzger and colleagues (1991) performed a comparison of methadone clients who continued to share needles, who had injected drugs but not shared needles, and who had not injected drugs in the preceding 6 months. Those who continued to share reported greater difficulty in acquiring new needles, more legal difficulties, more severe drug problems, and a higher level of psychiatric symptoms as measured by the Beck Depression Inventory and the SCL-90 scales such as scales of somatization, interpersonal sensitivity, depression, hostility, and anxiety. Contrary to expectations, fear of AIDS was not associated with safer injecting practices. Knowledge of methods of self-protection from infection was not found to relate to needle sharing, although such knowledge was nearly universal among the study group. The authors focused on the importance of the association between psychological distress and recent needle sharing and reported that reduction in psychiatric symptoms may play a role in reducing high-risk behavior.

Injection risks may also be related to injection practices. Inciardi and Page (1991) and Kaplan (1983) have described the process of skin-popping—the intramuscular (into the muscle) or subcutaneous (under the skin) injecting of drugs. Skin-popping is a common method of heroin use by experimenters and “tasters” who mistakenly believe that addiction cannot occur by this practice. Another process, known as booting, has been described by Des Jarlais and Hunt (1988). The booting process

involves using a syringe to draw blood from the user's arm, mixing the drawn blood with the drug already taken into the syringe, and injection of the blood/drug mixture into the vein. Many IDUs believe that this practice potentiates a drug's effects; however, this procedure is reported to leave traces of blood in the needle and the syringe, thus placing subsequent users of the injection equipment at higher risk. Inciardi and Page (1991) have studied frontloading and backloading practices in Miami-procedures for making the speedball solution (heroin and cocaine mixed together) in which two needles and syringes are used. This practice potentially doubles the risk of HIV transmission.

There is preliminary evidence that suggests that the type of drug used (heroin, cocaine, etc.) may increase the likelihood of needle sharing (Turner et al. 1990). Due to cocaine's short effect time, cocaine injectors require more injections to maintain their high than heroin injectors. One study found amphetamine users were more likely to share needles than heroin users and were less likely to be in contact with formal agencies and consequently HIV prevention services (Baxter and Schlecht 1990).

Koester and colleagues (1990) studied IDUs in Denver and detailed how IDUs may inadvertently transmit HIV. They found that drug preparation and injection involves a complex series of steps that may be influenced by any number of variables, including the type of drug being injected, the beliefs and customs of the users, and socioeconomic and psychosocial factors. Page and colleagues (1990) have identified some of the customs practiced in settings where injecting drug use takes place and have found these customs may shift as conditions and interpersonal relations change in a given scene.

Several studies have indicated the importance of not only needle- and syringe-sharing practices in HIV transmission but the sharing of drug containers, cotton, and other injection paraphernalia (Inciardi 1990; Inciardi and Page 1991; Page et al. 1990). Furthermore, the use of contaminated syringes may not entail sharing, in the sense of the social act of passing a recently used needle to a waiting partner, but rather pooling of used needles (Chitwood et al. 1990).

Virological studies have indicated that HIV can survive in ordinary tap water for extended periods of time (Resnick et al. 1986); thus, shared rinse water represents a considerable potential transmission risk. Koester and colleagues (1990) have described how IDUs often clean their works from the same cup of water that others are using to prepare their heroin

after they shoot drugs. Thus, the same water is used for rinsing of syringes and mixing of drugs.

Reports that the use of shooting galleries is associated with exposure to HIV infection are consistent in the literature. Murphy and Waldorf (1991) have described shooting galleries that provide a relatively private place to inject drugs, provide syringes for rent, and offer other materials to prepare the drugs for injection—such as water, cotton, matches, bottle caps, and syringes for sale. While Des Jarlais and Friedman (1987) described shooting galleries as an integral part of the addict lifestyle in New York, Murphy and Waldorf described shooting galleries as integral for impoverished addicts in the San Francisco Bay area.

Shared injection equipment can transmit HIV when residual contaminated blood remains in previously used syringes and needles. Blood residue is often present in the syringe because of aspiration of venous blood into the syringe. Chitwood and colleagues (1990) reported that shooting gallery syringes that contain visible blood and those that appear visibly clean have a significant risk of carrying HIV. Ten percent of the needle-syringe combinations that were tested from three shooting galleries in South Florida were positive for antibodies to HIV type 1 (HIV-1). Data from this study suggest that the selection of visibly clean injection equipment does not eliminate the possibility of using an HIV-infected needle.

Heterosexual IDUs appear to be less likely to engage in persistent shooting gallery use as compared with homosexual and bisexual men. Celentano and colleagues (1991) reported that in a sample of 2,615 active IDUs in Baltimore, lifetime shooting gallery use was associated with heavier drug involvement and with being male, homosexual or bisexual, of low socioeconomic status, and African American.

The understanding of race/ethnicity as a predictor of HIV risk behavior is still in very early stages. Koblin and colleagues (1990) examined differences in HIV seroprevalence and patterns of drug use and sexual behaviors among Hispanic, African-American, and white IDUs in a sample recruited at multiple sites in Worcester, Massachusetts. After adjustment for demographic differences, African-American males were significantly less likely to report risky drug use behaviors (such as ever sharing needles and recently visiting shooting galleries) compared with white males. However, Hispanic males were significantly more likely to report recent risky drug use behaviors. Both African Americans and

Hispanics were less likely to report risky sexual behaviors compared with whites. Odds ratios for HIV seropositivity were significantly higher for Hispanics compared with whites and maintained marginal significance for African Americans compared with whites when adjusted for risk behaviors and demographic variables. These results, indicating variations in risk behaviors across race/ethnicity groups, are supported by other studies. Guydish and colleagues (1990) reported that African-American IDUs in a San Francisco sample were less likely to share needles than whites.

Studies of HIV prevalence among IDUs have demonstrated varying racial/ethnic patterns dependent on the geographic area and subpopulation sampled. It is likely that risk behaviors also vary by geographic area and subpopulation. The finding that Hispanics and non-Hispanic African Americans in the United States share a disproportionate burden of HIV infection is perhaps due to the earlier onset of the HIV epidemic in African-American and Hispanic IDU populations. That is, while risk behaviors observed across race/ethnicity groups may be comparable, the increased probability of contact with an infected person may be an independent risk factor for African Americans and Hispanics.

Behavioral, cultural, and socioeconomic differences within racial/ethnic groups need to be examined in further studies. Serrano (1990) has described Puerto Rican IDUs. The impact of HIV at the neighborhood level is described as devastating. Preventing AIDS within minorities is proposed within the context of several well-defined communities, such as the family, and entails the development of community resources to deal with many complex problems. Marin (1990) described non-Puerto Rican Hispanics and AIDS prevention efforts that use culturally appropriate interventions.

## **SEXUAL RISK BEHAVIORS**

Feucht and colleagues (1990) described the sexual behavior of IDUs. Most male IDUs are sexually active and heterosexual, and significant proportions have multiple female partners. In this sample, while white males were about as likely to have an IDU partner as a non-IDU partner, only a third of the African-American males reported having a female IDU partner during the preceding year, while 85 percent reported having a female non-IDU partner. African-American males were more likely than white males to have sex with a non-IDU female and were more likely

than whites to have multiple non-IDU female partners. White males were more likely to have multiple IDU female partners.

Several studies have reported the low use of condoms among heterosexual male IDUs. Ross and colleagues (1992) compared IDUs across sexual orientation groups and reported sexual risk related to condom nonuse was lowest for homosexual men, intermediate for bisexual men, and highest for heterosexual men; i.e., heterosexual men were least likely to use condoms. Heterosexual men were, however, least likely to have multiple partners and to have anal sex. Reported rates of condom use vary by study; however, most report nonuse at more than two-thirds.

Factors that lead to condom use remain unclear. Chapman and colleagues (1990) found that in a general heterosexual sample, three conceptually coherent factors (condom use as a positive action, condom use as a cue to embarrassment, and condom use as antithetical to good sex) discriminated between users and nonusers. Condom use has been reported to be associated with voluntary testing for HIV, average or more than average fear of sexually transmitted diseases (STDs), and knowledge of HIV carrier status in personal relations (Moatti et al. 1991). This study included 1,088 heterosexuals with multiple partners (IDU status unknown).

Watkins and colleagues (1992) compared in- and out-of-treatment IDUs on their sexual risk behaviors. Out-of-treatment IDUs reported significantly more partners than in-treatment IDUs and more often exchanged sex for money or drugs. Alcabes and colleagues (1992) also compared in-treatment to out-of-treatment IDU samples and found that the out-of-treatment IDUs tended to be younger, male, and African American. However, associations between HIV-1 seropositivity and a series of demographic and drug-using characteristics were similar in direction and magnitude among subjects currently in treatment and those not in treatment. Lewis and Watters (1991) reported that sexual risk-taking behavior in a sample of IDUs was associated with recent increases in both injecting and smoking cocaine.

Clearly the concept of risk perception is important. Connors (1992) described the overlap of the risks associated with AIDS transmission with other risks common in the use of intravenous (IV) drugs (risks associated with stealing, dealing drugs, carrying a needle, copping drugs, and borrowing needles). On a daily basis, IDUs risk arrest, overdose, and

victimization through theft, violence, and illnesses related to their drug use. A person may borrow a needle from someone because the borrower does not want to assume the risk for illegal possession of a syringe. Similarly, the probability of a fatal overdose is reduced if someone else with whom they share a needle is present. The immediate costs of arrest, overdose, or dope sickness are usually more salient than the long-term risks to one's health (hepatitis, endocarditis, AIDS). Risk taking and risk perception are also likely to change over time, as a person's dependency on a substance increases and acculturation to the IDU community increases.

## **CHANGES IN AIDS RISK BEHAVIORS**

There is a growing literature on the effectiveness of intervention programs whose goals are to impact on the AIDS risk behaviors of IDUs and their sexual partners. While it is beyond the scope of this chapter to review this literature, it is nevertheless instructive to review the findings of a study that summarizes the impact of the National AIDS Demonstration Research (NADR) projects (Stephens et al. 1993). These projects targeted IDUs and their sexual partners with a variety of AIDS prevention messages delivered in a variety of innovative educational programs.

Twenty-eight NADR programs contributed longitudinal data (measured by standardized interviews at baseline and 6-month followup) on 13,475 IDUs and 1,637 sexual partners. Analysis indicated significant changes over the 6-month period in HIV-related risk behaviors among IDUs, including frequency of injecting drugs, the use of noninjected drugs, the use of borrowed injection equipment, and the number of sexual partners reported by the subject. Significant increases were observed in the use of new (rather than previously used) needles, the use of bleach to clean injection equipment between uses, and the use of condoms. The magnitude of change in many of the risk behaviors was very large. For example, at baseline, 54 percent of the total sample indicated that they had shared needles with two or more different persons during the preceding 6 months; at followup, the percentage had dropped to 23 percent. In particular, changes in risky needle-related behaviors were more dramatic than the changes in the risky sexual behaviors. Nevertheless, there were significant numbers of subjects who did not reduce their AIDS risk behaviors.

A number of variables linked to level of risk were identified in a series of analysis of covariance models. At followup, Hispanic IDUs, those who were unemployed, those who had previously been in drug treatment, those whose primary injection drug was heroin, and those who had longer histories of drug injection reported less reduction in the use of injected drugs than did other IDUs. At followup, overall needle-related risk was reduced most significantly among African-American IDUs. Overall sexual risk at followup was lowest among males and nonwhite IDUs.

## **SUGGESTIONS FOR FUTURE RESEARCH**

These results clearly indicate that IDUs are willing and able to reduce their risks of contracting AIDS. Comparing IDUs receiving drug treatment with those who have not, drug treatment does not ensure reduced risk. Studies consistently report high AIDS knowledge among IDUs, yet knowledge does not necessarily lead to behavior change.

The public and individual health issues of male heterosexual IDUs pose challenges for prevention, intervention, politics, and research. A review of the literature draws attention to some of the factors that place male heterosexual IDUs at highest risk. These factors include high levels of injecting drug use (which may lead to a hierarchy of risks that places long-range health risks below the risk of arrest or withdrawal), being younger and therefore more sexually active, having multiple sexual partners (particularly IDU sexual partners), being of African-American or Hispanic race/ethnicity, living in high seroprevalence areas, having negative attitudes regarding condom use for various cultural or psychological reasons, being out of drug treatment, and participating in social networks that do not value AIDS preventive behavior.

Epidemiological efforts need to explore further the interaction of heterosexual and IDU transmission. What specific heterosexual risk behaviors pose risks independent of IDU risks? How do these risks vary across sexual orientation?

It is obvious that much more needs to be known about the circumstances of needle sharing. While the existent literature addresses the larger questions relating variables like ethnicity, level of AIDS knowledge, and other variables to needle-sharing practices, little is known about the detailed circumstances of this phenomenon. Research questions that beg for further answers include: What are the various dimensions of needle

sharing? When are needles deliberately shared with others versus used in unknown contexts such as in shooting galleries? Why do IDUs share needles? What is the role of the heterosexual IDU partner? Does sharing/not sharing affect the relationship? What factors are associated with situational variation in behaviors? What is the composition of a needle-sharing network?

Further efforts should be focused on the factors that predict persistent high risk. Under what circumstances do low-risk individuals move to high risk? In the context of simultaneous risks, how is the hierarchy of risks constructed and how does it impact the decision to share needles and other injection equipment?

Contextual and social network variables should be examined using intensive ethnographic observation and in-depth interviewing. The unique aspects of heterosexual relationships (steady partnership, multiple partnership, cultural values, family values, smooth social relations) need to be examined in the context of IDU network relationships such as those to running buddies. AIDS often does not pose an immediate risk; however, the introduction and use of condoms, or the suggestion of cleaning needles shared with a sexual partner, may pose an immediate interpersonal risk.

Research on HIV transmission from IDUs to non-IDU sexual partners is today the subject of increased attention due to the confirmed risk of heterosexual transmission. However, the importance of HIV transmission among IDUs who engage in sexual relations with other IDUs should not be ignored. Heterosexual IDUs should be alerted not only to the risk of sexual HIV transmission to their non-IDU sexual partners but also to the risks of contracting and transmitting HIV through heterosexual intercourse with other IDUs.

Intervention efforts may need more realistic goals. Changing HIV risk behavior is complex since these risk behaviors are based on interpersonal relations. Further efforts need to be directed at how risk behaviors vary across sexual orientation (homosexual, bisexual, and heterosexual) and whether factors that appear to be related to relapse to risk behaviors in homosexual men are similar for bisexual and heterosexual men. Which components of interventions are most likely to lead to risk reductions? Under what legal codes is change in risk accomplished; for example, do researchers need additional studies of the impact of needle exchange programs?

Finally, additional efforts should be directed at considering special treatment programs for IDUs with *AIDS*. There is evidence that heterosexual seropositive IDUs continue to engage in unprotected sex.

It is clear that intensive interviewing and detailed ethnographic research will be able to answer those questions satisfactorily.

## REFERENCES

- Agar, M. *Ripping and Running*. New York: Seminar Press, 1973.
- Alcabes, P.; Vlahov, D.; and Anthony, J.C. Correlates of human immunodeficiency virus infection in intravenous drug users: Are treatment-program samples misleading? *Br J Addict* 87:47-54, 1992.
- Battjes, R.J.; Pickens, R.W.; Amsel, Z.; and Brown, L.S. Heterosexual transmission of human immunodeficiency virus among intravenous drug users. *J Infect Dis* 162:1007-1011, 1990.
- Baxter, D.N., and Schlecht, B. Patterns of behavior amongst injection drug-users-Implications for HIV. *Public Health* 104(5):321-325, 1990.
- Blower, S.M.; Hartel, D.; Dowlatabadi, H.; Anderson, R.M.; and May, R.M. Drugs, sex and HIV: A mathematical model for New York City. *Philos Trans R Soc Lond [Biol]*: 171-187, 1991.
- Celentano, D.D.; Vlahov, D.; Cohn, S.; Anthony, J.C.; Solomon, L.; and Nelson, K.E. Risk factors for shooting gallery use and cessation among intravenous drug users. *Am J Public Health* 81(10):1291-1295, 1991.
- Centers for Disease Control. AIDS/HIV Surveillance, *National Commission on AIDS Report*, 1993.
- Chaisson, R.E.; Moss, A.R.; Onishi, R.; Osmond, D.; and Carlson, J.R. Human Immunodeficiency Virus infection in heterosexual intravenous drug users in San Francisco. *Am J Public Health* 77(2):169-172, 1987.
- Chapman, S.; Stoker, L.; Ward, M.; Porritt, D.; and Fahey, P. Discriminant attitudes and beliefs about condoms in young, multi-partner heterosexuals. *Int J STD AIDS* 1(6):422-428, 1990.
- Chitwood, D.D.; McCoy, C.B.; and Comerford, M. Risk behavior of intravenous users: Implications of intervention. In: Leukefeld, C.; Battjes, R.; and Amsel, Z. eds. *AIDS and Intravenous Drug Use: Future Directions for Community-Based Prevention Research*. National Institute on Drug Abuse Research Monograph 93. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1990.

- Chitwood, D.D.; McCoy, C.B.; Inciardi, J.A.; McBride, D.C.; Comerford, M.; Trapido, E.; McCoy, V.; Page, J.B.; Griffin, J.; Fletcher, M.A.; and Ashman, M.A. HIV seropositivity of needles from shooting galleries in South Florida. *Am J Public Health* 80(2):150-152, 1990.
- Connors, M.M. Risk perception, risk taking and risk management among intravenous drug users: Implications for AIDS prevention. *Soc Sci Med* 34(6):591-601, 1992.
- Des Jarlais, D.C., and Friedman, S.R. HIV infection among intravenous drug users: Epidemiology and risk reduction. *AIDS* 1(2):67-76, 1987.
- Des Jarlais, D.C., and Friedman, S.R. The psychology of preventing AIDS among intravenous drug users: A social learning conceptualization. *Am Psychol* 43(11):865-870, 1988.
- Des Jarlais, D.C., and Hunt, D. AIDS and Intravenous Drug Use. *National Institute of Justice AIDS Bulletin*, 1988.
- Dolan, M.P.; Black, J.L.; Deford, H.A.; Skinner, J.R.; and Robinowitz, R. Characteristics of drug abusers that discriminate needle-sharers. *Public Health Rep* 102(4):395-398, 1987.
- Feucht, T.E.; Stephens, R.C.; and Roman, S.W. The sexual behavior of intravenous drug users: Assessing the risk of sexual transmission of HIV. *J Drug Issues* 20(2):195-213, 1990.
- Guydish, J.R.; Abramowitz, A.; Woods, W.; Black, D.M.; and Sorensen, J.L. Changes in needle sharing behavior among intravenous drug users: San Francisco, 1986-88. *Am J Public Health* 80(8):995-997, 1990.
- Hanson, B.; Beschner, G.; Walter, J. M.; and Bovellev, E. *Life With Heroin*. Lexington, Mass.: Lexington Books, 1985.
- Haverkos, H.W., and Edelman, R. The epidemiology of acquired immunodeficiency syndrome among heterosexuals. *JAMA* 260: 1922-1929, 1988.
- Hopkins, W. Needle sharing and street behavior in response to AIDS in New York City. In: Battjes, R., and Pickens, R., eds. *Needle Sharing among intravenous Drug Abusers: National and International Perspectives*. National Institute on Drug Abuse Research Monograph No. 80. DHHS Pub. No. (ADM)88-1567. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1988.
- Inciardi, J. HIV, AIDS, and intravenous drug use: Some considerations. *J Drug Issues* 20(2):181-194, 1990.
- Inciardi, J., and Page, J. Drug sharing among intravenous drug users. *AIDS* 5(6):772-773, 1991.
- Kaplan, J. HIV, heroin, and heterosexual relations. *Soc Sci Med* 32(9):1037-1050, 1983.

- Kleinman, P.H.; Goldsmith, D.S.; Friedman, S.R.; Hopkins, W.; and Des Jarlais, D.C. Knowledge about and behaviors affecting the spread of AIDS: A street survey of intravenous drug users and their associates in New York City. *Int J Addict* 25(4):345-361, 1990.
- Koblin, B.A.; McCusker, J.; Lewis, B.F.; and Sullivan, J.L. Racial/ethnic differences in HIV-1 seroprevalence and risky behaviors among intravenous drug users in a multisite study. *Am J Epidemiol* 132(5):837-846, 1990.
- Koester, S.; Booth, R.; and Wayne, W. The risk of transmission from sharing water, drug mixing containers, and cotton filters among intravenous drug users. *Int J Drug Policy* 1(6):28-30, 1990.
- Lewis, D.K.; Watters, J.K.; and Case, P. The prevalence of high-risk sexual behavior in male intravenous drug users with steady female partners. *Am J Public Health* 80:465-466, 1990.
- Lewis, D.K., and Watters, J.K. Sexual risk behavior among heterosexual intravenous drug users: Ethnic and gender variations. *AIDS* 5:77-83, 1991.
- Magura, S.; Grossman, J.I.; Lipton, D.S.; Siddiqi, Q.; Shapiro, J.; Marion, I.; and Amann, K.R. Determinants of needle sharing among intravenous drug users. *Am J Public Health* 79(4):459-462, 1989.
- Marin, B.V. AIDS prevention for non-Puerto Rican Hispanics. In: Leukefeld, C.; Battjes, R.; and Amsel, Z., eds. *AIDS and Intravenous Drug Use: Future Directions for Community-Based Prevention Research*. National Institute on Drug Abuse Research Monograph No. 93. DHHS. Pub. No. (ADM)90-1627. Supt. of Docs, U.S. Govt. Print. Off., 1990.
- Metzger, D.; Woody, G.; De Phillips, D.; McLellan, A.T.; O'Brien, C.P.; and Platt, J.J. Risk factors for needle sharing among methadone-treated patients. *Am J Psychiatry* 148(5):636-640, May 1991.
- Moatti, J.P.; Bajos, N.; and Durbec, J.P. Determinant of condom use among French heterosexuals with multiple partners *Am J Public Health* 81(1):106-109, 1991.
- Murphy, S. Intravenous drug use and AIDS: Notes on the social economy of needle sharing. *Contemp Drug Probl* 14(3):373-410, 1987.
- Murphy, S., and Waldorf, D. Kicking down to the street doc: Shooting galleries in the San Francisco Bay Area. *Contemp Drug Probl* 28(1):9-29, 1991.
- Nemoto, T.; Brown Jr., L.S.; Foster, K.; and Chu, A. Behavioral risk factors of human immunodeficiency virus infection among intravenous drug users and implications for preventive interventions. *AIDS Educ Prev* 2(2):116-126, 1990.

- Page, J.B.; Smith, P.C.; and Kane, N. Shooting galleries, their proprietors, and implications for prevention of AIDS. *Drugs Soc* 5(1):69-85, 1990.
- Power, R.; Hartnoll, R.; and Daviadud, E. Drug injecting, AIDS, and risk behavior: Potential for change and intervention strategies. *Br J Addict* 83:649-654, 1988.
- Resnick, L.K.; Veren, S.Z.; Salahuddin, S.; Tondreau, S.; and Karkham, P.D. Stability and inactivation of HTLV-III/LAV under clinical and laboratory environments. *JAMA* 255(14):1887-1891, 1986.
- Ross, M.W.; Wodak, A.G.; Gold, J.; and Miller, M.E. Differences across sexual orientation on HIV risk behaviors in injecting drug users. *AIDS Care* 4(2):139-148, 1992.
- Schoenbaum, E.E.; Hartel, D.; Selwyn, P.A.; Klein, R.S.; Davenny, K.; Rogers, M.; Feiner, C.; and Friedland, G. Risk factors for human immunodeficiency virus infection in intravenous drug users. *N Engl J Med* 321:874-879, 1989.
- Serrano, Y. The Puerto Rican Intravenous Drug User. In: Leukefeld, C.; Battjes, R.; and Amsel, Z., eds. *AIDS and Intravenous Drug Use: Future Directions for Community-Based Prevention Research*. National Institute on Drug Abuse Research Monograph No. 93. DHHS Pub. No. (ADM)90-1627. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1990.
- Siegal, H.A. Intravenous drug abuse and the HIV epidemic in two midwestern cities: A preliminary report. *J Drug Issues* 20(2):281-290, 1990.
- Stephens, R.C.; Simpson, D.D.; Coyle, S.L.; McCoy, C.B.; and the National AIDS Research Consortium. In: Brown, B.S., and Beschner, G., eds. *Handbook in AIDS and the Injection Drug User*. New York: Greenwood Press, 1993.
- Turner, C.; Miller, H.; and Moses, L., eds. *AIDS, Sexual Behavior and Intravenous Drug Use*. Washington, D.C.: National Academy Press, 1990.
- Waldorf, D., and Murphy, S. IV drug use and syringe sharing practices in call men and hustlers. In: Plant, N., ed. *AIDS, Drugs and Prostitution*. London, England: Routledge, 1989.
- Watkins, K.E.; Metzger, D.; Woody, G.; and McLellan, A.T. High-risk sexual behaviors of intravenous drug users in- and out-of-treatment: Implications for the spread of HIV infection. *Am J Drug Alcohol Abuse* 18(4):389-398, 1992.
- Watters, J.K. Meaning and context: The social facts of intravenous drug use and HIV transmission in the inner city. *J Psychoactive Drugs* 20(2):173-177, 1988.

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# HIV/AIDS Risks Among Male, Heterosexual Noninjecting Drug Users Who Exchange Crack for Sex

*James A. Inciardi*

## INTRODUCTION

Of the 249, 199 cumulative adult/adolescent acquired immunodeficiency syndrome (AIDS) cases reported to the Centers for Disease Control and Prevention (CDC) through December 1992, only 7 percent (N = 16,254) were the result of heterosexual contact, and of these, some 39 percent (N = 6,419) occurred among men (CDC 1993). As such, heterosexual contact accounts for only 3 percent of all reported AIDS cases among men in the United States.

At present, the biological variables that determine human immunodeficiency virus (HIV) infectivity (the tendency to spread from host to host) and susceptibility (the tendency for a host to become infected) are incompletely understood. HIV has been isolated from the semen of infected men, and it appears that it may be harbored in the cells of preejaculated fluids or sequestered in inflammatory lesions (Fischl 1988). Furthermore, there is evidence that women can harbor HIV in vaginal and cervical secretions at varying times during the menstrual cycle (Vogt et al. 1986, 1987; Wofsy 1986).

The probability of sexual transmission of HIV among gay and bisexual men through anal intercourse and to women through vaginal intercourse has been well documented (Kasalow and Francis 1989; Ma and Armstrong 1989). However, although there is the potential for viral transmission from female secretions, the absolute amounts of virus in these secretions appear to be relatively low. The efficiency of transmission of male-to-female versus female-to-male is likely affected by the relative infectivity of these different secretions, as well as sex during menses, specific sexual practices, the relative integrity of skin and mucosal surfaces involved, and the presence of other sexually transmitted diseases (STDs). Given this, there are a number of issues to be examined when considering the heterosexual transmission of HIV among male

non-injecting drug users (non-IDUs). Of particular interest are the biological variables, risk factors and cofactors, and particular sexual practices that relate to the target population of this review—specifically, *men who exchange crack for sex with women crack users*.

## **THE EFFICIENCY OF FEMALE-TO-MALE TRANSMISSION**

The likelihood of female-to-male sexual transmission of HIV is supported by biological plausibility, equal numbers of male and female AIDS cases in some African countries, case reports of males with no risk factors other than heterosexual intercourse, and seroconversion of male sex partners of infected women that occurred while the couples were being studied prospectively. In terms of the biological plausibility of female-to-male transmission, it has been argued that since other STDs are bidirectional in nature, it is not unreasonable to assume that HIV can spread in the same manner. A number of studies have documented that African and Indian men who have multiple female sex partners or sexual contact with prostitutes are at high risk for becoming infected with HIV (Cameron et al. 1987; Carswell et al. 1989; Clumeck et al. 1985; Kreiss et al. 1986; Singh et al. 1993). The most persuasive case reports of female-to-male transmission have been those in which the female acquired the infection from a transfusion or organ transplant and her male partner (without other known risk factors) subsequently seroconverted (L'Age-Stehr et al. 1985), and those in which a sequential chain of male-to-female-to-male transmission was observed (Calabrese and Gopalakrishna 1986).

Although significant numbers of female-to-male infections have been documented in Africa (Barnett and Blaikie 1992; Panos Institute 1988; Shannon et al. 1991), such a mode of transmission has been reported only infrequently in the United States, and the majority of the more recent case reports have come from investigators in Europe (Beck et al. 1989; European Study Group 1992; Johnson et al. 1989; Lefrere et al. 1988).

Several explanations have been offered for the differences in female-to-male transmission rates between U.S. and African experiences. A number of researchers have suggested that the infrequent documentation of heterosexual transmission from women to men in the United States may be a function of the history of the epidemic. They suggest that the initial phase was largely confined to male homosexuals and intravenous drug users (IVDUs). As a result, the number of infected women was low

during that time, and the possibility of female-to-male transmission was small.

Because the majority of AIDS cases occurring today reflect infections that were acquired during the early years of the epidemic, most heterosexually acquired infections among men still may be in the asymptomatic or latent stage (Friedland and Klein 1987; Osmond 1990). The infectivity of an HIV carrier increases over time, suggesting that this additional factor in the natural history of HIV infection may magnify the effects alluded to above. Following this line of reasoning, it has been argued that virus concentration in genital secretions also may increase over the course of the infection (Burke and Redfield 1988). On the other hand, Haverkos and Battjes (1992) recently have argued that the relative frequency of female-to-male transmission has been underestimated (primarily as the result of the way that cases are classified), suggesting that it represents a more significant public health concern than is generally believed.

## **COFACTORS IN FEMALE-TO-MALE TRANSMISSION OF HIV**

Of additional significance here are the relationships among prostitution, untreated STDs, condom use, and HIV infection. In 1988, Cohen and colleagues argued that:

If prostitutes [in the United States] are effectively transmitting the AIDS virus to their customers, there would be far more cases of white, heterosexual males diagnosed with AIDS than are reflected in the current statistics, because some IVDUs in New York, including some prostitutes, have been infected with the AIDS virus since at least 1978. The average street prostitute sees 1,500 customers a year. If even five percent of female street prostitutes in New York City were infected by 1981, the year AIDS was first identified, even moderately efficient transmission of the virus from prostitutes to clients would have resulted in the diagnosis of at least 100,000 white, heterosexual men by now.  
(p. 18)

In 1992, at the National Institute on Drug Abuse (NIDA) AIDS research planning meeting, Dr. Cohen reiterated her argument:

Direct information on customers becoming infected by sex workers is very limited, but does not support more than rare instances of transmission. CDC data report very low rates of “heterosexual transmission” or “no identified risk” AIDS cases among men; given the number of men who purchase sex in this country, these low rates argue against anything but rare transmission.

(p. 1)

As already noted, in Africa, by contrast, there is considerable evidence of viral transmission by HIV-infected prostitutes to their male customers (Barnett and Blaikie 1992; Carswell et al. 1989; Shannon et al. 1991). A number of factors contribute to this difference. Among African prostitutes and their customers, there appear to be significant proportions with untreated STDs, including genital ulcers, and these appear to increase men’s susceptibility to HIV (Cameron et al. 1987; Johnson and Laga 1988; Kreiss et al. 1989; O’Farrell 1989; Piot et al. 1987; Plummer et al. 1991; Simonsen et al. 1988). In addition, several studies have noted that sex workers in the United States are more conscious of STDs and are more likely to use safer sexual practices (e.g., vaginal and anal sex with condoms) with customers than those in Africa (Cohen 1992). For example, a number of reports have noted that there is a socialization process associated with becoming a prostitute in the United States. Would-be and neophyte prostitutes learn the appropriate techniques and safeguards through apprenticeships with pimps or more experienced prostitutes (Carmen and Moody 1985; Evans 1979; Goldstein 1979; Miller 1986; Rosenbaum 1981; Winick and Kinsie 1971). In some cases there is informal or even formal training on how to protect oneself from theft, violence, or disease. For example, in one sociological analysis of prostitution as an occupation, it was found that the recognition of STDs was a specific topic of instruction for neophyte house prostitutes (Heyl 1979). Furthermore, those who work the streets or in organized houses of prostitution in the United States have friendships and peer relationships, however loose, unstructured, and transitory they may often be, through which experiences are shared, techniques are traded, warnings are communicated, and knowledge is reinforced.

All of these issues and considerations have relevance to the examination of HIV risks among heterosexual male non-IDUs who exchange crack for sex.

## **THE BARTERING OF SEX FOR CRACK COCAINE**

Although the bartering of sex for crack had been mentioned in the popular media at the very beginnings of the crack epidemic (Gross 1985; Lamar 1986; Lawlor 1986), the first empirical study of the phenomenon did not appear in the scientific literature until 1989. In that analysis, drawn from a larger study of drug use and street crime among serious delinquents in Miami, the potential for HIV acquisition and transmission through sex-for-crack exchanges was addressed (Inciardi 1989). Of 100 girls in the 14- to 17-year age range, 27 had bartered sex for crack during the 1-year period prior to interview. Of these, 11 had traded sex for drugs on fewer than 6 occasions but had nevertheless exchanged sex for money on an aggregate of 6,850 occasions. By contrast, there were others in the sample who had bartered sex hundreds and even thousands of times.

At about the same time that this research was being reported, others began to notice rising rates of syphilis and other STDs among crack users (Bowser 1989; Fullilove and Fullilove 1989; Fullilove et al. 1990; Kerr 1989; Knopf 1989*a, b*). Shortly thereafter, sex-for-crack exchanges were targeted for systematic study, but to date, only a few reports have appeared in the literature. Moreover, one of the difficulties in assessing the nature of HIV risks associated with crack use, particularly among heterosexual male non-IDUs, is the fact that most crack users engage in multiple risk behaviors.

A study of risk factors for HIV-1 infection was conducted at an STD clinic in an area in New York City where the cumulative incidence of AIDS in adults through mid-1990 was 9.1 per 1,000 population and where the use of illicit drugs, including crack smoking, was common (Chiasson et al. 1991). The overall seroprevalence among the 3,084 volunteer subjects was 12 percent, with 80 percent of these seropositives reporting risk behaviors associated with HIV-1 infection, including male-to-male sexual contact, IV drug use, and heterosexual contact with an IDU. The seroprevalence in individuals denying these risks was 3.6 percent in men (50 of 1,389) and 4.2 percent in women (22 of 522). Among these individuals, the behaviors associated with infection were

prostitution and use of crack in women and a history of syphilis, crack use, and sexual contact with a crack-using prostitute in men.

The potential for a male in sex-for-crack exchanges to come into contact with an HIV positive female partner was demonstrated in a study of 87 New York City women who had been admitted to a municipal hospital with a diagnosis of pelvic inflammatory disease (PID) (Des Jarlais et al. 1991). Crack use was reported by 56 percent of the subjects (N = 49), and of these, 20 percent were HIV seropositive. Crack use was significantly related to both traditional AIDS risk behaviors (injecting drugs and sex with an IDU) and other unsafe sexual behaviors (exchanging sex for money or drugs and having casual sex partners).

In 1989, given the potential of sex-for-crack exchanges for spreading HIV to new populations, NIDA supported ethnographic studies of the phenomenon in eight cities: Chicago, Denver, Los Angeles, Miami, Newark, New York, Philadelphia, and San Francisco (Ratner 1993). A total of 340 crack users were interviewed in depth, 69 percent of whom were women. Of the 233 women, 108 had participated in sex-for-crack exchanges, as had 69 of the men. HIV testing was done with 168 of the subjects, and a total of 14 percent were found to be positive for the HIV antibody. Of the 24 males who were non-IDUs and who had engaged in heterosexual sex-for-crack exchanges, 12 percent were HIV positive.

## **CRACK, SEX, AND THE SECONDARY SPREAD OF HIV**

The potential for transmission of HIV from women to heterosexual male non-IDUs within the context of sex-for-crack exchanges is related to a number of considerations, including two important independent risk factors. The first is the cocaine/sexuality connection. Cocaine has long had a reputation as an aphrodisiac, although sexuality is notoriously a playground of legend, exaggeration, and rumor. In all likelihood, much of cocaine's reputation may be from the mental exhilaration and disinhibition it engenders, thus bringing about some heightened sexual pleasure during the early stages of use. At the same time, cocaine users have consistently reported that the drug tends to delay the sexual climax, and that after prolonged stimulation, an explosive orgasm occurs. Users also report that chronic use of the drug results in sexual dysfunction, with impotence and the inability to ejaculate the common complaints of male users, the inability to climax among females, and decreased desire for sex

becoming the norm for both male and female users (Grinspoon and Bakalar 1976; Weiss and Mirin 1987).

What applies to powder cocaine with regard to sexual stimulation and functioning also would apply to crack cocaine. Curiously, however, there is the rather contradictory evidence that crack appears to engender what has been referred to as “hypersexual” behavior among many users. This has been observed in a number of ethnographic studies (Inciardi et al. 1993; Ratner 1993). Many crack addicted women and men engage in any manner of sexual activity, under any circumstances, in private or in public, and with multiple partners of either sex (or both sexes simultaneously). Indeed, the tendency of some crack users to engage in high-frequency sex with numerous anonymous partners is a feature of crack dependence and crack house life in many locales. Furthermore, sex-for-drugs exchanges seem to be far more common among female crack addicts now than they ever were among female narcotics addicts, even at the height of the 1967 to 1974 heroin epidemics (Ball and Chambers 1970; Rosenbaum 1981).

The pharmacological effects of crack (the rapid onset, extreme euphoria, and short duration), as well as the economic need to pay for the drug, have a special impact on women. Because crack makes its users ecstatic and yet is so short-acting, it has an extremely high addiction potential. Use rapidly becomes compulsive use. Crack acquisition thus becomes enormously more important than family, work, social responsibility, health, values, modesty, morality, or self-respect. This makes sex-for-crack exchanges psychologically tolerable as an economic necessity. Further, the disinhibiting effects of crack enable users to engage in sexual acts they otherwise might not even consider. Crack-using male customers involved in sex-for-crack exchanges, although they consistently report difficulties in maintaining an erection and ejaculating under the influence of the drug, also state that sex while smoking not only enhances the drug’s effects but also gives them a sense of power and control that they typically do not have in other aspects of their lives (Inciardi et al. 1993).

A second independent risk factor relates to the impact of crack use on physical health and hygiene. Because of the pharmacology and addiction potential of crack, it is rare that smokers take only a single hit of the drug. More likely they spend \$50 to \$500 during what they call a mission—a 3- or 4-day binge, smoking almost constantly, 3 to 50 rocks per day. During these cycles, crack users rarely eat or sleep. This tendency to

binge on crack for days at a time, neglecting food, sleep, and basic hygiene, severely compromises physical health. Consequently, crack users appear emaciated most of the time. They lose interest in their physical appearance. Many have scabs on their faces, arms, and legs-the result of burns and picking at the skin to remove bugs and other insects believed to be crawling under the skin. Crack users tend to have burned facial hair from carelessly lighting their smoking paraphernalia, they have mouth ulcerations and burned lips and tongues from the hot stems of their pipes, and they seem to cough constantly. In addition, many have self-reported and have been observed to have untreated STDs (Inciardi et al. 1993; McCoy and Miles 1992; Ratner 1993).

Going further, although street prostitutes who barter sex for money to purchase drugs often insist that their customers use condoms, this is not usually the case with crack house sex. In fact, condoms are rarely seen in crack houses. Given the health status of crack users (including a high likelihood of compromised immune systems), the incidence of STDs (many of which go untreated), and general lack of condom use, many of the conditions that have contributed to the heterosexual transmission of HIV in Africa exist in crack houses in Miami, New York, Philadelphia, and other urban areas across the United States. In addition, given the frequency of sex and the large number of partners associated with crack house sex, the potential for coming into contact with HIV is of an even greater magnitude. And it is within this context that the heterosexual transmission of HIV to non-IDUs is most likely.

Furthermore, there are a number of situations that may make the crack house unique in the heterosexual spread of HIV. In a study of crack house sexual activities in Miami, for example, a number of men reported that they could climax only through extremely vigorous masturbation or prolonged vaginal intercourse. Many of the female partners in these exchanges reported that the lengthy intercourse resulted in both vaginal and penile bleeding (Inciardi et al. 1993). In situations as these, the potential for female-to-male transmission of HIV increases. During vaginal intercourse, the friction of the penis against the clitoris, labia minora, and vaginal vestibule, opening, and canal causes stimulation that can generate copious amounts of vaginal secretions. And as noted above, HIV has been isolated from vaginal/cervical secretions. Moreover, since women who exchange sex for crack in crack houses do so with many different men during the course of a day or night, potentially HIV-infected semen from a previous customer can still be present in the vagina. It was reported by one crack house customer that he had ruptured

the skin on his penis while having intercourse with a crack house prostitute while she was menstruating. This informant also indicated that vaginal sex during menses was not a rare event. As such, genital secretions as well as semen and blood come into direct contact with the traumatized skin of a client's penis during crack house sex.

In many crack houses, it is not uncommon for women to engage in repeated oral, vaginal, and anal sexual activities, often with no time lapse between successive customers. Since condom use is rare, not only are the women exposed to the semen of *all* of their male partners, but successive male partners also are exposed to the semen of the women's previous partners (Inciardi et al. 1992). As such, *heterosexual transmission of HIV can be from male to female, female to male, and male to male*. It would appear, moreover, that this phenomenon is not unique to crack house sex. In an Orange County, California, study of Hispanic undocumented migrant workers and heroin-addicted prostitutes (Magana 1991), a parallel situation was found. Large numbers of men engaged in vaginal intercourse with the same woman in rapid succession—a sexual behavior referred to by the participants as becoming “milk brothers.”

Finally, there is the matter of oral sex. Few studies have associated oro-genital sex with HIV transmission (Fischl et al. 1987; Puro et al. 1991), and the majority of reports have examined this transmission route among homosexual men (Keet et al. 1992; Lifson et al. 1990; Rozenbaum et al. 1988). Only one fully documented case of female-to-male transmission through oral sex has appeared in the literature (Spitzer and Weiner 1989). In crack houses, oral sex (both fellatio and cunnilingus) is common. Given such risk factors and cofactors as STD infections, genital ulcers, lesions on the lips and tongue, and abrasions on the penis and in the vagina among those who exchange sex for crack, the potential for female-to-male transmission of HIV through oral sex is not inconsiderable.

## **CONCLUSIONS**

As is apparent from this review, any examination of HIV risks among heterosexual male non-IDUs must be done primarily through indirect evidence. At present, the number of confirmed cases of female-to-male AIDS cases in the United States is comparatively small, and the majority of studies of drug-using groups find that most subjects have multiple risk

factors. Not surprisingly, this review raises more questions than it answers. For example:

1. How widespread is the female-to-male heterosexual transmission of HIV in general, and particularly among non-IDUs?
2. How widespread are sex-for-crack exchanges? Are the crack-related sexual phenomena reported in the studies covered in this review (Inciardi et al. 1993; Ratner 1993) unique to the cities targeted, or are they common to the wider crack scene? Are they transitory phenomena, characteristic only of a single phase of the crack epidemic?
3. Where do these sex-for-crack exchanges take place? Are they primarily in crack houses, or do they occur in other places as well? What are the situational variables that foster occurrence in one locale as opposed to others?
4. What is the frequency of sex in crack houses?
5. To what extent are there untreated STDs among crack users? What are the health risks associated with crack addiction that have implications for HIV acquisition and transmission? To what extent do crack users perceive risk for HIV?
6. What is the status of the crack epidemic? Has it increased, declined, or plateaued? What are the regional differences in the status of the epidemic? What are the implications of the status of the epidemic for the heterosexual transmission of HIV?
7. For those deeply enmeshed in the crack life, what types of HIV/AIDS prevention/intervention strategies are most appropriate? What are the best mechanisms for luring crack addicts into HIV prevention programs and into drug abuse treatment? In addition to drug treatment and general health care, what other kinds of services does this population need?
8. Has the crack epidemic had any positive influences? That is, are there any potential sources of positive behavior change that can be utilized in either drug abuse or AIDS prevention efforts?

## REFERENCES

- Ball, J.C., and Chambers, C.D. *The Epidemiology of Opiate Addiction in the United States*. Springfield, IL: Charles C. Thomas, 1970.
- Barnett, T., and Blaikie, P. *AIDS in Africa: Its Present and Future Impact*. New York: Guilford Press, 1992.
- Beck, E.J.; Donegan, C.; Cohen, C.S.; Kenny, C.; Moss, V.; Underhill, G.S.; Terry, P.; Jeffries, D.J.; Pinching, A.J.; Miller, D.L.; Cunningham, D.G.; and Harris, J.R.W. Risk factors for HIV-1 infection in a British population: Lessons from a London sexually transmitted disease clinic. *AIDS* 3:533-538, 1989.
- Bowser, B. Crack and AIDS: An ethnographic impression. *J Natl Med Assoc* 81:538-540, 1989.
- Burke, D.S., and Redfield, R.R. Transmission of human immunodeficiency virus (HIV). *New Engl J Med* 318:1202-1203, 1988.
- Calabrese, L.H., and Gopalakrishna, K.V. Transmission of HTLV-III infection from man to woman to man. *N Engl J Med* 314:987, 1986.
- Cameron, D.W.; Plummer, F.A.; and Simonsen, J.N. "Female to Male Heterosexual Transmission of HIV Infection in Nairobi." Paper presented at the 3rd International Conference on AIDS, Washington, DC, June 1-5, 1987.
- Carmen, A., and Moody, H. *Working Women: The Subterranean World of Street Prostitution*. New York: Harper & Row, 1985.
- Carswell, J.W.; Lloyd, G.; and Howells, J. Prevalence of HIV-1 in East African lorry drivers. *AIDS* 3:759-761, 1989.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Report*. Atlanta, GA: Centers for Disease Control and Prevention, February 1993.
- Chiasson, M.A.; Stonebumer, R.L.; Hildebrandt, D.S.; Ewing, W.E.; Telzak, E.E.; and Jaffee, H.W. Heterosexual transmission of HIV-1 associated with the use of smokable freebase cocaine (crack). *AIDS* 5:1121-1126, 1991.
- Clumeck, N.; Robert-Guroff, M.; Van de Perre, P.; Jennings, A.; Sibomana, J.; Demol, P.; Cran, S.; and Gallo, R.C. Seroepidemiological studies of HTLV-III antibody prevalence among selected groups of heterosexual Africans. *JAMA* 254:2599, 1985.
- Cohen, J.B. "Sexual Transmission Associated with Commercial Sex." Paper presented at the National Institute on Drug Abuse AIDS Research Planning Meeting, Rockville, MD, January 23-24, 1992.
- Cohen, J.B.; Alexander, P.; and Wofsy, C. Prostitutes and AIDS: Public policy issues. *AIDS Pub Pol J* 3:16-22, 1988.

- Des Jarlais, D.C.; Abdul-Quader, A.; Minkoff, H.; Hoegsberg, B.; Landesman, S.; and Tross, S. Crack use and multiple AIDS risk behaviors. *J Acquir Immune Defic Syndr* 4:446-447, 1991.
- European Study Group on Heterosexual Transmission of HIV. Comparison of female to male and male to female transmission of HIV in 563 stable couples. *Brit Med J* 304:809-813, 1992.
- Evans, H. *Harlots, Whores, and Hookers: A History of Prostitution*. New York: Dorset Books, 1979.
- Fischl, M.A. Prevention of transmission of AIDS during sexual intercourse. In: DeVita, V.T.; Hellman, S.; and Rosenberg, S.A., eds. *AIDS: Etiology, Diagnosis, Treatment, and Prevention*. Philadelphia: J.B. Lippincott, 1988. pp. 369-374.
- Fischl, M.A.; Dickenson, G.M.; Scott, G.B.; Klimas, N.; Fletcher, M.A.; and Parks, W. Evaluation of heterosexual partners, children, and household contacts of adults with AIDS. *JAMA* 257:640-644, 1987.
- Friedland, G.H., and Klein, R.S. Transmission of human immunodeficiency virus. *N Engl J Med* 317:1125-1135, 1987.
- Fullilove, M.T., and Fullilove, R.E. Intersecting epidemics: Black teen crack use and sexually transmitted disease. *J Am Med Worn Assoc* 44:146-153, 1989.
- Fullilove, R.E.; Fullilove, M.T.; Bowser, B.B.; and Gross, S.A. Risk of sexually transmitted disease among black adolescent crack users in Oakland and San Francisco, California. *JAMA* 263:851-855, 1990.
- Goldstein, P.J. *Prostitution and Drugs*. Lexington, MA: Lexington Books, 1979.
- Grinspoon, L., and Bakalar, J.B. *Cocaine: A Drug and Its Social Evolution*. New York: Basic Books, 1976.
- Gross, J. A new, purified form of cocaine causes alarm as abuse increases. *New York Times*, November 29, 1985.
- Haverkos, H.W., and Battjes, R.J. Female-to-male transmission of HIV. *JAMA* 268:1855, 1992.
- Heyl, B.S. *The Madam as Entrepreneur: Career Management in House Prostitution*. New Brunswick, NJ: Transaction Books, 1979.
- Inciardi, J.A. Trading sex for crack among juvenile drug users: A research note. *Contemp Drug Prob* 16:689-700, 1989.
- Inciardi, J.A.; Chitwood, D.D.; and McCoy, C.B. Special risks for the acquisition and transmission of HIV infection during sex in crack houses. *J Acquir Immune Defic Syndr* 5:951-952, 1992.
- Inciardi, J.A.; Lockwood, D.; and Pottieger, A.E. *Women and Crack-Cocaine*. New York: Macmillan, 1993.
- Johnson, A.M., and Laga, M. Heterosexual transmission of HIV. Supplement. *AIDS* 2:S49-S56, 1988.

- Johnson, A.M.; Petherick, A.; Davidson, S.J.; Brettle, R.; Hooker, M.; Howard, L.; McLean, K.A.; Osborne, L.E.M.; Robertson, R.; Sonnex, C.; Tchamouroff, S.; Shergold, C.; and Adler, M.W. Transmission of HIV to heterosexual partners of infected men and women. *AIDS* 3:367-372, 1989.
- Kasalow, R.A., and Francis, D.P., eds. *The Epidemiology of AIDS: Expression, Occurrence, and Control of Human Immunodeficiency Virus Type 1 Infection*. New York: Oxford University Press, 1989.
- Keet, I.P.M.; van Lent, N.A.; Sandfort, T.G.M.; Coutinho, R.A.; and van Griensven, G.J.P. Orogenital sex and the transmission of HIV among homosexual men. *AIDS* 6:223-226, 1992.
- Kerr, P. Crack and resurgence of syphilis spreading AIDS among the poor. *New York Times*, August 20, 1989.
- Knopf, A. Syphilis and crack linked in Connecticut. *Substance Abuse Report* August 1:1-2, 1989a.
- Knopf, A. Syphilis and gonorrhea on the rise among inner-city drug addicts. *Substance Abuse Report* June 1:1-2, 1989b.
- Kreiss, J.K.; Coombs, R.; Plummer, F.; Holmes, K.K.; Nikora, B.; Cameron, W.; Ngugi, E.; Ndinya-Achola, J.O.; and Corey, L. Isolation of human immunodeficiency virus from genital ulcers in Nairobi prostitutes. *J Infect Dis* 160:380-384, 1989.
- Kreiss, J.K.; Koech, D.; and Plummer, F.A. AIDS virus infection in Nairobi prostitutes: Spread of the epidemic in East Africa. *N Engl J Med* 314:414, 1986.
- L'Age-Stehr, J.; Schwarz, A.; and Offermann, G. HTLV-III infection in kidney transplant recipients. *Lancet* 2:1361-1362, 1985.
- Lamar, J.V. Crack. *Time*, June 2, 1986.
- Lawlor, J. USA battles souped-up cocaine. *USA Today*, June 16, 1986.
- Lefrere, J.J.; Vittecoq, D.; North, M.L.; Smilovici, W.; Aubertin, P.; Gueguen, M.; Nicod, A.; Lambert, T.; and Janot, C. Risk of female to male transmission of HIV from women infected by transfusion. *AIDS* 2:137-138, 1988.
- Lifson, A.R.; O'Malley, P.M.; Hessol, N.A.; Buchbinder, S.P.; Cannon, L.; and Rutherford, G.W. HIV seroconversion in two homosexual men after receptive oral intercourse with ejaculation: Implications for counseling concerning safe sexual practices. *Am J Public Health* 80:1509-1511, 1990.
- Ma, P., and Armstrong, D., eds. *AIDS and Infections of Homosexual Men*. Boston: Butterworths, 1989.
- Magana, J.R. Sex, drugs, and HIV: An ethnographic investigation. *Soc Sci Med* 33:5-9, 1991.

- McCoy, H.V., and Miles, C. A gender comparison of health status among users of crack cocaine. *J Psychoactive Drugs* 24:389-397, 1992.
- Miller, E.M. *Street Women*. Philadelphia: Temple University Press, 1986.
- O'Farrell, N. Transmission of HIV: Genital ulceration, sexual behavior, and circumcision. *Lancet* ii Nov.:1157, 1989.
- Osmond, D. Heterosexual transmission of HIV. In: Cohen, P.T.; Sande, M.A.; and Volberding, P.A., eds. *The AIDS Knowledge Base*. Waltham, MA: Massachusetts Medical Society, 1990. pp. 1.2.4:1-9
- Panos Institute. *AIDS and the Third World*. London: Panos Publications, 1988.
- Piot, P.; Kreiss, J.K.; Ndinya-Achola, J.O.; Ngugi, E.N.; Simonsen, J.N.; Cameron, D.W.; Tealman, H.; and Plummer, F.A. Editorial review: Heterosexual transmission of HIV. *AIDS* 1:199-206, 1987.
- Plummer, F.A.; Simonsen, J.N.; Cameron, D.W.; Ndinya-Achola, J.O.; Kreiss, J.K.; Gakinya, M.N.; Waiyaki, P.; Cheang, M.; Piot, P.; Ronald, A.R.; and Ngugi, E.N. Cofactors in male-female sexual transmission of human immunodeficiency virus type 1. *J Infect Dis* 163:233-239, 1991.
- Puro, V.; Narciso, N.; Girardi, E.; Antonelli, L.; Zaccarelli, M.; and Visco, G. Male-to-female transmission of human immunodeficiency virus infection by oro-genital sex. *Eur J Clin Microbial Infect Dis* 10:47, 1991.
- Ratner, M.S., ed. *Crack Pipe as Pimp: An Ethnographic Investigation of Sex-for-Crack Exchanges*. New York: Lexington Books, 1993.
- Rosenbaum, M. *Women on Heroin*. New Brunswick, NJ: Rutgers University Press, 1981.
- Rozenbaum, W.; Gharakhanian, S.; Cardon, B.; Duval, E.; and Coulaud, J.P. HIV transmission by oral sex. *Lancet* i June:1395, 1988.
- Shannon, G.W.; Pyle, G.F.; and Bashshur, R.L. *The Geography of AIDS: Origins and Course of the Epidemic*. New York: Guilford Press, 1991.
- Simonsen, J.N.; Cameron, D.W.; Gakinya, M.N.; Ndinya-Achola, J.O.; D'Costa, L.J.; Karasira, P.; Cheang, M.; Ronald, A.R.; Piot, P.; and Plummer, F.A. Human immunodeficiency virus infection among men with sexually transmitted diseases. *N Engl J Med* 319:274-278, 1988.
- Singh, Y.N.; Singh, K.; Joshi, R.; Rustagi, G.K.; and Malaviya, A.N. HIV infection among long-distance truck drivers in Delhi, India. *J Acquir Immune Defic Syndr*, 6:323, 1993.
- Spitzer, P.G., and Weiner, N.J. Transmission of HIV infection from a woman to a man by oral sex. *N Engl J Med* 320:251, 1989.

- Vogt, M.W.; Craven, D.E.; Crawford, D.; Witt, D.J.; Byington, R.; Schooley, R.T.; and Hirsch, M.S. Isolation of HTLV-III/LAV from cervical secretions of women at risk for AIDS. *Lancet* 1:525-527, 1986.
- Vogt, M.W.; Witt, D.J.; Craven, D.E.; Byington, R.; Crawford, D.; Hutchinson, M.S.; Schooley, R.T.; and Hirsch, M.S. Isolation patterns of the human immunodeficiency virus from cervical secretions during the menstrual cycle of women at risk for the Acquired Immunodeficiency Syndrome. *Ann Intern Med* 106:380-382, 1987.
- Weiss, R.D., and Mirin, S.M. *Cocaine*. Washington, DC: American Psychiatric Press, 1987.
- Winick, C., and Kinsie, P.M. *The Lively Commerce: Prostitution in the United States*. Chicago: Quadrangle Books, 1971.
- Wofsy, C.B.; Cohen, J.B.; Hauer, L.B.; Padian, N.; Michaelis, B.; Evans, J.; and Levy, J.A. Isolation of AIDS-associated retrovirus from genital secretions of women with antibodies to the virus. *Lancet* 1:527-529, 1986.

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# Context of HIV Risk Behavior Among Female Injecting Drug Users and Female Sexual Partners of Injecting Drug Users

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In the first decade of research on human immunodeficiency virus (HIV) infection among women, most research was devoted to quantifying biological risks for heterosexual and perinatal infection (Miller et al. 1990). Of necessity, most studies were designed to quantify individual exposure risk and to develop models to predict the course of the epidemic through the population (Brookmeyer and Gail 1994). In heterosexual transmission studies, scientific discourse centered on the degree of risk for each type of sex act (e.g., anal versus vaginal intercourse) and individual conditions that might facilitate transmission (e.g., presence of sexually transmitted infections such as syphilis). Except for prostitutes who use needles, there was little research on female injecting drug users (IDUs) per se; exposure to HIV, rather than gender roles related to injecting behavior, was emphasized (Cohen et al. 1988). Female sex partners of male IDUs only recently have been subject to study. HIV prevention programs for women, whether IDUs or partners of IDUs, have brought increased interest in gender-specific factors that may be barriers to risk reduction (Brown and Weissman 1994).

In this section, the unique aspects of HIV risk behavior among women are reviewed. Female IDUs (Allen, this volume) have been considered separately from sexual partners of IDUs (O'Leary, this volume), although in reality these groups are overlapping. The vast majority of female IDUs are sexual partners of IDUs, although this is not the case for male IDUs (Brown and Weissman 1994; Cohen et al. 1988; Turner et al. 1989). As with male IDUs, the severity of chemical dependency and access to needles are central determinants of needle use and needle sharing among female IDUs (Grund et al. 1992). Women with severe drug dependency problems are likely to be at greater risk of sexual acquisition of HIV than men (Ickovics and Rodin 1992). IDU women are more likely than their male counterparts to engage in high-risk sex with multiple partners for money or drugs, share needles, and have unprotected sex with an IDU partner. In addition, there appears to be greater efficiency in HIV

transmission from males to females than the reverse in the United States and Europe (European Study Group 1992; Vermund et al. 1990). Apart from female IDUs, other sexual partners of IDUs comprise a large heterogeneous population in which cultural, social, racial, and other factors are major determinants of sexual risk behavior and safer sex practices.

Since there has been very little recent research on female IDUs, a brief review of the literature on women who inject drugs that predates the HIV epidemic is included in this introduction. The injection method has been employed nearly universally by opiate addicts since the 1940s (Brecher 1972), with cocaine a more recent but important drug of injection since the 1970s (Kozel and Adams 1986). Regardless of the type of drug injected, the estimate of the ratio of male to female IDUs (Brown and Weissman 1994; Cohen et al. 1988; Turner et al. 1989) and “hard” drug users is 3 to 1 (Cottler et al. 1990). This ratio persists in current statistics derived from needle exchange programs (University of California 1993). The lower ratio of female to male IDUs has been attributed to a number of factors: greater stigmatization and thus secrecy of women who use illicit drugs (Barnard 1993; Kane 1991; Rosenbaum 1988); faster removal of women from the active injecting population through treatment or abstinence as compared to men (Hser et al. 1987; Longshore et al. 1993; Rosenbaum 1981); and reduced opportunity to initiate and sustain hard drug use among women with resultant irregular or polydrug use patterns (Rosenbaum 1981; Worth 1991).

There is some indication of a trend toward convergence for males and females in population-based (i.e., not samples of IDUs alone) drug use studies (Clayton et al. 1986). Population-based surveys show few differences by gender among adolescents (Kaestner et al. 1986). A community-based life study of drug use and health care behavior that has followed Harlem adolescents for many years also shows only a small excess of injection drug use by males compared to females since 1978 (11 percent versus 9 percent) (Brunswick et al. 1986).

Whether due to biased sampling, location-specific patterns, or an age cohort phenomenon, gender-based differences remain among the most severely affected drug users (Johnson 1986). The 3 to 1 gender ratio in IDU samples most likely is the result of social factors that have a relatively greater impact on women than men at each stage in the course of becoming addicted. This differential dropout likely results in an IDU population with more severely affected women compared to men.

The older drug injection literature probably remains relevant for women IDUs with chronic chemical dependency problems.

In most of the literature on chemically dependent women, initiation and continued access to drugs occur mainly through male sexual partners (Barnard 1993; Kane 1991; Rosenbaum 1981; Worth 1991), which partially explain the disproportionate percentage of women IDUs who have drug-using sexual partners compared to male IDUs. This is reflected in the HIV risk literature, which shows that women primarily share injection equipment with sexual partners or with close-knit groups that include the sexual partner (Barnard 1993; Kane 1991). These studies indicate that overall rates of needle-sharing may be greater for women compared to men. Injection of drugs with strangers in shooting gallery-type settings or with groups of casual acquaintances with frequent shifts in membership are predominantly male behaviors.

In samples of individuals in drug treatment, women have a faster transition from drug use initiation to addiction (Anglin et al. 1987; Hser et al. 1987) and greater severity of addiction as compared to their male counterparts (Anglin et al. 1987; Hser et al. 1987; Rosenbaum 1981). The greater ease of obtaining steady drug money through female prostitution, compared to the more risky and erratic economic activities of IDU males, may be a central factor in these gender differences (Anglin et al. 1987; Hser et al. 1987; Rosenbaum 1981).

However, even if the numbers of IDUs were to become equal for males and females, reasons for initiation of drug use, access to needles, and needle use settings are likely to retain strong gender differences as long as gender-based social and economic differences remain among drug users. Illicit drug distribution economies are male-dominated hierarchies, resulting in the restriction of female roles in drug procurement (Naffine 1987). Chemically dependent women tend to have drug-using male sexual partners to overcome gender barriers to drug access.

When women decide to seek treatment, however, a drug-using sexual partner may obstruct access to treatment (Mondanaro 1989). For IDU women, drug use by male sexual partners may be the central problem in reduction of high-risk needle use or high-risk sex associated with both injection and noninjection drug use [e.g., crack]. The chief implication is that HIV-risk-reduction programs for women who use drugs must consider the continued central role of drug-using male sexual partners. As indicated in Allen's sampling of the recent HIV literature

(this volume), there is little attention paid to the gender-specific contextual issues of injection drug use as outlined above.

In her review, O'Leary (this volume) points out that sexual risk reduction programs for women require great sensitivity to problems of male domination of sexual roles. Prevention programs instruct women to require male partners to use condoms. Sexual partners may be long-standing relationships, casual partners, or potential long-term partners who may or may not be willing to comply for different reasons, depending on the nature of the partnership or the individual psychology. Although the majority of males do not respond with hostility to a condom request, some do.

Violent assaults on women by male sexual partners, documented for over a century (Gordon 1988), are estimated to occur for as many as 1 in 4 women (Herman 1992). Yet this problem, which exists in all social classes, seldom has been considered formally in risk reduction programs. Women who use illicit psychoactive substances are especially likely to have a childhood history of physical and sexual abuse as well as violent adult sexual partnerships (Boyd 1993). Prevention programs should counsel both men and women to recognize abuse potential and to develop strategies to reduce abusive behavior as part of safer sex awareness and practice.

Other points in the O'Leary review bear reiteration. The crisis-driven lifestyle of many urban poor people often results in placing a low priority on safer sex practices (Kalickman et al. 1992). While under studied, stabilization of lifestyle is likely an important factor in risk reduction. Most important is the recommendation that community-based intervention programs can be used to fine-tune HIV prevention messages to their own communities. The advantage of establishing community-based prevention programs is that new strategies may be tested directly using the images, language, and styles of a community as defined by the community itself.

What is missing in the review on sex risk also is missing in the HIV literature in general: focused research on sexual risk behavior and its reduction in different social strata. One suspects there are many commonalities among women in different social strata, but there are no comparative studies. A potential effect of more broad-based research on women's strategies in practicing safer sex might be to dilute the excessive

attention paid to impoverished women, which sometimes inadvertently results in their stigmatization as part of the problem in HIV infection prevention.

As experience with prevention programs for women grows during the second decade of the HIV epidemic, a new emphasis on gender-specific behavioral issues has been emerging. The conditions that underlie risk behavior, particularly those not amenable to simple informational campaigns, are most important. Increasingly, the literature points to the importance of female subordination in social, economic, and personal spheres as factors in the maintenance of women's drug injection risk behavior, sexual risk behavior related to drug use, and sexual behavior in general. Early HIV prevention programs did not anticipate sexism as a barrier to risk reduction, but practical experience increasingly has brought it to researchers' attention.

## REFERENCES

- Anglin, M.; Hser, Y.; and McGlothlin, W. Sex differences in addict careers: 2. Becoming addicted. *Am J Drug Alcohol Abuse* 13:59-71, 1987.
- Barnard, M. Needle sharing in context: Patterns of sharing among men and women injectors and HIV risks. *Addict* 88:805-812, 1993.
- Boyd, C. The antecedents of women's crack cocaine abuse: Family substance abuse, sexual abuse, depression and illicit drug use. *J Subst Abuse Treat* 10:433-438, 1993.
- Brecher, E. *Licit & Illicit Drugs*. Boston: Little Brown & Co., 1972.
- Brookmeyer, R., and Gail, M. *AIDS Epidemiology: A Quantitative Approach*. New York: Oxford University Press, 1994.
- Brown, V., and Weissman, G. Women and men injecting drug users: An updated look at gender differences and risk factors. In: Brown, B., and Beschner, G., eds. *At Risk for AIDS: Injection Drug Users and their Partners*. Westport, CT: Greenwood Press, 1994.
- Brunswick, A.; Aidala, A.; Dobkin, J.; Howard, J.; Titus, S., and Banaszak-Holl, J. HIV-1 seroprevalence and risk behaviors in an urban African-American community cohort. *Am J Public Health* 83:1390-1394, 1993.

- Clayton, R.; Voss, H.; Robbins, C.; and Skinner, W. Gender differences in drug use: An epidemiological perspective. In: Ray, B., and Braude, M., eds. *Women & Drugs: A New Era for Research*. National Institute on Drug Abuse Research Monograph No. 65. DHHS Pub. No. (ADM)90-1447. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1986.
- Cohen, J.; Alexander, P.; and Wofsey, C. Prostitutes and AIDS. *AIDS Pub Policy* 3:16-22, 1988.
- Cottler, L.; Helzer, J.; and Tipp, J. Lifetime patterns of substance use among general population subjects engaging in high risk sexual behaviors: Implications for HIV risk. *Am J Drug Alcohol Abuse* 16:207-222, 1990.
- European Study Group on Heterosexual Transmission. Comparison of male to female and female to male transmission of HIV in 563 stable couples. *BMJ* 304:809-813, 1992.
- Gordon, L. *Heroes of Their Own Lives. The Politics & History of Family Violence*. New York: Penguin, 1988.
- Grund, J.; Synn-Stem, L.; Kaplan, C.; Adriaans, N.; and Drucker, E. Drug use contexts and HIV consequences: The effect of drug policy on patterns of everyday drug use in Rotterdam and the Bronx. *Br J Addiction* 87:381-392, 1992.
- Herman, J. *Trauma & Recovery*. New York: Basicbooks, 1992.
- Hser, Y.; Anglin, M.; and Booth, M. Sex differences in addict careers: 3. *Addiction. Am J Drug Alcohol Abuse* 13:231-251, 1987.
- Ickovics, J., and Rodin, J. Women and AIDS in the United States. Epidemiology, natural history and mediating mechanisms. *Health Psychol* 11:1-16, 1992.
- Johnson, E. Women's health: Issues in mental health, alcoholism and substance abuse. *Public Health Rep* 1:42-48, 1986.
- Kaestner, E.; Frank, B.; Marel, R.; and Schmeidler, J. Substance use among females in New York State: Catching up with the males. *Adv Alcohol Subst Abuse* 5:29-49, 1986.
- Kalickman, S.; Hunter, T.; and Kelly, J. Perceptions of AIDS susceptibility among minority and non-minority women at risk for HIV infection. *J Consult Clin Psychol* 60:725-732, 1992.
- Kane, S. HIV, heroin and heterosexual relations. *Soc Sci Med* 32:1037-1050, 1991.
- Kozel, N., and Adams, E. Epidemiology of drug abuse. *Science* 234:970-976, 1986.
- Longshore, D.; Hsieh, S.; and Anglin, D. Ethnic and gender differences in drug users' perceived need for treatment. *Intl J Addict* 28:539-558, 1993.

- Miller, H.; Turner, C.; and Moses, L., eds. *AIDS: The Second Decade*. Washington, DC: National Academy Press, 1990.
- Mondanaro, J. *Treatment of Women with Chemical Dependency Problems*. Lexington, MA: Lexington Press, 1989.
- Naffine, N. *Female Crime. The Construction of Women in Criminology*. Boston: Allen & Unwin, 1987.
- Rosenbaum, M. Sex roles among deviants: The woman addict. *Intl J Addict* 16:859-877, 1981.
- Rosenbaum, M. *Women on Heroin*. New Brunswick, NJ: Rutgers University Press, 1988.
- Turner, C.; Miller, H.; and Moses, L., eds. *AIDS: Sexual Behavior and Intravenous Drug Use*. Washington, DC: National Academy Press, 1989.
- University of California (Berkeley and San Francisco). *The Public Health Impact of Needle Exchange Programs in the United States and Abroad*. Vol. 1. Atlanta: Centers for Disease Control and Prevention, 1993.
- Vermund, S.; Shoen, A.; Galbraith, M.; Ebner, S.; and Fisher, R. Transmission of the human immunodeficiency virus. In: Koff, W.; Wong-Staal, F.; and Kennedy, R., eds. *Annu Rev AIDS Res* 1:81-135, 1990.
- Worth, D. American women and polydrug abuse. In: Roth, P., ed. *Alcohol and Drugs are Women's Issues*. Vol. 1. Metuchen, NJ: Scarecrow Press, 1991.

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# Female Drug Abusers and the Context of Their HIV Transmission Risk Behaviors

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## INTRODUCTION

The following dialog is part of a conversation that took place during an initial interview of a 29-year-old, noninjection drug using (non-IDU), African-American female at an outpatient drug treatment program.

Counselor: “So you know you are HIV positive?”

Client: “Yes, I just found out and I know it has something to do with the fact that I had sex a lot.”

Counselor: “How do you feel about being HIV positive?”

Client: “Well, I take it a day at a time. I guess I deal with it okay, but my main concern is this cocaine. I have got to stop using drugs! That’s why I tried to commit suicide.”

There was little or no affect in the client’s face when discussing the human immunodeficiency virus (HIV) diagnosis. Emotion was shown only when discussing drug use. A similar reaction was shown in the following dialog between a physician and a 41-year-old IDU African-American female. The interview took place on a medical unit in a hospital. Because the patient’s energy primarily was given to routines of her life that were devastating, the impact of receiving a diagnosis of being HIV positive was not perceived as being devastating.

Physician: “I just wanted to let you know that you are HIV positive.”

Nurse: “You are not responding. Does this diagnosis upset you?”

Patient: “Why should it? It’s just one more negative problem to add to the others. Things are already bad, this is not going to make it much worse!”

These dialogs put faces behind reported statistics. As of December 1992, among women ages 15 to 24, 912 deaths from acquired immunodeficiency syndrome (AIDS) had been reported to the Centers for Disease Control and Prevention (CDC). Among those 25 to 34 years of age, 7,346 deaths from AIDS had been reported; for women in age groups 35 to 44, 45 to 54, and those 55 years or older, reported deaths from AIDS were 5,924, 1,728, and 1,556, respectively. These numbers represent increases in AIDS death rates across all age categories for women (Centers for Disease Control and Prevention 1993*a*).

CDC (1993*b*) has described a number of characteristics associated with females with the highest incidence of AIDS. These characteristics included being of African-American or Hispanic heritage, current or past injection drug use, being a non-IDU, and engaging in high-risk sexual activity with IDUs or other HIV-infected persons. In addition, women with AIDS tend to be poor and of disadvantaged socioeconomic status (Ickovics and Rodin 1992).

Injecting drugs and having sex without condoms are the two primary behaviors that researchers have focused on and described as being high risk in the transmission of HIV among female drug abusers. Much of what is known about injecting drug use and unsafe sex as related to HIV transmission among female drug users is descriptive epidemiology. When designing and analyzing studies, many researchers report information that describes how many women were exposed through specified behaviors, their levels of knowledge about the disease, or whether certain interventions changed the number of high-risk behaviors. However, there is a lack of information regarding the underlying factors or contextual issues that contribute to drug-using women’s exposing themselves to HIV. Information regarding the emotional, psychological, familial, and social-environmental contexts in which HIV transmission behaviors take place would yield data that would give insight into the motivations for continued behavior. As a result, the data would provide direction for developing effective interventions for decreasing risk behaviors.

Some researchers have access to subjects to ask for this type of data, but their research questions do not focus on contextual issues. Some may

have the data but interpret it superficially or not at all. The purpose of this chapter is to report on representative current research to determine how well studies have addressed the underlying issues or context in which women, especially African-American and Hispanic women, continue to participate in high-risk behaviors.

## **THEORETICAL PERSPECTIVE**

A number of theoretical perspectives may be applied to understanding the context of HIV risk in a given population. While certainly not the only applicable perspective, one useful framework that may be applied is the Bowen Family Systems Theory (Bowen 1978). This theory is based on the concept of differentiation of self. The characteristics of women most frequently diagnosed with AIDS, as profiled by CDC, are consistent with descriptions of persons with low to moderate levels of differentiation of self in the Bowen Family Systems Theory.

Differentiation of self refers to the degree to which a person has a “solid self” or solidly held principles by which they live. Papero (1990) believes that to the degree that one can thoughtfully guide personal behavior in accordance with well-defined principles in spite of intense anxiety, that person displays a level of differentiation. In addition, Papero (1990) states that the basic level of differentiation of self is manifested in the degree to which an individual manages across life to keep thinking and emotional systems separate, to retain choice between behavior governed by thinking and behavior governed by emotional reactivity, and to set a life course based on carefully thought out principles and goals.

The basic level of differentiation of self for any person is believed to develop and become fixed early in life and is usually similar to that of the person’s parents. It is a product of the generations of the persons who raised the individual (the nuclear family) in that each nuclear family embodies the emotional processes and patterns of the generations that have preceded it. A lifestyle of behavior based on thinking or behavior based on emotional reactivity that a child learns from the nuclear family or caregiver is replicated in future relationships (Bowen 1978; Papero 1990).

Bowen (1978) described those with low levels of self-differentiation as living in a world where feelings and subjectivity are dominant over

objective reasoning. Persons with low levels of self-differentiation are further described as dependent on the feelings of those around them, expending so much of their energy in maintaining the relationship system about them (loving, being loved, reacting against failure to get love, and achieving comfort from anxiety) that there is no life energy left for other things. Another characteristic is that major life decisions are made on the basis of what “feels right” or simply on being comfortable. Persons with low levels of self-differentiation not only do not use the “differentiated I” in relationships with others, they are incapable of doing so. Further, they inherit a major portion of the world’s serious health, financial, and social problems.

Bowen described persons with moderate levels of differentiation of self as being overtly emotionally dependent on others and in lifelong pursuit of the “ideal close relationship.” If they fail to achieve it (a likely probability), they may withdraw, become depressed, or pursue closeness in another relationship. Those with moderate levels of self-differentiation are recipients of a high percentage of human problems, including the full range of physical illness, emotional illness, and social dysfunctions marked by many levels of impulsive and irresponsible behavior. Finally, they tend to be involved in the use and abuse of substances to relieve the anxiety of the moment.

Bowen then described the level of self-differentiation that he believed contributed to good health and should be promoted among clients and their families. Those characterized as having healthy and good levels of self-differentiation have an intellectual system that is sufficiently developed to begin making a few decisions without the emotional system, and they have developed a reasonable level of solid self on most of the essential issues in life. They are able to successfully meet new situations and, while aware of the importance of relationships in life, determine their life course from within themselves rather than from what others think. Such persons are able to cope successfully with a broad range of human situations and are remarkably free from the full range of human problems.

Bowen’s system is subject to the criticisms of other motivational or psychodynamic theories (e.g., difficulties in operationalizing constructs, observed outcomes not uniquely predicted by theory), but it does provide a context for understanding behavior and a method of integrating observed behavior with potential meaning of that behavior. It is

important to examine current studies to see if this or similar theoretical bases are being used or could be used to guide and interpret extant research.

## **REVIEW OF CURRENT RESEARCH**

One example is the research currently being conducted at the University of Maryland School of Nursing. This study is aimed at reducing the high-risk behaviors of needle sharing and sex without condoms among African-American female IDUs. It is a 3-year experimental design study targeted for 200 subjects in a methadone maintenance program. The study is called the Peer Counseling and Leadership Training (PCLT) program, and it focuses on control and self-esteem as critical issues in development of efficacious selves, sex and sexuality as related to AIDS, and self-reported lifestyles that have implications for drug use and sexual behaviors. The goal of this intervention is empowerment through instillation of a sense of inner control and motivation based on increased self-esteem and competency involving self, relationships with others, and involvement with the community. Particular attention is paid to sensitivity to and management of relationships with others and to attitudes involving trust, competence, confidence, positive thinking, personal direction, and self-identity (R.M. Harris, personal communication, March 18, 1993).

This research does appear to be addressing some of the contextual issues of HIV transmission among female drug abusers. The activities in the intervention are consistent with the Bowen Family Systems Theory and could be seen as helping women develop a solid self as well as appealing to their intellect for increasing their ability to determine their behavior based on thinking rather than emotional reactivity. It could be argued that the effect of the intervention is to change a major factor in behavior, low level of differentiation of self. However, because the researchers are not viewing the subjects' self as having developed as a result of embodying emotional processes and patterns of previous generations, the expectation is that intended changes resulting from the intervention will happen soon. Bowen (1978) states that an increase in the level of differentiation of self is gradual and takes a while to accomplish.

According to Harris, one initial finding from this study is that the partners of female drug users lend the women's equipment to other IDUs. Hence, some female drug users are not necessarily sharing their needles and

equipment; instead, they are being shared for them. Having a low level of differentiation of self would make the women unable to say “I want this to stop.”

Another finding of Harris and colleagues’ study is that even though the intervention is not targeting drug use, drug use is repeatedly mentioned by the female IDUs. Although these women are on a methadone program, they are using drugs such as alcohol, marijuana, cocaine, and heroin. The investigators have learned that addressing HIV transmission among this population without addressing the issue of drug abuse is not approaching the problem from a comprehensive perspective.

Frischer and colleagues (1993) reported on their study conducted in Scotland that aimed at theoretically modeling the behavior and attributes of intravenous drug users (IVDUs) in order to examine relationships between different variables as they affect HIV risk practices. In face-to-face interviews, the investigators administered a questionnaire that captured 10 variables: treatment, drug use, needle sharing, harm reduction, prison, prostitution, income, travel, sex, and AIDS awareness. This questionnaire was designed by an international World Health Organization (WHO) working party and used in 11 cities worldwide. The investigators used the questionnaire to collect data from 503 drug-using subjects and submit it to the linear structural relations program (LISREL). Data were collected in an attempt to establish relationships predictive of HIV risk, HIV harm reduction, or protection from risk. Although the authors reported no specifics regarding the percentage of female subjects, data were analyzed in order to determine if gender contributed to the predictive power of equations addressing HIV risk.

In terms of HIV risk for female IVDUs, it was found that higher levels of drug use were associated with higher levels of sexual activity and with lower levels of precautions taken in relation to HIV. Injecting drug use was related to sharing of injecting equipment; those who injected more also shared more. Female subjects, particularly younger females, those reporting higher levels of drug use, and those reporting higher levels of sexual activity, reported higher levels of sharing injection equipment than males.

Injection drug use was found to be a predictor of prostitution. High levels of drug use were associated with prostitution and illegal behavior for obtaining drugs. Another predictor of sharing injection equipment

found in this study was low socioeconomic status; those at the lower end of the socioeconomic scale and those needing housing engaged in more sharing.

Drug use was the best predictor of harm reduction in that those who reported a low level of drug use engaged in high levels of harm reduction and vice versa. In other words, a low incidence of drug use was a protective factor against HIV transmission risk for the women in this study.

AIDS awareness was related to harm reduction. Female drug users living with their sexual partners and having stable housing and living arrangements reported high levels of AIDS awareness and were less likely to engage in risky sexual behaviors. Another protective factor discovered was that of treatment for drug abuse in that it engendered safer practices both with regard to sexual activity and drugs.

The lack of reporting the exact number of women subjects in the study leaves an opening for challenging gender-specific results. Also, the reporting could have been strengthened by providing more details on the reliability and validity of the data collection instrument. However, the study demonstrated the utility of applying statistical models and analyses through LISREL to identify variables contributing to risk of HIV transmission among female drug users. An important finding in this study is the impact of drug abuse treatment on high-risk behaviors. Researchers found that treatment engendered safer practices with regard to sexual activity and drugs. More treatment was reported by older female IVDUs and those cohabiting with sexual partners.

This study by Frischer and colleagues (1993) revealed behaviors and attributes that contribute to high-risk behaviors for HIV transmission and provided some information about the context in which such behaviors occur.

Kang and De Leon (1993) reported on a study of correlates of drug injection among 152 methadone outpatients; 39 percent (59) of the subjects were female. Data were gathered on sociodemographic background, drug use and treatment history, needle use behavior, sexual behavior, medical status, criminal history, and psychiatric/psychological status. Correlation coefficients were used to examine relationships between variables, and discriminant analysis was used to explore predictors of classification of high- or low-risk behaviors. High levels of

symptomatic distress, depression, and anxiety among the 59 female IVDUs were reported.

In an analysis of data from the Australian National AIDS and Injecting Drug User Study, Darke and colleagues (1992) examined the context of benzodiazepine use among IVDUs and its impact on HIV transmission risk behaviors. The study was conducted in Australia, but the research questions investigated have implications for female IDUs in the United States. Two questions are particularly relevant: “What is the prevalence of benzodiazepine use in this population?” and “Does use of this drug cause this population to engage in more risky injecting and sexual behavior?”

Out of the 1,245 IVDUs, 331 were females. The interview schedule used had been pilot tested and contained sections on demographics; drug treatment and incarceration history; drug use including type of drug used, frequency, and method of use; patterns of needle use and reuse; social context of injecting drug use; sexual history; knowledge of and attitudes towards HIV; and behavior change in response to HIV.

Results showed that female IVDUs were more likely than males to report benzodiazepine use. In turn, benzodiazepine users reported younger mean ages at first injecting use and at first regular injection drug use than did the rest of the sample. The benzodiazepine users also reported significantly more injections during the last month of use, more injections of heroin, and greater frequency of injections with borrowed equipment. The benzodiazepine users were more likely to have engaged in prostitution.

Other information that became clear with this study is that many risk behaviors took place in the context of multiple drug use. It seems likely that unless use and abuse of mood-altering drugs among these females are addressed comprehensively in conjunction with contributing contextual issues, HIV transmission risk behaviors will stay the same or increase.

Forney and colleagues (1992) conducted interviews with 60 female drug users: 25 in rural Georgia and 35 in the inner city of Miami. The women were approached through street outreach workers and contacts with local public health and drug treatment centers. The purpose of the study was to determine the sociodemographics of women who exchange sex for crack cocaine; the drug use and sexual histories of these women; knowledge, beliefs, and attitudes about AIDS and HIV transmission among women

who trade sex for crack; and similarities and differences in sexual practices of rural and urban female crack users.

Of the 35 subjects from Miami, 24 were African American, 7 were white, 3 were Hispanic, and 1 was Asian American. Of the 25 subjects from Georgia, 21 were African American, and 4 were white. The primary source of income was prostitution for 63 percent of the Miami sample and for 68 percent of the Georgia sample. Except for alcohol and marijuana use, crack cocaine was used more regularly than any other drug, and respondents in both Miami and Georgia received their crack through barter systems. In these systems, crack is purchased in a variety of ways, including money from drug sales, bonuses for selling drugs, in exchange for stolen goods, in exchange for other drugs, and as pay for sex. Occasionally, the drugs were simply given to the women. For both samples, the most common means of obtaining crack was in exchange for sex (65 percent in Miami, 72 percent in Georgia).

Forney and colleagues reported that almost all of the respondents expressed concern about AIDS and seemed to understand HIV transmission routes; however, few had changed behaviors to reduce their risk for HIV infection except initiating or increasing condom use. Most continued to engage in high-risk practices, particularly unsafe sex with numerous partners, in an effort to support their chronic crack habits.

This study provides useful details and speaks to the powerful influence of physiological addiction in maintaining risky behaviors. Future studies should attempt to address other factors in the lives of female drug users to clarify what life events and circumstances necessitate their continuing to risk their lives to obtain drugs. What contextual issues present in their lives drive them to high-risk sexual practices to achieve and continue their high?

In focus groups with 134 African-American and Hispanic IVDUs and HIV-positive women, Kline and colleagues (1992) explored attitudes and behaviors that surround sexual decisionmaking in minority communities. Approximately 85 percent of the Hispanic participants were Puerto Rican, and 9 percent were Cuban. Forty-five percent of the entire group of Hispanic women were born outside of the United States. Moderators of the focus groups were provided with discussion guides containing a set of 35 to 40 core questions that all groups were asked and 10 to 15 additional questions specific to the category of risk.

The investigators found that these women did place a high value on relationships with their men, but they were not submissive, dependent, or self-sacrificing women as is often portrayed. The investigators found that condom use was inconsistent in the women's relationships. Based on differential perceptions and judgments related to physical discomfort when using the condoms, HIV status, length and intimacy of the relationship, perception of the partner's risk, and personal sense of responsibility toward the partner, the women determined whether or not condoms would be used. Although the women believed condom use was important with casual partners, a majority of the women agreed that use of condoms with primary partners was not important or desirable. The reason for this belief was based on showing trust to partners and special concerns that using condoms would interfere with the romance of the moment. It seems that most of the issues affecting this major decision were related to the partner's feelings or to what was going on in the relationship. The emphasis on the relationship seems, characteristic of low to moderate levels of differentiation of self as described by Bowen (1978). The women who were HIV positive felt it was important to use condoms with someone they cared about, but they did not feel it necessary to extend that loyalty and concern to casual partners.

These female subjects reported a number of strategies they used with good results to insist partners use condoms, which shows that they had some resources for negotiating safer sex. However, this negotiation required much effort on their part.

In view of differences in drug usage between Puerto Ricans and other Hispanic groups (e.g., Puerto Ricans have higher rates of illicit drug use than Mexican Americans), results from this study should not be generalized to other groups. Also, these women were from drug treatment programs, which likely influenced their attitudes and responses. For a group of women not in treatment, the responses could be different, especially for that subset of crack-abusing women who work in crack houses and go from partner to partner for the sake of getting the drug, securing housing, and so forth.

Kline and colleagues' data allowed them to examine IVDUs' condom use and sexual behaviors. They utilized a family and cultural perspective to understand factors affecting women's decisions surrounding condom use. In addition, they gathered information regarding economics and family responsibilities that influenced behavior, despite contrary stereotypes of these women regarding submissive behavior. It is important to put these

responsibilities in perspective. Such assumption of responsibility is not unique for these women. Economic responsibility for women is not new and not solely attributable to current high levels of drug use and high levels of unemployment among men. These women rose to the occasion and responded much like the women in previous generations, pitching in and helping economically-patterns they, particularly African-American women, were taught as children.

Corby and colleagues (1991) conducted interviews with 137 female sex partners of male IDUs. Sixty-seven percent of these women were current users of noninjecting drugs. Forty-seven percent of the women used marijuana, 45 percent used crack cocaine, 19 percent used cocaine, and 14 percent used tranquilizers. Fifty-eight percent of African-American women and 52 percent of white women had smoked marijuana in the past 6 months, compared to 16 percent of Hispanic women, African-American women (61.5 percent) more frequently reported crack cocaine use than white women (30 percent) or Hispanic women (16 percent). Also, African-American women (32 percent) were more likely to report drinking 2 or more days per week than white women (4 percent) or Hispanic women (3 percent).

These investigators reported that a larger proportion of African-American women (42.3 percent) reported having multiple sex partners during the past 6 months compared to whites (26 percent) or Hispanics (16 percent). No women reported exchanging sex exclusively for drugs. All who had traded sex for drugs had also done so for money. A larger proportion of African-American women acknowledged having engaged in prostitution, and all but two prostitutes (92.9 percent) reported using crack cocaine. In addition, women who engaged in prostitution also were more likely to report daily drinking.

Almost all of the women across all ethnic groups reported engaging in unprotected vaginal intercourse. However, these investigators found no relationship between condom use, ethnicity, and use of crack cocaine or daily drinking. Among the 95 percent of women who reported no use or inconsistent use of condoms, the most frequently stated reasons were dislike of condoms by their partners. Once again, relationship issues and the feelings of those around them are very important to these women. The women, in a sense, were unable to get beyond the barrier of needing to be loved and avoid an intense level of anxiety in the relationship. As Bowen (1978) states, their feeling or emotional system keeps them from making choices governed by thinking, and such processes and patterns

may be passed down from generation to generation. Corby and colleagues state that these women were concerned as well as knowledgeable about HIV transmission, and they were fully aware of being at risk. From a contextual perspective, these investigators obtained information that showed the effects of socioeconomic and lifestyle status of these subjects on behavior.

Des Jarlais and colleagues (1991) examined crack use among 87 females who had been admitted to a municipal New York City hospital during 1988 with a diagnosis of pelvic inflammatory disease (PID). Face-to-face interviews were conducted covering the areas of AIDS risk behaviors and HIV counseling and testing. The subjects were 86 percent African American, 9 percent Hispanic, 3 percent white, and 1 percent other. The investigators found that crack use was reported by 49 (56 percent) of the sample and was strongly associated with unsafe sexual behavior. All 21 subjects who reported recently exchanging sex for money or drugs had smoked crack, and 21 (84 percent) of the 25 females who had recently had casual sex partners had also smoked crack. Twelve of the 87 subjects were HIV positive, and 10 of these were among the 49 who were crack users.

This study shows a strong connection between female crack cocaine users and increased risk for HIV transmission. The investigators have raised awareness to the fact that the very addictive nature of a particular drug is associated with the increase in HIV among females.

Lewis and Watters (1991) examined the relationship of ethnicity and gender to high-risk sexual behavior among 457 heterosexual IVDUs, 37 percent of whom were female. The subjects were interviewed on the street and in clinic settings in San Francisco as part of a larger ongoing study of risk factors for HIV transmission in IVDUs. Respondents were given a 45-minute structured interview.

Results showed that 14 percent of African-American women and 30 percent of white women had 10 or more partners over the past year. Among the subjects who were sexually active during the study, white women had a median of three sexual partners, and African-American women had a median of two partners. Fifty percent of the women reported participating in sex-for-money exchanges. More African-American women reported prostitution than white women, and, of the 83 women who exchanged sex for money, 54 used condoms.

Robles and colleagues (1990) examined social relations and roles of 160 Puerto Rican sexual partners of IVDUs in Puerto Rico as they related to prevention of HIV transmission, particularly use of condoms. They used the AIDS Initial Assessment instrument developed by the National Institute on Drug Abuse along with participant observation notes and transcribed conversations. Although the women were not IDUs, they engaged in substantial use of noninjected substances. Alcohol was the most commonly used substance of abuse and marijuana the second most common. Involvement with noninjection cocaine also was high.

The reasons most cited by the women for not using condoms were that their husbands did not like it (52.6 percent), and they themselves did not like the condoms (35.5 percent). Also, 50.3 percent reported other reasons related to their partners. The article indicated that these women were cognizant of their risk of getting infected with AIDS, as 84 percent reported that they had at least some chance of developing AIDS.

These investigators obtained additional contextual information. The ethnographic data showed that these women did not belong to or participate in organizational activities. However, they were actively involved in primary group relationships with family, friends, neighbors, and peers-particularly family. In applying Bowen's (1978) ideas, these women in Puerto Rico would be described as expending much of their life energy for maintaining relationship systems around them, and there appears to be little energy left for involvement in other things. There is no sense of solid self as described by Bowen, to the extent that energy can be reserved and used for making decisions and changing behaviors that impact in a major way on their health.

While all of these studies reporting associations between demographics and specific risk behaviors or between specific drugs and risk behaviors provide findings that are factual and informative, contextual issues are relatively neglected. An exception to this is investigation of the impact of multiple drug use on sexual and injecting risk behaviors. If more investigators had probed the circumstances or situations that led these women to use crack as opposed to another type of drug, the impact of community and family relations on their drug use, or other situation-specific variables, a fuller sense of the context of the high-risk practices of women would have been developed. Of particular concern is that sometimes findings specific to females, and perhaps even females within specified ethnic groups, could have been reported but were not. Examples of not reporting analyses specific to females and of neglecting

contextual issues despite an apparent availability of some relevant data are not unique. The author wishes to emphasize that results specific to female subjects are needed and important.

## **CONCLUSION**

This sample of research literature on high-risk behaviors of female drug abusers shows much diversity in attention to contextual issues. There often is a lack of asking research questions, collecting data, and reporting findings from a perspective that includes enough information to form a picture of the contextual situation in which these women exist, use drugs, and succumb to HIV through high-risk behavior. Studies should attempt to not only present associations, but also to explain why there is continued high-risk behavior despite the danger. Information on the emotional, psychological, familial, and social-environmental contexts of high-risk behaviors among female drug users is sorely needed.

Explanatory systems, such as level of differentiation of self, could help make sense of such statements as “I would like to get treatment for my drug use, but I know that being drug free is like a pie in the sky dream for me.” Bowen’s system also can be used to explain a number of current observations on both individual and community levels.

From a community perspective, because Bowen’s theory posits that level of self-differentiation is passed down among generations and that children will be similar to parents in level of self-differentiation, one would not expect problems to be limited to individuals within a family. In fact, AIDS is affecting entire families and generations in African-American neighborhoods. An example is a 51-year-old IVDU woman who is HIV positive; her 36-year-old son just recently died of AIDS; and her sister recently died of AIDS. Another example of this phenomenon is a woman who injects heroin and is HIV positive; her daughter is cocaine addicted and is HIV positive from high-risk sexual behavior; and her daughter’s child is HIV positive. All of this in one family! Families in some African-American communities are accepting the disease and resulting death as a routine part of life, and children are growing up in environments where the norm is for many adults to have AIDS. The children are learning dysfunctional patterns (using drugs to deal with issues, make life comfortable, and relieve the anxiety of relationships and participation in high-risk behaviors) that may be passed on to other generations.

The lack of rational thought separated from emotions described by Bowen may be reflected in the following observation. When some patients find out they have AIDS, they experience it as something someone did to them. As a result, they are not motivated to protect others through condom use or not sharing needles.

A low level of self-differentiation keeps people from advocating for themselves. When diagnosed with being HIV positive, some patients in hospitals hear about it from medical students or interns whom they do not identify as their physician. Sometimes, the diagnosis is given when the patient is being discharged, and no thorough information is given. Another phenomenon is the attitudes of medical and nursing staff toward the patients or clients. Staff may feel as if patients “do this to themselves” and may make comments like “Why don’t you go to another hospital or medical facility?” This response from staff contributes to poor self-esteem and perpetuates a sense of hopelessness. Patients may go back to using drugs to make themselves more comfortable, rather than feeling the anger, hurt, and disillusionment. Persons with high levels of self-differentiation would be able to negotiate the medical care system to avoid or at least confront such insensitivities.

Finally, a consistent theme in research literature on HIV risk in women is that treatment for drug abuse can make an impact on high-risk behaviors for HIV transmission among female drug users. Therefore, drug treatment for women is a crucial intervention to provide the context and skills whereby women can lower their risk of HIV infection.

## REFERENCES

- Bowen, M. *Family Therapy in Clinical Practice*. New York: Jason Aronson, 1978.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Report: Year End Edition*. Atlanta: Centers for Disease Control and Prevention, 1993a.
- Centers for Disease Control and Prevention. U.S. AIDS cases reported through March 1993. *HIV/AIDS Surveillance Report* 5(1):3-19. Atlanta: Centers for Disease Control and Prevention, 1993b.
- Corby, N.; Wolitski, R.; Thornton-Johnson, S.; and Tanner, N. AIDS knowledge, perception of risk, and behaviors among female sex partners of injection drug users. *AIDS Educ Prev* 3(4):353-366, 1991.

- Darke, S.; Hall, W.; Ross, M.; and Wodak, A. Benzodiazepine use and HIV risk taking behavior among injecting drug users. *Drug Alcohol Depend* 31:31-36, 1992.
- Des Jarlais, D.; Abdul-Quader, A.; Minkoff, H.; and Tross, S. Crack use and multiple AIDS risk behaviors. *J Acquir Immune Defic Syndr* 4(4):446-447, 1991.
- Forney, M.; Inciardi, J.; and Lockwood, D. Exchanging sex for crack-cocaine: A comparison of women from rural and urban communities. *J Community Health* 17(2):73-85, 1992.
- Frischer, M.; Haw, S.; Bloor, M.; Goldberg, D.; Green, S.; McKeganey, N.; and Covell, R. Modeling the behavior and attributes of injecting drug users: A new approach to identifying HIV risk practices. *Int J Addict* 28(2):129-152, 1993.
- Ickovics, J., and Rodin, J. Women and AIDS in the United States: Epidemiology, natural history, and mediating mechanisms. *Health Psychol* 11(1):1-16, 1992.
- Kang, S., and De Leon, G. Correlates of drug injection behaviors among methadone outpatients. *Am J Drug Alcohol Abuse* 19(1):107-118, 1993.
- Kline, A.; Kline, E.; and Oken, E. Minority women and sexual choice in the age of AIDS. *Soc Sci Med* 34(4):447-457, 1992.
- Lewis, D., and Watters, J. Sexual risk behavior among heterosexual intravenous drug users: Ethnic and gender variations. *AIDS* 5:77-83, 1991.
- Papero, D. *Bowen Family Systems Theory*. Boston: Allyn and Bacon, 1990.
- Robles, R.; Colon, H.; Gonzalez, A.; and Mateos, R. Social relations and empowerment of sexual partners of IV drug users. *P R Health Sci J* 9(1):99-104, 1990.

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# Factors Associated With Sexual Risk of AIDS in Women

*Ann O'Leary*

## INTRODUCTION

Women are increasingly represented among U.S. acquired immunodeficiency syndrome (AIDS) cases. As of December 1992, almost 28,000 cases of AIDS in women had been reported to the Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention 1993*b*). However, nearly half of these (44 percent) were reported during 1991 and 1992 alone, reflecting a dramatic increase in the rate of female infection (Centers for Disease Control and Prevention 1993*a*). The number of cases of AIDS in women has been projected to become between 55,000 and 75,000 by the end of 1994 (Centers for Disease Control and Prevention, 1992). As the number of women with human immunodeficiency virus (HIV) infection and AIDS has grown, numerous considerations specific to women have arisen. These concern differences in disease course and treatment, issues in the prevention of infection, and effects of stigmatization (Ickovics and Rodin 1992; O'Leary et al. 1993*b*). This chapter describes the extant research concerning the structural and personal factors related to sexual risk for HIV infection in women, with special reference to female partners of drug users. Following is a brief description of prevention programs that have been evaluated, a discussion of female-centered prevention strategies, and recommendations for future research and intervention.

## WOMEN AND AIDS: WHO IS AT RISK?

Within the United States, women are a rapidly growing segment of the population infected with HIV, the cause of AIDS. Their representation among persons with AIDS, expressed as a percentage of the total AIDS cases reported, increased from about 3 percent in 1981, when the first cases were reported to the CDC, to 12 percent in 1990 (Ellerbrock et al. 1991). AIDS is now the leading cause of death among African-American women of reproductive age (ages 15 to 44) in New York and New Jersey (Chu et al. 1990). Heterosexual transmission, which appears to be more efficient when the infected partner is male (Padian et al. 1991), also has

become a prominent source of female infection. In the United States, the proportion of women who have contracted AIDS via heterosexual activity has increased from 11 percent in 1984 to 34 percent in 1990, and this proportion is increasing over time (Ellerbock et al. 1991).

Worldwide, it is estimated that 71 percent of HIV transmission occurred through heterosexual contact (Ehrhardt 1992). Some fear that the United States may ultimately become a "Pattern II" country with 50 percent of those affected being women, as is the case now in some African countries (Haverkos and Edelman 1988).

At the present time, AIDS in the United States affects predominantly the inner-city poor, the majority of whom are people of color. African-American and Hispanic women are disproportionately affected. While whites account for only 27 percent of AIDS cases in women, about 50 percent of women with AIDS are African American, and about 20 percent are Hispanic (Chu et al. 1990). About 73 percent of mothers with HIV-infected children receive public assistance (Shayne and Kaplan 1991). Commercial sex workers also are greatly at risk for HIV infection (Centers for Disease Control and Prevention 1987; Cohen et al. 1988). Most women with AIDS who have been infected heterosexually (although possibly no longer most of those with early-stage HIV infection) were infected by injecting drug-using (IDU) partners (Fordyce et al. 1991). This is not surprising given the high seroprevalence rates of IDUs (Centers for Disease Control and Prevention 1989), their low rates of condom use (Lewis and Watters 1991; Weissman et al. 1991), and the fact that sexual partners may not know of their partners' drug use (Kane 1991).

In the absence of a cure or preventive vaccination against HIV infection, behavior change remains the primary available means for combating this epidemic. The most widely accepted method for preventing sexual transmission of HIV in the United States, apart from abstinence, is the use of latex condoms.

The following is a review of correlates of sexual risk that have been identified among disenfranchised women. It is not restricted to research on female partners of IDUs, although papers focusing specifically on this population are included. A variety of factors associated with sexual risk in women have been identified. These include factors related to poverty, partner/relationship issues, cultural factors, beliefs and attitudes regarding condoms, and personal characteristics. Each of these will be discussed in turn.

## **Factors Associated With Poverty**

A number of aspects of poverty affect the ability of women to protect themselves. These include enhanced risk for drug addiction, high prevalence of sexually transmitted diseases (STDs), and competing life concerns. Poverty also contributes to economic dependence of some women on their partners (Airhihenbuwa et al. 1992); relationship factors contributing to risk are the topic of the next section.

Poverty and the pain that accompanies it contribute to the use of psychotropic drugs, including heroin, crack and other forms of cocaine, and alcohol. Injection of drugs created the initial vector for HIV infection in the inner city. Further, use of psychotropic substances militates against people's ability to practice safer sexual behaviors (Leigh and Stall 1993). One reason for this relationship may be the clouding of judgment that occurs when people are under the influence of such substances; another is that addicted women often exchange sex for the drug that they need (Corby et al. 1991). Female partners of IDUs report high levels of use of illegal drugs and alcohol (Corby et al. 1991; Weissman et al. 1991) and concomitantly high levels of sexual risk (Brown and Weissman, in press). However, it should be noted that one study found that exchanging sex for drugs was not associated with higher sexual risk for women (Brown and Weissman, in press).

Another aspect of inner-city life that contributes to AIDS risk for its female inhabitants is the high prevalence of other STDs that are endemic to these areas. Diseases such as syphilis, gonorrhea, chlamydia, pelvic inflammatory disease, human papillomavirus, and chancroid are severe epidemics in the inner city (Aral and Holmes 1991; Hatcher et al. 1990; Hayes 1987; Hofferth and Hayes 1987; Rothenberg 1991). Populations with higher rates of STDs are at increased risk for HIV infection. The risks of STDs and HIV are similar because both are caused by unprotected sexual activity. In addition, the presence of an STD and associated lesions may facilitate transmission of HIV.

It has been posited that the burdened, crisis-driven lifestyle frequently associated with poverty may contribute to AIDS risk by displacing HIV infection among the list of concerns on peoples' minds (Amaro 1988; Guarnaccia et al. 1989; Marin and Marin 1991; Nyamathi and Vasquez 1989). Indeed, results from a recent study support this notion in that the female respondents listed AIDS below several other life problems in seriousness (Kalichman et al. 1992). In a study of IDUs, residential

instability was found to predict sexual risk for HIV transmission (Brown and Weissman, in press).

## **Relationship Factors**

Perhaps the most critical feature of many behavior changes that might prevent the sexual transmission of HIV is that they require the cooperation of another person, namely, the woman's sex partner. Unfortunately, some of the women most at risk are dependent upon their male partners for economic security (Kane 1991). Some women also fear that they will lose desired partners if they insist on condom use, since this may be interpreted as an indication that the woman has been unfaithful to her partner, believes that her partner has been unfaithful to her, or has discovered that she is infected with HIV or other pathogenic agents (De Bruyn 1992; Fullilove et al. 1990; Kenen and Armstrong 1992). Women also may desire to become pregnant, militating against the use of condoms or any other contraceptive (De Bruyn 1992; Kline et al. 1992).

Of particular concern is the plight of the woman experiencing domestic violence or coerced sex, for whom the recommendation of condom use may be impossible and even dangerous to execute. A recent study of the sex partners of IDUs revealed alarmingly high rates of domestic violence (Weissman 1991). While focus group members generally do not reveal abuse in their own lives, they do comment that other women experience it, as illustrated by one respondent's statement, "It probably happens... in 90 percent of marriages and relationships where women live alone" (Fullilove et al. 1990). Further, while the female condom (discussed below) will give women some control over the safety of their encounters, many of the problems that women experience in their attempts to be safe will persist, since the presence of the female condom is quite obvious to her partner.

Some investigators have suggested the potential utility of alternative negotiation techniques, which involve giving reasons for condom use that do not have to do with AIDS per se (Magana and Magana 1992; O'Leary 1991) and that therefore obviate many potential partner objections. The woman might claim, for example, that her health care providers have recommended condoms for contraception because she is allergic to semen or to quell persistent yeast infections. Recommending to women that they lie to their partners is a controversial strategy that carries obvious risks (e.g., in abusive situations where they are most likely to be tried), and may be seen as less healthy or desirable than other solutions such as

encouraging such women to leave their partners. However, in cases when other options are not realistic or might take considerable time, careful exploration of such possibilities would seem justified for some women.

## **Cultural Factors**

As noted above, women of African and Hispanic descent are disproportionately represented among women with AIDS. Thus, cultural factors that distinguish these cultures are seen by many as being highly relevant to AIDS prevention efforts in the communities most at risk (Airhihenbuwa et al. 1992). While such considerations may be useful in designing interventions aimed at these groups as a whole (e.g., in mass media or marketing applications), it should not be assumed that they apply to every individual member of an ethnic group.

*African-American Women.* Only very limited data are available on the prevalence and correlates of most sexual behaviors other than contraceptive use among African-American women (Reinisch et al. 1988; Turner et al. 1989). While African and African-American cultures are generally regarded as very “sex-positive” and comfortable with discussions of sexuality, it has been observed that poor African-American women may exhibit less varied sexual repertoires than white women (Wyatt et al. 1988a, 1988b). They may equate intimacy specifically with vaginal sex or penetration, an emphasis that may be related to an orientation to procreation rather than erotic sex, possibly related in turn to conservative religious values (Houston-Hamilton 1988). Caution also has been urged in providing AIDS education that may be at odds with established values. For example, the suggestion that women should explore new forms of sexual behavior (e.g., nonpenetrative sexual techniques) as a means of prevention of HIV transmission may be received ambivalently by women subject to victim-blaming because of stereotypes about their sexual behavior (Hine and Wittenstein 1989).

Another aspect of African-American culture relevant to AIDS prevention efforts in that community are issues of trust in health care professionals and mainstream health services (Airhihenbuwa et al. 1992; Thomas and Quinn 1991). Distrust also may contribute to delay in seeking services. It has been argued that African-American women’s resistance to admit sexual risk is driven by fear of racial and sexual backlash (Hine and Wittenstein 1989). There is fear that in the course of addressing the AIDS problem, the African-American community will open itself to additional discrimination by furthering the stereotypical association of

African Americans, disease, and immoral behavior. The ethnicity and sensitivity of the deliverer of the message that AIDS is an issue of importance to the African-American community is likely to be a critical factor in its acceptance.

Yet another feature of some elements of African-American culture that may impact response to AIDS messages is adherence to folk and spiritual beliefs regarding disease etiology and treatment (Landrine and Klonoff 1994). To the extent that an individual holds these beliefs, one might expect low receptiveness to biomedical-based messages regarding transmission as well as treatment. A study of low-income African Americans living in the Los Angeles area revealed prevalent beliefs in spiritual forces, witchcraft, and evil influences as causative agents for HIV and AIDS (Flaskerud and Rush 1989).

*Hispanic Women.* Like African-American culture, Hispanic culture is distinguished in numerous ways of relevance for AIDS. While it should be noted that there are numerous Hispanic cultures corresponding to different geographical regions and countries, a number of characteristics are shared by most or all (Marin and Marin 1991). The literature has characterized Hispanic women as having conservative religious beliefs and gender roles in which they are willing to sacrifice themselves for their children and are passive and subordinate to men (Canino 1982; Rivera 1985). These findings must be interpreted with caution because they are not derived from controlled studies and often do not account for demographic and socioeconomic variables. One strong cultural value that has been established is “familismo,” or an emphasis on family as the primary social unit and source of support, with less emphasis on individualistic achievement than in the dominant culture (Marin and Marin 1991). Children and fertility are highly valued; motherhood brings high status within the family structure; and desire for fertility has been shown to be a barrier to safer sex recommendations for Hispanics (Marin, in press; Marin and Marin 1991). However, it also has been suggested that this family orientation can be used to enhance motivation for behavior change to reduce the risk of AIDS, for example, by appealing to the health of unborn children (Marin, in press).

Many Hispanic women are at risk for HIV infection due to the behavior of their husbands (Magana and Magana 1992; Marin, in press). Injection drug use is prevalent among Hispanics, particularly those living in the Northeast United States and Puerto Rico (Magana and Magana 1992). Hispanic cultural norms promote virginity and monogamous marriage for

Hispanic women but extramarital affairs and frequent sex with other men for men (Magana and Magana 1992). For example, it has been estimated that approximately 30 percent of Hispanic men have engaged in sex with other men (Carrier 1985). An interesting but unanswered question concerns the degree to which women know about their husbands' behavior or admit it to themselves; however, it is clear that discussions on this topic are very difficult for many women, making it difficult for them to protect themselves.

It is widely believed that Hispanic women have a strong religious orientation and that Roman Catholic doctrine has tremendous influence upon their life decisions (Marin and Mat-in 1991). It often is assumed that they will follow papal decrees regarding birth control and condom use. However, contemporary studies indicate that Hispanic women use contraception, and being Catholic is not necessarily associated with traditional reproductive behavior (Marin and Marin 1991). In addition, folk and spiritualistic beliefs regarding health are held by many Hispanics. A recent study of HIV-infected Hispanics living in New Jersey identified prevalent beliefs in folk and spiritualistic causes and treatments for AIDS (Suarez et al. 1993).

Thus, data exist both to support the existence of cultural factors in HIV transmission as well as to dispel myths about cultural stereotypes. It is very important for anyone working in the area of AIDS prevention both to attend to cultural factors that may moderate intervention effectiveness, but also to question preexisting assumptions about the cultural characteristics of the group with which they are working.

Male condoms have been a primary focus of most AIDS education and behavior change efforts in the United States. Thus, cultural factors influencing attitudes toward condoms may be especially pertinent for AIDS prevention. A number of investigators have studied beliefs and attitudes of at-risk women toward male condoms; the next section is devoted to a review of this research.

## **Condom Beliefs and Attitudes**

A number of investigators working within the frameworks of the theory of reasoned action (Fishbein and Middlestadt 1989; Fisher and Fisher 1992; Jemmott and Jemmott 1991) and social cognitive theory (Bandura 1992; O'Leary 1992) have identified beliefs and attitudes related to safer sex in women. Perceptions of risk have been associated with greater

safety in some studies (Corby and Wolitski 1992; Lo Conte et al. 1993); it is important that questions be asked in terms of potential risk given unsafe behavior, or subjects will base responses on current behavior, obscuring the relationship. Self-efficacy beliefs, a central component of social cognitive theory (Bandura 1986), are another factor that has been examined in several studies. Self-efficacy refers to a person's belief that an individual can successfully execute skilled behavior necessary to achieve a desired outcome (in the present case, safer sex). Self-efficacy operates by affecting people's behavior choices, the amount of effort they will exert in performing the behavior, and the degree of persistence they will display in the face of difficulty. Self-efficacy beliefs regarding one's safer sex ability are relevant in three domains (O'Leary 1992): technical use of condoms and nonpenetrative sexual techniques; negotiation with partners; and self-control as related to use of alcohol, other drugs, and sexual arousal. Negotiation self-efficacy has been associated with higher rates of condom use by commercial sex workers (Corby and Wolitski 1992), other disadvantaged women (Lo Conte et al. 1993; O'Leary et al. 1992), and adolescents (Catania et al. 1989; Jemmott et al. 1992). One recent study found that self-efficacy perceptions were more closely linked to behavioral safety for women than for men (Lo Conte et al. 1993). Self-efficacy enhancement takes place through systematic skill-building, through modeling (demonstrating the behavior), and practice of increasingly difficult skills (Bandura 1986). A recent study of African-American female adolescents demonstrated that increases in self-efficacy were associated with increased behavioral intention to practice safer sex (Jemmott and Jemmott 1992).

Expected outcomes of condom use also are important influences on behavior. One belief is that condoms interfere with sexual pleasure (Jemmott and Jemmott 1991). Another belief is that safer practices will win the social approval of peers (Jemmott et al. 1992; Valdiserri et al. 1989). These beliefs, attitudes, and skills are important elements to address in prevention interventions, and they lend themselves readily to influence. Skill and self-efficacy-building techniques are specified particularly well in social cognitive theory (Bandura 1986).

## **Personal Characteristics**

Relatively little research has been conducted to identify personal characteristics and resources that may condition women's ability to respond to AIDS messages. However, one recent study found that disenfranchised women with higher self-esteem and a greater sense of

coherence—the sense that life is controllable and meaningful—were practicing more protective behavior than their low-self-esteem and low-coherence counterparts (Nyamathi 1991). The implications of these findings for AIDS intervention are unclear, as changes in these global personality traits may be difficult to effect, at least in brief intervention.

## **EVALUATED AIDS PREVENTION PROGRAMS FOR WOMEN**

A small number of published studies have evaluated prevention programs for women. The theoretical approaches that have been applied in the area of AIDS prevention include social cognitive theory and the theory of reasoned action. Such programs typically combine risk education with individualized skill-building for condom use and negotiation. One study with a pretest-posttest design demonstrated increases in condom use intentions among African-American adolescent women following a single session intervention (Jemmott and Jemmott 1992); another with a similar design increased intended behavior change among low-income adult women attending Women, Infants, and Children (WIC) clinics (Flaskerud and Nyamathi 1990).

Two studies have used randomized experimental designs to demonstrate intervention effects. One, by Schilling and colleagues (1991), randomized women on methadone maintenance to receive a five-session skill-building intervention or to a control condition. Significant increases in condom use and in perceptions of control over AIDS risk were obtained, although the number of sexual partners did not change. Further, condom use remained significantly more frequent among intervention participants at a 15-month followup (El-Bassel and Schilling 1992). Another study in which a similar intervention was delivered to inner-city women attending a primary care clinic also demonstrated substantial reductions in risk behavior at a 3-month followup (Kelly et al., in press). These studies illustrate that inner-city women can reduce their behavioral risk for HIV infection if properly trained in negotiation and condom use skills.

## **AIDS PREVENTION TECHNOLOGY**

The female condom, which is undergoing safety and efficacy evaluation in the United States, may confer superior protection both because it is made of polyurethane, a material tougher than latex, and possibly also

because it covers more tissue area (Nowak 1993). As mentioned above, the presence of the female condom is obvious to the male; thus, issues of trust remain potentially problematic.

An issue that has become the subject of much debate but woefully little research is the recommendation that women use spermicide alone when the protection afforded by a condom is not a possible option (Cates et al. 1992; Rosenberg and Gollub 1992; Stein 1992). These would be situations in which women perceive themselves as helpless to prevent unprotected encounters, as in cases of rape and domestic violence. (Of course, these events would have to be predictable for the woman to be able to insert the spermicide). Indeed, many service providers in the community are recommending this measure, which obviously does not depend upon male cooperation. Arguments in favor of this recommendation include the *in vitro* virucidal effects of nonoxynol-9 (North 1990), and the speculation that the lubrication afforded by spermicidal gels may prevent tearing of the skin during episodes of coerced sex. However, because frequent use of nonoxynol-9 has been shown to disrupt the outer lining of the cervix and vagina in some women (Niruthisard et al. 1991), it is possible that transmission may be *facilitated* in some cases by this strategy. Indeed, in an experimental study in which commercial sex workers in Nairobi were randomized to receive either a nonoxynol-9-containing sponge or placebo cream, no effect on HIV seroconversion was observed (Kreiss et al. 1992). This study has been criticized as flawed in design and nongeneralizable in results (Rosenberg and Gollub 1992); however, it suggests the need for conservatism in recommending this prevention strategy. Furthermore, some intervention specialists express concern about giving complex or mixed messages, particularly given the extreme paucity of data regarding the effectiveness of this strategy.

## **GENERAL ISSUES IN PREVENTION OF AIDS IN AT-RISK WOMEN**

Prevention efforts may not reach the women most in need, as many inner-city women are isolated and not attached to community agencies. Individualized outreach by trusted others is the most effective way to recruit disenfranchised women, particularly Hispanic women. When possible, integration of AIDS prevention intervention with ongoing trusted services already part of women's lives is likely to enhance maintenance of change. Emotional support for the client on the part of

the change agent may be a crucial factor in promoting change (National Institute of Mental Health 1992). Interventions must take realities of women's lives into consideration, for example, by providing transportation and childcare. Interventions for couples, or at least ones that involve the partner to some degree, must be developed. There is a need for innovative prevention programs and programs that capitalize on cultural strengths. Intervention will be more effective if provided within community sources such as community-based organizations, neighborhood groups, or tenant groups. Formal or informal community leaders should be involved in prevention efforts. Alternative education strategies such as "telenovelas," street theater, and Spanish-language radio and television programs also should be considered.

The cohesion and mutual caring that exist within the families and communities of African-American and Hispanic individuals can be used to advantage in AIDS prevention. Mays and Cochran (1988) have suggested that prevention approaches for ethnic minority individuals should focus on the individual as a responsible member of a familial or social network. Recent work by Kelly and colleagues (1991, 1992) in gay communities has demonstrated the promise of diffusion of innovation models for AIDS prevention; this approach seems well-suited to the socially cohesive Hispanic community as well.

There is a crucial need for education and services related to violence and domestic abuse as well as creation of alternatives to remaining in abusive relationships. AIDS prevention efforts must address issues of abuse if they are to be effective and maintain the safety of the women they are trying to reach.

There is also a need to document behavioral changes other than condom use that women may be using in the belief, correct or incorrect, that they may decrease risk. Behaviors involving partner selection, use of withdrawal, antibody testing, and sexual history-taking (O'Leary et al. 1992) may be tried in response to AIDS prevention messages; these behaviors need to be both documented and studied for effectiveness. A great need also exists for research on woman-controlled technologies for AIDS prevention.

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## REFERENCES

- Airhihenbuwa, C.O.; DiClemente, R.J.; Wingood, G.M.; and Lowe, A. HIV/AIDS education and prevention among African-Americans: A focus on culture. *AIDS Educ Prev* 4:267-276, 1992.
- Amaro, H. Hispanic women and AIDS. *Psychol of Women Q*, 12:423-443, 1988.
- Aral, S.O., and Holmes, K.K. Sexually transmitted diseases in the AIDS era. *Sci Am* 264:62-69, 1991.
- Bandura, A. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall, 1986.
- Bandura, A. A social cognitive approach to the exercise of control over AIDS infection. In: DiClemente, R., ed. *Adolescents and AIDS: A Generation in Jeopardy*. Beverly Hills, CA: Sage, 1992.
- Brown, V.B., and Weissman, G. Women and men injection drug users: An updated look at gender differences and risk factors. In: Brown, B., and Beschner, G.M., eds. *Handbook on Risk for AIDS: Injection Drug Users and Their Partners*. Westport, CT: Greenwood Press, 1993. pp. 173-194.
- Canino, G. The Hispanic woman: Sociocultural influences on diagnosis and treatment. In: Becerra, R.; Karno, M; and Escobar, J., eds. *Mental Health of Hispanic Americans*. New York: Grune and Stratton, 1982.
- Carrier, J.M. Mexican male bisexuality. In: Klein, F., and Wolf, T., eds. *Bisexualities: Theory and Research*. New York: Haworth, 1985. pp. 359-375.
- Catania, J.A.; Dolcini, M.M.; Coates, T.J.; Kegeles, S.M.; Greenblatt, R.M.; Puckett, S.; Corman, M.; and Miller, J. Predictors of condom use and multiple partnered sex among sexually-active adolescent women: Implications for AIDS-related health interventions. *J Sex Res* 26:514-524, 1989.
- Cates, W.; Stewart, F.H.; and Trussel, J. Commentary: The quest for women's prophylactic methods-Hopes versus science. *Am. J Pub Health* 82:1479-1482, 1992.

- Centers for Disease Control and Prevention. Antibody to human immunodeficiency virus in female prostitutes. *MMWR Morb Mortal Wkly Rep* 36:157-161, 1987.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Report*. Atlanta: Centers for Disease Control and Prevention, 1989.
- Centers for Disease Control and Prevention. Projections of the number of persons diagnosed with AIDS and the number of immunosuppressed HIV-infected persons: United States, 1992-1994. *MMWR Morb Mortal Wkly Rep* 41:1-11, 1992.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Report*. Atlanta: Centers for Disease Control and Prevention, 1993a.
- Centers for Disease Control and Prevention. Update: Acquired Immune Deficiency Syndrome: United States, 1992. *MMWR Morb Mortal Wkly Rep* 42:547-557, 1993b.
- Chu, S.Y.; Buehler, J.W.; and Berkelman, R.L. Impact of the human immunodeficiency virus epidemic on mortality in women of reproductive age, United States. *JAMA* 264:225-229, 1990.
- Cohen, J.B.; Alexander, P.; and Wofsy, C. Prostitutes and AIDS: Public policy issues. *AIDS Pub Policy J* 3:16-22, 1988.
- Corby, N.H., and Wolitski, R.J. "Relationship Between Street Sex Workers' Attitudes and Condom Use by Type of Partner." Paper presented at the Eighth International Conference on AIDS/Third STD World Congress, Amsterdam, July 16-21, 1992.
- Corby, N.H.; Wolitski, R.J.; Thornton-Johnson, S.; and Tanner, W.M. AIDS knowledge, perception of risk, and behaviors among female sex partners of injection drug users. *AIDS Educ Prev* 3:353-366, 1991.
- De Bruyn, M. Women and AIDS in developing countries. *Soc Sci Med* 34:249-262, 1992.
- Ehrhardt, A.A. Trends in sexual behavior and the HIV pandemic. *Am J Pub Health* 82:1459-1461, 1992.
- El-Bassel, N., and Schilling, R.F. Fifteen-month followup of women methadone patients taught skills to reduce heterosexual HIV transmission. *Pub Health Rep* 107:500-504, 1992.
- Ellerbrock, T.V.; Bush, T.J.; Chamberland, M.E.; and Oxtoby, M.J. Epidemiology of women with AIDS in the United States, 1981-1990. *JAMA* 265:2971-2975, 1991.
- Fishbein, M., and Middlestadt, S. Using the theory of reasoned action as a framework for understanding and changing AIDS-related behaviors. In: Mays, V.; Albee, G.; and Schenider, S., eds. *Primary Prevention of AIDS: Psychological Approaches*. Newbury Park, CA: Sage, 1989. pp. 93-110.

- Fisher, J., and Fisher, W. Changing AIDS risk behavior. *Psychol Bull* 111:455-474, 1992.
- Flaskerud, J.H., and Nyamathi, A.M. Effects of an AIDS education program on the knowledge, attitudes, and practices of low income Black and Latina women. *J Comm Health* 15:343-355, 1990.
- Flaskerud, J.H., and Rush, C.E. AIDS and traditional health beliefs and practices of Black women. *Nursing Res* 38:210-215, 1989.
- Fordyce, E.J.; Blum, A.; and Stoneburner, R.L. A method for estimating HIV transmission rates among female sex partners of male intravenous drug users. *Am J Epidemiol* 133:590-598, 1991.
- Fullilove, M.; Fullilove, R.E.; Haynes, K.; and Gross, S. Black women and AIDS prevention: A view towards understanding the gender rules. *J Sex Res* 27:47-64, 1990.
- Guarnaccia, P.J.; Angel, R.; and Worobey, J.L. The factor structure of CES-D in the Hispanic Health and Nutrition Examination Survey: The influence of ethnicity, gender, and language. *Soc Sci* 29:85-94, 1989.
- Hatcher, R.A.; Stewart, F.H.; Trussell, J.; Kowal, D.; Guest, F.; Stewart, G.K.; and Cates, W. *Contraceptive Technology, 1990-1992*. New York: Irvington Publishers, Inc., 1990.
- Haverkos, H.W., and Edelman, R. The epidemiology of acquired immunodeficiency syndrome among heterosexuals. *JAMA* 260:1922-1929, 1988.
- Hayes, C. *Risking the Future*. Washington, DC: National Academy Press, 1987.
- Hine, D., and Wittenstein, K. Female slave resistance: The economics of sex. In: Steady, F., ed. *The Black Woman Cross-Culturally*. Cambridge: Schenkman Publishing Company, 1981. pp. 189-344.
- Hofferth, S., and Hayes, C. *Risking the Future*. Vol. 2. Washington, DC: National Academy Press, 1987.
- Houston-Hamilton, A. "Implications of Sexual and Contraceptive Practices/Attitudes for Prevention of Heterosexual Transmission in Blacks." Paper presented at the National Institute on Drug Abuse Technical Review, Washington, DC, January 1988.
- Ickovics, J. R., and Rodin, J. Women and AIDS in the United States: Epidemiology, natural history, and mediating mechanisms. *Health Psychol* 11:1-16, 1992.
- Jemmott, L.S., and Jemmott, J.B. Applying the theory of reasoned action to AIDS risk behavior: Condom use among Black women. *Nursing Res* 40:228-234, 1991.
- Jemmott, L.S., and Jemmott, J.B. Increasing condom-use intentions among sexually active Black adolescent women. *Nursing Res* 41:273-278, 1992.

- Jemmott, J.B.; Jemmott, L.S.; Spears, H.; Hewitt, N.; and Cruz Collins, M. Self-efficacy, hedonistic expectancies, and condom-use intentions among sexually active Black inner-city women: A social cognitive theory approach to AIDS risk behavior. *J Adolesc Health* 13:512-519, 1992.
- Kalichman, S.C.; Hunter, T.L.; and Kelly, J.A. Perceptions of AIDS susceptibility among minority and nonminority women at risk for HIV infection. *J Consult Clin Psychol* 60:725-732, 1992.
- Kane, S. HIV, heroin, and heterosexual relations. *Soc Sci Med* 32:1037-1050, 1991.
- Kelly, J.A.; Murphy, D.A.; Washington, C.D.; Wilson, T.S.; Koob, J.J.; Davis, D.R.; Ledezma, G.; and Davantes, B. HIV/AIDS prevention for women seen in primary health care clinics: Effects of intervention to change high-risk sexual behavior patterns. *Am J Pub Health*, in press.
- Kelly, J.A.; St. Lawrence, J.S.; Diaz, Y.E.; Stevenson, L.Y.; Hauth, A.C.; Brasfield, T.L.; Kalichman, S.C.; Smith, J.E.; and Andrew, M.E. HIV risk behavior reduction following intervention with key opinion leaders of population: An experimental analysis. *Am J Pub Health* 81:168-171, 1991.
- Kelly, J.A.; St. Lawrence, J.S.; Stevenson, L.Y.; Hauth, A.C.; Kalichman, S.C.; Diaz, Y.E.; Brasfield, T.L.; Koob, J.J.; and Morgan, M.G. Community AIDS/HIV risk reduction: The effects of endorsements by popular people in three cities. *Am J Pub Health* 82:1483-1489, 1992.
- Kline, A.; Kline, E.; and Oken, E. Minority women and sexual choice in the age of AIDS. *Soc Sci Medicine* 34:447-457, 1992.
- Kreiss, J.; Ngugi, E.; Holmes, K.; Ndinya-Achola, J.; Waiyaki, P.; Roberts, P.L.; Ruminjo, I.; Sajabi, R.; Kimata, J.; Fleming, T.R.; Anzala, A.; Holton, D.; and Plummer, F. Efficacy of nonoxynol-9 contraceptive sponge use in preventing heterosexual acquisition of HIV in Nairobi prostitutes. *JAMA* 268:477-482, 1992.
- Landrine, H., and Klonoff, E.A. Cultural diversity in causal attributions for illness: The role of the supernatural. *J Behav Med* 17:181-193, 1994.
- Leigh, B.C., and Stall, R. Substance use and risky sexual behavior for exposure to HIV: Issues in methodology, interpretation, and prevention. *Am Psychol* 48:1035-1045, 1993.
- Lewis, D.K., and Watters, J.K. Sexual risk behavior among heterosexual intravenous drug users: Ethnic and gender variations. *AIDS* 5:577-583, 1991.
- Lo Conte, J.S.; O'Leary, A.; and Labouvie, E. Applying social-cognitive theory to the safety of sexual behavior of inner city African-Americans. Supplement. *Ann Behav Med* 15:S102, 1993.

- Magana, J.R., and Magana, H.A. Mexican-Latino children. In: Stuber, M.L., ed. *Children and AIDS*. Washington, DC: American Psychiatric Press, 1992. pp. 33-43.
- Marin, B.V., and Gomez, C.A. Latinos, HIV disease and culture: Strategies for AIDS prevention. In: Cohen, P.T.; Sande, M.A.; and Volberding, P.A., eds. *The AIDS Knowledge Base: 1993 Update*. Boston: Little Brown and Co., in press.
- Marin, G., and Marin, B.V. *Research with Hispanic Populations*. Newbury Park, CA: Sage, 1991.
- Mays, V.M., and Cochran, S.D. Issues in the perception of AIDS risk and risk reduction activities by Black and Hispanic/Latina women. *Am Psychol* 43:949-957, 1988.
- National Institute of Mental Health. Report of the working group on women. In: *Putting Knowledge to Work: HIV Prevention Research and Community Programs*. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1992.
- Niruthisard, S.; Roddy, R.E.; and Chutivongse, S. The effects of frequent nonoxynol-9 use on the vaginal and cervical mucosa. *Sex Transm Dis* 4:176-179, 1991.
- North, B.B. Effectiveness of vaginal contraceptives in prevention of STDs. In: Alexander, N.J.; Gabelnick, H.L.; and Spieler, J.M., eds. *Heterosexual Transmission of AIDS*. New York: Wiley-Liss, 1990. pp. 273-290.
- Nowak, R. Research reveals condom conundrums. *J NIH Res* 5:32-33, 1993.
- Nyamathi, A.M. Relationship of resources to emotional distress, somatic complaints, and high-risk behaviors in drug recovery and homeless minority women. *Res Nurs Health* 14:269-277, 1991.
- Nyamathi, A., and Vasquez, R. Impact of poverty, homelessness, and drugs on Hispanic women at risk for HIV infection. *Hisp J Behav Sci* 11:299-314, 1989.
- O'Leary, A. Self-efficacy and health: Behavioral and stress-physiological mediation. *Cog Ther Res* 16:229-245, 1992.
- O'Leary, A. "Social Learning Theory and Its Application to AIDS Prevention in Developing Countries." Paper presented at the Family Health International AIDSTECH Task Force Meeting, Durham, NC, April 3-5, 1991.
- O'Leary, A.; Goodhart, F.; Jemmott, L.S.; and Botcher-Lattimore, D. Predictors of safer sexual behavior on the college campus: A social cognitive theory analysis. *J Am Coll Health* 40:254-263, 1992.

- O'Leary, A.; Celentano, D.; Maibach, E.; Weisman, C.; McCormack, M.; Raffaelli, M.; Jemmott, J.B., III; and LaVange, A. "Social Cognitive Predictors of HIV Preventive Behavior Among Uban STD Clinic Patients." Paper presented at the Ninth International Conference on AIDS, Berlin, June 6-11, 1993a.
- O'Leary, A.; Jemmott, L.S.; Suarez-Al-Adam, M.; AlRoy, C.; and Fernandez, M. I. Women and AIDS. In: Matteo, S., ed. *American Women in the 1990's: Today's Critical Issues*. Boston: Northeastern University Press, 1993b. pp. 173-192.
- Padian, N.S.; Shiboski, S.C.; and Jewell, N.P. Female-to-male transmission of human immunodeficiency virus. *JAMA* 266:1664-1667, 1991.
- Reinisch, J.M.; Sanders, S.A.; and Ziemba-Davis, M. The study of sexual behavior in relation to the transmission of human immunodeficiency virus. *Am Psychol* 43:921-927, 1988.
- Rivera, C. Hispanics and the social service system. In: Cafferty, P.S.J., and McCready, W.C., eds. *Hispanics in the United States*. New Brunswick, NJ: Transaction Books, 1985.
- Rosenberg, M.J., and Gollub, E.L. Commentary: Methods women can use that may prevent sexually transmitted disease, including HIV. *Am J Public Health* 82:1473-1478, 1992.
- Rothenberg, R.B. Those other STDs. *Am J Public Health* 81:1250-1251, 1991.
- Schilling, R.F.; El-Bassel, N.; Schinke, S.P.; Gordon, K.; and Nichols, S. Building skills of recovering women drug users to reduce heterosexual AIDS transmission. *Pub Health Rep* 106:297-304, 1991.
- Shayne, V.T., and Kaplan, B.J. Double victims: Poor women and AIDS. *Women Health* 17:21-37, 1991.
- Stein, Z. The double bind in science policy and the protection of women from HIV infection. [Editorial] *Am J Public Health* 82:1471-1472, 1992.
- Suarez, M.; Raffaelli, M.; O'Leary, A.; and Lo Conte, J. "Use of Alternative Healing Practices Among HIV-infected Hispanics." Paper presented at the Ninth International Conference on AIDS, Berlin, June 6-11, 1993.
- Thomas, S.B., and Quinn, S.C. The Tuskegee syphilis study, 1932-1972: Implications for HIV education and AIDS risk education programs in the Black community. *Am J Public Health* 81:1498-1505, 1991.
- Turner, C.; Miller, H.; and Moses, L. *AIDS: Sexual Behavior and Intravenous Drug Use*. Washington, DC: National Academy Press, 1989.

- Valdiserri, R.O.; Arena, V.C.; Proctor, D.; and Bonati, F.A. The relationship between women's attitudes about condoms and their use: Implications for condom promotion programs. *Pub Health Briefs* 79: 499-501, 1989.
- Weissman, G. "Working with Women at Risk: Experience From a National Prevention Research Program." Plenary address presented at the Annual Training Institute, Comprehensive HIV/AIDS Mental Health Education Program, Detroit, MI, December 6, 1991.
- Weissman, G.; Brown, V.; and The National AIDS Research Consortium. Drug use and sexual behaviors among sex partners of injecting drug-users. *MMWR Morb Mortal Wkly Rep* 40:855-860, 1991.
- Wyatt, G.E.; Peters, S.; and Guthrie, D. Kinsey revisited, I: Comparisons of sexual socialization and sexual behavior of White women over 33 years. *Arch Sex Behav* 17:201-239, 1988a.
- Wyatt, G.E.; Peters, S.; and Guthrie, D. Kinsey revisited, II: Comparisons of sexual socialization and sexual behavior of Black women over 33 years. *Arch Sex Behav* 17:289-332, 1988b.

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# Drug Use and HIV Risk Among Gay and Bisexual Men: An Overview

*Robert J. Battjes*

The acquired immunodeficiency syndrome (AIDS) epidemic was first identified among gay and bisexual men, and men who have sex with men still comprise the majority of persons with AIDS in the United States. Since the inception of the epidemic, 60 percent of AIDS cases reported to the Centers for Disease Control and Prevention (CDC) have occurred among men who reported having sex with men, with 54 percent of AIDS cases occurring in men who reported sex with men but no injecting drug use, and 6 percent of cases occurring in men reporting dual risk behaviors of sex with men and injecting drug use (Centers for Disease Control and Prevention 1993). The National Institute on Drug Abuse (NIDA) is the lead Federal agency for research on drug abuse aspects of AIDS. Thus, NIDA is concerned with AIDS associated with injecting drug use and also with the impact of noninjecting drug use on sexual risk behaviors and disease progression.

This section of the monograph focuses on the relationship between drug use and HIV risk among gay and bisexual men.’ In planning this section of the technical review, Battjes, Sloboda, and Grace recognized the importance of focusing on two distinct subgroups of gay and bisexual men: noninjecting drug users (non-IDUs) whose drug use may contribute to their sexual HIV risk, and gay and bisexual men who also were IDUs. Ostrow was asked to focus on the first group, non-IDUs. Unfortunately, with regard to the second group (gay and bisexual IDUs), little research has been conducted except for that focused on injecting drug use among male prostitutes. Therefore, Waldorf was asked to focus on drug use and HIV risk among male prostitutes. It was decided to briefly highlight the HIV risk of other gay and bisexual IDUs in this section introduction.

In addition to the two chapters in this section, the chapter by Rotheram-Borus and colleagues in the section on HIV risk among adolescents focuses on high-risk gay and bisexual adolescent males who chronically abuse drugs, often including injecting drug use, and engage in sex to obtain drugs and as a means of survival.

## **GAY AND BISEXUAL INJECTING DRUG USERS**

NIDA's AIDS research 5-year planning process (see Battjes et al., this volume) identified the dual risk group of gay and bisexual men who inject drugs as a major research gap. Relatively little research has focused specifically on this population, although they comprise 6 percent of all AIDS cases, 10 percent of AIDS cases occurring in men who report sex with men, and 21 percent of AIDS cases occurring in IDUs (Centers for Disease Control and Prevention 1993). AIDS case data indicate that persons in this dual risk group are at substantially increased risk for AIDS compared with persons reporting either risk behavior alone.

While men who have sex with men comprise 21 percent of AIDS cases in IDUs, it appears that relatively few of this dual risk group are reached through the primary HIV prevention initiatives that target drug abusers (i.e., drug abuse treatment and AIDS outreach programs). For example, in NIDA's HIV Seroprevalence Survey, which studied IDUs admitted to methadone treatment in nine U.S. cities between 1987 and 1991, only 0.8 percent of approximately 6,400 male IDUs reported having exclusively homosexual sexual contacts within the previous year, while another 0.9 percent reported both male and female sexual partners (Battjes, unpublished data). In the NIDA-supported National AIDS Demonstration Research (NADR) program, which evaluated street outreach to IDUs at 61 sites between 1987 and 1992, only 2.2 percent of approximately 35,000 males reported having only male sexual partners within the prior 6 months, while 2.9 percent reported having both male and female sexual partners (Needle, personal communication, March 1993). In the NIDA-supported HIV Outreach Cooperative Agreement research program, which is evaluating HIV outreach and counseling to IDUs and crack cocaine users in 22 cities, only 2 percent of approximately 4,100 males enrolled between January 1992 and April 1993 reported having either exclusively male or both male and female sexual partners (Needle, personal communication, March 1993).

Increased risk of HIV infection in this dual risk group compared with non-IDU gay and bisexual men has been reported by Stall and Ostrow (1989) in their analysis of gay and bisexual men participating in the San Francisco Men's Health Study. At study entry, 88.2 percent (30 of 34) of gay and bisexual men who reported injecting drug use were HIV seropositive, compared with 46.2 percent (189 of 409) of non-IDU gay and bisexual men. Gay and bisexual male IDUs in NIDA's HIV Seroprevalence Survey were more likely to be infected than other IDUs,

with 34.6 percent of gay men and 28.6 percent of bisexual men HIV seropositive compared with 13.2 percent of men reporting no male sexual partners (Battjes, unpublished data). In the NADR study, gay IDUs were similarly more likely to be HIV seropositive (34.6 percent), while bisexual male IDUs were slightly less likely to be HIV seropositive (16.4 percent) compared with males reporting no male sexual partners (18.7 percent). Assessing gay and bisexual men together in the Cooperative Agreement program, 39.3 percent of these men were HIV seropositive compared with 10.7 percent of men reporting no male sexual partners (Needle, unpublished data).

Stall and Ostrow (1989) also found that gay and bisexual male IDUs were more likely to report high-risk sexual activity at study entry (67.7 percent) than non-IDU gay and bisexual men (45.1 percent). Comparing the sexual risk of gay and bisexual IDUs with male IDUs reporting no male sexual partners in the HIV Seroprevalence Survey, 28.9 percent of gay and 46.4 percent of bisexual males reported receiving payment for sex, compared with 7.0 percent of other men. Yet gay IDUs also were more likely to use condoms, with 20.7 percent reporting always using condoms, compared with 11.8 percent of bisexual male IDUs and 8.0 percent of other male IDUs (Battjes, unpublished data). Similarly in the NADR study, 35.8 percent of gay IDUs and 64.3 percent of bisexual male IDUs reported receiving payment for sex, compared with 6.8 percent of other male IDUs. Also, 18.8 percent of gay IDUs reported always using condoms, compared with 8.5 percent of bisexual male IDUs and 8.3 percent of other male IDUs (Needle, unpublished data).

This dual risk group of gay and bisexual IDUs is important not only in its own right, but also because persons reporting dual risk may serve as a bridge for HIV transmission between heterosexual and lesbian IDUs and non-IDU gay and bisexual men. For example, in a study of IDUs entering methadone treatment in four low HIV prevalence areas, Battjes and colleagues (1989) found that the only behavioral difference between HIV seropositive and seronegative IDUs was self-reported sharing of needles or syringes with gay or bisexual men. Of seropositives, 25.0 percent reported such needle sharing, compared with 3.1 percent of seronegatives (adjusted odds ratio = 5.44). In Chicago, Lampinen and colleagues (1991) found that almost all of the earliest IDU-associated AIDS cases (diagnosed between 1982 and 1986) were among men who also reported sex with other men, suggesting that they may have acquired their infection sexually rather than parenterally. They further found that the geographic distribution of AIDS cases within Chicago suggested two

geographically and demographically distinct points of entry of HIV among IDUs: one in a northside neighborhood with a large concentration of gay men, and the other among heterosexual Puerto Ricans several miles away. Finding such demographic distinctions within populations of IDUs even in a single city reinforces the need for further evaluation of contextual variables contributing to HIV risk.

## **GAY AND BISEXUAL NONINJECTING DRUG USERS**

In the following chapter, Ostrow focuses on the relationship of illicit drug use with sexual HIV risk behaviors and HIV infection among noninjecting gay and bisexual men, reviewing the published scientific literature and highlighting research findings from the Chicago site of the Multicenter AIDS Cohort Study, funded by the National Institute of Allergy and Infectious Diseases, and its companion behavioral/mental health study funded by the National Institute of Mental Health. As reported by Ostrow, nonmedical drug use is clearly associated with high-risk sexual behaviors and also with increased likelihood of HIV infection in gay and bisexual men. However, the mechanisms that may account for these associations are not clear; thus, it is uncertain whether high-risk sexual behavior is causally related to drug use or if both behaviors are manifestations of some common underlying factor. While causation is not established, Ostrow notes that researchers currently know enough about their association to permit targeting HIV prevention interventions.

## **DRUG USE AMONG MALE SEX WORKERS**

In the second chapter of this section, Waldorf focuses on drug use and HIV risk among male sex workers, reviewing the published scientific literature and highlighting findings from two studies conducted in San Francisco from 1987 to 1988 and from 1989 to 1991. As reported by Waldorf, relatively few studies have assessed drug use among male sex workers, and the extent of injecting drug use reported has varied considerably. A significant contribution of Waldorf and his colleagues was the differentiation of two types of male prostitutes, “hustlers” and “call men,” with nine different subtypes, and their use of quota sampling to permit study of the various subtypes. Waldorf reports that injectable drugs, including methamphetamine, cocaine hydrochloride, and heroin, were readily available in the areas of San Francisco where male sex workers were concentrated, and high rates of injecting drug use were

found among both hustlers and call men in both studies. Among these IDU male sex workers, Waldorf reports high levels of needle sharing, including sharing in communal settings such as shooting galleries and sex clubs. Waldorf concludes that unsafe sex and needle sharing place many male sex workers at risk for HIV infection.

## NOTE

1. While not all men who have sex with men identify themselves as gay or bisexual, for purposes of this introduction, “gay” is used to refer to men who report having had only male sexual partners. “Bisexual” refers to men who report having had both male and female sexual partners. It is recognized that such behavioral definitions do not necessarily equate with individuals’ self-identified sexual orientation.

## REFERENCES

- Battjes, R.J.; Pickens, R.W.; and Amsel, Z. Introduction of HIV infection among intravenous drug abusers in low prevalence areas. *J Acquir Immune Defic Syndr* 2:533-539, 1989.
- Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report. Vol. 5, No. 3, 1993.
- Lampinen, T.M.; Joo, E.; Seweryn, S.; Wiebel, W.; and Chapman, B.T. “Race/Ethnicity Not Associated With HIV-1 Seropositivity Among Chicago Intravenous Drug Users (IVDUs): Confounding and Epidemic Duration.” Paper presented at the Seventh International Conference on AIDS, Florence, Italy, June 16-21, 1991.
- Stall, R., and Ostrow, D.G. Intravenous drug use, the combination of drugs and sexual activity and HIV infection among gay and bisexual men: The San Francisco Men’s Health Study. *J Drug Issues* 19:57-73, 1989.

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# Substance Use and HIV-Transmitting Behaviors Among Gay and Bisexual Men

*David G. Ostrow*

## INTRODUCTION

This chapter reviews what is known about the relationships between nonmedical psychoactive drug (NMPD) use and human immunodeficiency virus type 1 (HIV-1)<sup>1</sup> infection, HIV-related disease, and acquired immunodeficiency syndrome (AIDS) in men who have sex with men. The review is limited to the published literature, which is, however, quite large in several areas of specific relevance to HIV infection and AIDS.

By far the largest area of interest concerns intravenous (IV) drug use because of the obvious relationship to a major and growing route of transmission of HIV. While this chapter does not specifically address the issues of IV drug use and HIV infection, several recently published reviews (Des Jarlais et al. 1991; Schoenbaum et al. 1989; and Ross et al. 1992) provide comprehensive and up-to-date information regarding the behavioral and mental health aspects of this important subject. Rather, this chapter focuses on nonparenterally used NMPDs and their relationship to HIV transmission behaviors, specifically high-risk sexual behavior. It also discusses the secondary community impact of these associations and their intervention implications. Readers interested in a more detailed discussion of published studies concerning the potential effects of NMPD use on the natural history of HIV infection are referred to the recently published monograph, *Cofactors in HIV-1 Infection and AIDS* (Watson 1990).

Many of the published reports and all of the tables and figures in this chapter come from the Chicago Multicenter AIDS Cohort Study (MACS) cohort, one of the four National Institute of Allergy and Infectious Diseases (NIAID)-funded collaborative natural history of HIV study sites, and its companion National Institute of Mental Health (NIMH)-funded behavioral/mental health add-on study, the Coping & Change Study (CCS).<sup>2</sup> Over 1,000 gay and bisexual men volunteered for these studies

when they were begun in 1984, and approximately 600 men continue to participate semiannually in this, the tenth year of the study. NMPD use patterns have been analyzed for all men attending at each semiannual assessment and also for the smaller number of men (approximately 350) who have participated every year since the start of the study. Since there were no significant differences between the serial cross-sectional and panel patterns for commonly used substances, the former are presented here.

## **PATTERNS OF NMPD USE IN A COHORT OF GAY AND BISEXUAL MEN**

Table 1 illustrates the long-term patterns (1984-1993) of use of those continuously monitored NMPDs and cigarette smoking in the Chicago MACS/CCS cohort, while table 2 shows the alcohol consumption patterns for that same period. While frequency of use in the past 6 months was assessed for nine classes of drugs at each semiannual visit, prevalence patterns suggest three general categories of NMPD use by members of the Chicago MACS/CCS cohort seen at each semiannual evaluation.

### **Frequently Used NMPDs**

The prevalence rates for use of marijuana and volatile nitrates (poppers) are extremely similar, and are the highest of any of the classes of recreational substances throughout the study period (table 1). There was a gradual decline during the first 3 years of the study, from approximately 70 percent of participants using either substance in 1984 to less than 50 percent reporting use from 1986 onward, but little reported change in popularity since visit 6 or 7. At the start of the study, over 60 percent of men reported using both marijuana and poppers; this proportion declined to approximately 35 percent by visit 12. This drop in use of both marijuana and poppers corresponded with a drop in the average number of NMPDs used, from two to one (figure 1). From visits 12 to 16 there was a further drop in popper use (to 20 percent), but a more recent rebound (visits 17 to 19) to approximately one-third is evident in the latest data. Cocaine was the third most popular NMPD used throughout the study, decreasing from a prevalence of one-third of the cohort at the study's beginning to one-sixth from visits 6 to 7 onward. Cocaine use was almost exclusively through nasal insufflation: Crack cocaine use was only specifically assessed beginning with visit 12 and was reported by

**TABLE 1.** *Prevalence of substance use among Chicago (MACS) men, by visit [1] (in percents)*

Substance:	Visit Number/Year																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	1984/85	1985/86		1986/87		1987/88		1988/89		1989/90		1990/91		1991/92		1992/1993			
<i>Group A:</i>																			
Cigarettes	39.4	35.7	34.0	32.2	32.9	30.1	31.0	29.5	30.2	31.3	30.9	31.7	30.4	28.4	28.6	27.5	27.8	28.7	26.8
Marijuana/Hashish	70.2	64.6	62.6	57.4	50.7	49.9	45.7	44.1	43.7	41.6	41.2	39.9	34.0	32.2	29.6	31.8	35.0	31.8	33.2
Cocaine	33.9	28.8	25.3	22.2	20.9	16.6	15.2	15.3	15.3	14.4	12.9	12.2	10.3	8.3	9.4	6.5	7.5	5.5	5.5
Crack [2]												1.5	0.9	0.6	0.6	1.7	1.2	1.2	1.6
Poppers	70.6	69.0	59.3	52.9	49.0	44.5	46.2	44.1	43.3	42.5	42.4	43.4	38.7	30.2	21.1	21.6	27.9	24.7	27.1
<i>Group B:</i>																			
MDA [3]	15.5	14.6	10.4	5.6	3.9	2.4	1.7	2.1	2.5	2.0	1.0	1.0	0.9	1.1	1.5				
Hallucinogens [3]	18.2	12.9	9.6	5.5	5.2	4.1	4.3	3.0	2.5	3.3	4.2	2.5	2.9	2.2	2.3				
Downers [3]	19.4	12.3	7.9	7.9	5.2	3.3	2.7	4.1	3.7	3.1	0.8	1.5	1.6	1.5	1.3				
Uppers [3]	17.6	12.9	10.4	7.2	4.9	3.3	4.3	3.8	4.1	5.3	3.0	4.4	31	3.7	2.3				
<i>Other Substances:</i>																			
Ethyl Chloride [4]	5.1	4.3	3.8	2.8	2.2	2.1	2.2												
Heroin/Methadone [5]	1.8	1.5	1.9	1.2	0.4	0.4	0.2	0.2	0.0	0.3	0.3								
Other Drugs	1.4	2.0	1.5	2.2	3.0	1.8	0.5	1.9	1.1	1.8	1.3	2.2	1.8	0.9	1.7	6.3	6.9	6.1	5.7
<i>Total N (by visit):</i>	1005	925	852	824	736	704	600	531	563	604	595	592	556	543	522	524	494	491	506

[1] Cases include only those Chicago MACS respondents who subsequently entered the Coping and Change Study.

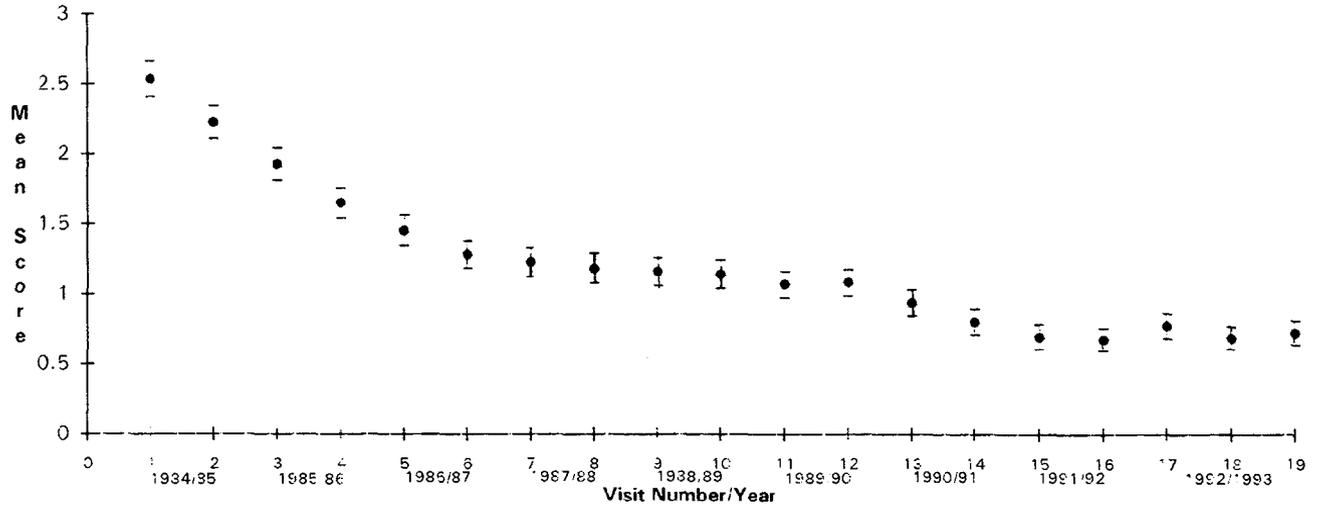
The proportions represent those respondents reporting use of each substance during the prior six-month period.

[2] Crack cocaine was included as a separate category, beginning at Visit 12.

[3] These items were dropped from the MACS questionnaire after Visit 15.

[4] This item was dropped from the MACS questionnaire after Visit 7.

[5] This item was dropped from the MACS questionnaire after Visit 11.



\* Excludes alcoholic beverages and cigarettes.

**FIGURE 1.** Total number of drug classes\* used in prior 6 months, visits 1 to 19 (with 95 percent confidence intervals)

less than 2 percent of participants at that time. The legal but highly psychoactive substance, nicotine, was reported consumed through cigarette smoking by about one-third of the participants throughout the study (table 1).

### **Infrequently Used Substances**

All of the other NMPDs inquired about were used by less than 20 percent of the participants at the start of the study and declined by at least three-quarters to less than 5 percent by visit 6 (table 1). Reported use of downers (mostly methaqualone and barbiturates) and the hallucinogen 1-(3,4-methylenedioxyphenyl)-2-aminopropane (MDA) have continued to decline to less than 2 percent of participants in recent visits. Smoked cocaine, or crack, was only assessed beginning with the 12th visit, and use was less than 2 percent prevalent at that time.

The differentially greater decreases in the proportion of men using the less popular NMPDs probably reflects their use by a subgroup of men using three or more drugs and at significantly higher risk of prevalent HIV infection, a group that has differentially dropped out of the study over time. Men who regularly and consistently participate in the Chicago MACS/CCS studies are significantly less likely to be HIV infected (25-30 percent versus 50-60 percent HIV antibody prevalence rates among the two groups) and use fewer NMPDs than the men who have dropped out or been inconsistent in their study participation. In addition, men developing AIDS in the course of their study participation have either dropped out or been excluded from further behavioral assessment. Given the significantly higher HIV infection rates among polysubstance-using men of the MACS (Chmiel et al. 1987; and Easterbrook et al. 1993; Ostrow et al. 1987), the dramatic decline in popularity of uppers, downers, and hallucinogenic drugs seen in the study cohort may reflect the rapid increase in AIDS and related deaths among members of the fast track subpopulation of Chicago's gay community between 1984 and 1987. Both of these general patterns suggest that results based on long-term and consistent participants in the Chicago MACS/CCS may *underestimate* the actual rate of current NMPD use among the original cohort members and *lessen* the likelihood of detecting the relationships between NMPD use and sexual behavior patterns.

## Alcohol Use Patterns

Table 2 shows that while alcohol use is common in the cohort, heavy alcohol consumption (defined as more than 60 drinks/month or an average of 2 or more drinks per day) was reported by approximately 28 percent of the men at baseline, dropped rapidly during the first year to approximately half that level, and has continued at around 10 to 15 percent thereafter. Most of the drop in heavy alcohol use has been reflected in a corresponding rise in the proportion of abstainers, which has risen slowly from less than 5 percent at baseline to approximately 10 to 15 percent during recent visits. No differences in the longitudinal patterns of alcohol use between prevalent seropositive and seronegative men were observed, other than that seropositive men began the study with higher rates of alcohol use, which rapidly fell to the same levels as reported by seronegative men by visit 3 or 4.

## Other Study Findings

There are at least three other studies that lend credence to the generalizability of the patterns of NMPD use observed in the Chicago MACS/CCS cohort of sexually active gay/bisexual men between 1984 and 1990. The most similar study in terms of time and site is the 1985 Social Issues Survey conducted by McKimman and Peterson (1989*a*) among Chicago's gay and lesbian community. In that study, approximately 21,000 anonymous self-report questionnaires were distributed as inserts in a gay community newsletter, at large social events, and through a broad variety of social, religious, political, or professional organizations serving the community. Thirty-four hundred (16 percent) were returned, including 2,652 from men with demographic and socioeconomic characteristics similar to the Chicago MACS/CCS cohort at baseline. Using the same definition of heavy drinking, McKimman and Peterson found that among their male respondents, 13 percent were abstainers, 70 percent were moderate users, and 17 percent qualified as heavy users. Prevalence rates for the use of marijuana (56 percent) and cocaine (23 percent) in the past year were lower than the baseline rates (70 percent and 34 percent, respectively) and closer to the visit 4 rates of the Chicago MACS/CCS. However, their reported 21 percent popper use rate among men was considerably lower than the rate reported at any time among the Chicago MACS/CCS participants.

**TABLE 2.** *Quantity of alcohol use among Chicago (MACS) men, by visit [1] (in percents)*

<b>Alcohol Use Category</b>	<b>Visit Number/Year</b>																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	1984/85		1985/86		1986/87		1987/88		1988/89		1989/90		1990/91		1991/92		1992/1993		
None	4.7	6.4	6.8	7.5	7.5	8.9	9.3	8.7	9.6	9.5	11.3	9.7	11.8	12.9	16.2	14.9	14.3	16.5	19.0
Light (<13 drinks/mo.)	27.6	29.8	33.3	32.9	36.2	37.1	36.4	36.5	40.1	38.4	39.3	38.2	38.5	39.2	36.5	38.9	37.7	40.6	38.9
Moderate (<60 drinks/mo.)	39.7	44.8	42.5	42.1	40.6	40.1	39.9	39.4	35.5	39.7	37.1	39.0	38.5	37.0	36.5	34.4	36.7	34.5	31.3
Heavy (60 + drinks/mo.)	28.0	19.0	17.4	17.5	15.7	13.9	14.4	15.4	14.7	12.5	12.3	13.2	11.1	10.9	10.8	11.8	11.4	8.4	10.7
<i>Total N (by visit):</i>	<i>989</i>	<i>924</i>	<i>852</i>	<i>824</i>	<i>734</i>	<i>704</i>	<i>599</i>	<i>531</i>	<i>563</i>	<i>602</i>	<i>604</i>	<i>600</i>	<i>566</i>	<i>543</i>	<i>520</i>	<i>524</i>	<i>491</i>	<i>490</i>	<i>504</i>

[1] Cases include only those Chicago MACS respondents who subsequently entered the Coping and Change Study. The proportions represent the respondents' reported average drinking during the prior 6-month period.

Using the same interview questions as the Chicago MACS, but employing a random household survey of unmarried males living in the San Francisco neighborhoods with the highest rates of reported AIDS cases, Stall and Wiley (1988) reported on the NMPD use patterns of 1,034 men aged 25 to 54, of whom 286 said they were exclusively heterosexual and 748 were gay or bisexual. Using a somewhat different definition of heavy drinking (5 or more drinks on 2 or more nights per week), the San Francisco Men's Health Study (SFMHS) sample had rates of 19 percent and 11 percent heavy drinkers among the gay/bisexual and heterosexual subsamples, respectively, compared to rates of 28 percent and 19 percent at the first two baseline assessments of the gay/bisexual men in the Chicago MACS/CCS. Except for the oldest group (45 to 54 years) in the SFMHS sample, gay/bisexual men did not differ from heterosexual men in terms of alcohol use patterns.

In terms of NMPD use prevalence, however, the SFMHS data for gay/bisexual men is similar to what was found in the Chicago MACS/CCS at baseline and significantly higher than in the San Francisco heterosexual male subgroup. Stall and Wiley (1988) reported 25 percent and 18 percent prevalence use rates for downers and hallucinogens in their gay/bisexual sample, which compares to the 19 percent and 18 percent rates in the Chicago cohort and 9 percent and 12 percent rates for downers and hallucinogen use by the San Francisco heterosexual male sample. The SFMHS gay/bisexual subgroup did report somewhat higher baseline rates of reported use of cocaine (52 percent), opiates (4 percent), and uppers (28 percent) than did the Chicago sample. Conversely, popper use was reported by 58 percent of SFMHS respondents and MDA use by 9 percent, compared to initial rates of use of 71 percent and 15 percent, respectively, by the Chicago MACS/CCS sample.

The third relevant sample is the diverse community-based sample of 746 New York City (NYC) gay/bisexual men recruited by Martin and Dean in early 1985 (Martin et al. 1989). In three yearly interviews of their cohort, the investigators determined both prevalence of NMPD use and alcohol abuse/dependence disorder. They reported a 12 percent rate of alcohol abuse or dependence in 1986, which dropped to 9 percent in 1987. In terms of NMPD use, Martin and Dean's NYC cohort appears similar to the Chicago MACS/CCS cohort during the period 1984-1987, with the exception of inhaled nitrites, which were reportedly used by 45 percent of the NYC cohort in 1984/1985 and approximately 25 percent of the men in 1986/1987.

A fourth study of gay/bisexual men, the Boston Partners Study, has recently published rates of NMPD use over the previous 5 years reported at entry between 1985-1988. For the most commonly used drugs reported by seronegative (N=275) and seropositive (N=206) men, respectively, prevalence rates were 79 percent and 88 percent for marijuana, 64 percent and 84 percent for poppers, and 56 percent and 73 percent for cocaine (Seage et al. 1992).

Differences among these five studies may reflect differences in sampling methods and retrospective recall periods, or may indicate actual differences in NMPD use preferences among gay/bisexual men in different United States cities. These studies indicate the relative popularity of specific NMPDs among gay/bisexual men in four cities and recruited through differing mechanisms during the mid-1980s, a time of particularly high rates of drug use in these communities. In fact, approximately half of the men in both the SFMHS and Chicago MACS/CCS cohorts reported the use of three or more categories of NMPDs during the last 6 months of 1984, at the simultaneous start of the two studies.

## **PATTERNS OF SEXUAL RISK BEHAVIOR AS RELATED TO NMPD USE**

Since the original observations that gay/bisexual men participating in AIDS epidemiology cohort studies who used alcohol and NMPDs with sexual partners were more likely to engage in high-risk sexual activities, most notably unprotected anal intercourse (UAI), and were less likely to reduce their sexual risk than abstaining men (Stall et al. 1986; Ostrow et al. 1987), there has been a plethora of confirmatory studies. Leigh and Stall (1993) have reviewed the published literature in this area; this section summarizes some of the conclusions of that comprehensive and scholarly review. Leigh and Stall's group studies of the relationship between NMPD use and risky sexual behavior into three general categories.

1. **Global association studies** examine NMPD use and high-risk sexual behaviors, but these behaviors are not linked temporally. Thus, these studies are unable to determine whether or not the high-risk sex occurred in the context of NMPD use.

2. **Situational association studies** examine the frequency of high-risk sexual behaviors and also examine the extent to which sexual activities occur in conjunction with NMPD use. These studies establish the occurrence of high-risk sex and of sex while using drugs or alcohol, but do not determine if high-risk sex is more likely to occur when drugs or alcohol are used.
3. **Event analysis studies** examine sexual behaviors and NMPD use in specific sexual encounters. While these studies can assess the temporal association of high-risk sexual behaviors and drug or alcohol use, they share the limitations in terms of causal inference of the other two categories of studies. Yet, event analysis studies are useful in distinguishing circumstantial within-person associations.

None of the seven event analysis studies involving gay/bisexual men cited by Leigh and Stall demonstrated a significant difference in the likelihood of risky sex when NMPDs were used, and only one study found an association between drinking and UAI (McCusker et al. 1990). The most recently published event analysis studies of gay/bisexual men, from the multisite Project Sigma of Great Britain (Weatherbum et al. 1993) and the Talking Sex Project of Toronto (Myers et al. 1992), also failed to detect any differences in the incidence of unprotected receptive or insertive anal intercourse between events involving the use or nonuse of alcohol or NMPDs, respectively. The general failure of event analysis studies to confirm a link between NMPD use in specific sexual encounters and risky sexual behaviors does argue for possible underlying interpersonal personality or character factors, rather than circumstantial factors, as underlying the NMPD-risky sex associations documented below.

## **MECHANISMS AND THEORIES OF ASSOCIATIONS BETWEEN NMPD USE AND HIGH-RISK SEXUAL BEHAVIOR AMONG GAY/BISEXUAL MEN**

Leigh and Stall conclude that “it is clear that there is a positive relationship between substance use and high risk sex; what is less clear is the level at which this link exists.... findings from these studies are consistent with a number of explanations-causal, correlational, and confounding” (p. 1038). To the extent that any specific underlying mechanisms have important HIV prevention implications, they need to be considered as priorities for future research efforts. It is important to keep

in mind, however, that most of the prior studies that reported a positive association between UAI and NMPD use can be at least partially explained simply on the basis of a relationship between NMPD use and increased frequency of sex or number of sexual partners, regardless of mechanism. However, the author and colleagues believe that any associations observed between specific drug categories and specific high-risk activities can be cited in support of multiple causal mechanisms, from the social, physiological, cognitive, and clinical domains of behavioral science.

### **Summary of Findings from Three Ongoing Prospective Studies**

Three ongoing cohort studies of gay and bisexual men provide the most detailed evidence of the nature and mechanisms of the association between NMPD use and HIV-transmitting sexual behavior: the Chicago MACS/CCS cohort, whose NMPD use history is detailed above; the Boston Partners Study, also described above (Seage et al 1992); and the Toronto Sexual Contact Study, which recently published an analysis spanning the 5-year period of 1984/1985 to 1989/1990 (Calzavara et al. 1993). These three studies are reviewed according to a hierarchy of evidence that combines the three category methodological typology of Leigh and Stall with whether or not the outcome examined is sexual risk behavior or rates of HIV infection.

*Cross-Sectional Global Associations of NMPD Use and High-Risk Sexual Behavior.* Table 3 summarizes the significant associations across 6 years of global NMPD use and unprotected receptive anal sex (RAS) among members of the Chicago MACS/CCS cohort (Ostrow et al. 1993). Among the 10 categories of NMPDs examined at all 12 semiannual assessments, only popper use showed a consistent and strong cross-sectional association with unprotected RAS. While the other commonly used NMPDs had inconsistent associations with high-risk sex in this cohort, the use of both poppers and either cocaine or marijuana was associated with the highest rates of unprotected RAS throughout the study period.

*Association of Global NMPD Use and HIV Infection Rates.* Both the Chicago MACS/CCS (Chmiel et al. 1987) and Boston Partners Study (Seage et al. 1992) demonstrate baseline prevalence rates of HIV infection that were significantly higher among NMPD users when compared with nonusers. Similar odds ratios for cross-sectional HIV

**TABLE 3.** *Prevalence of use of substances by receptive anal sex risk: Summary of twoway table analysis, waves 1-12 [1]*

Receptive Anal Sex Risk [2] at Wave:												
Substance: [3]	1	2	3	4	5	6	7	8	9	10	11	12
Marijuana/Hashish	++	++	++	++	++	++	++	++	x	+	x	x
Poppers	++	++	++	++	++	++	++	++	++	++	++	++
Cocaine	++	++	x	++	++	x	+	++	+	++	++	++
Crack Cocaine [4]												x
MDA	++	++	++	++	++	x	x	x	x	++	x	+
Hallucinogens	++	++	x	++	+	x	x	x	x	+	+	x
Downers	x	+	x	x	x	x	x	x	x	x	x	x
Ethyl Chloride [5]	++	++	++	++	+	x	x					
Heroin [6]	x	x	x	x	x	x	x	x	x	x	x	
Uppers	++	+	+	+	++	x	+	++	x	++	x	+
Other Drugs	x	x	+	x	x	x	x	x	x	x	++	++
Cigarettes	x	x	x	x	+	x	x	x	x	x	x	x
Alcohol Volume	++	+	x	++	+	x	x	x	x	x	x	x
<i>Total N Per Wave:</i>	<b>825</b>	<b>830</b>	<b>763</b>	<b>742</b>	<b>657</b>	<b>650</b>	<b>650</b>	<b>597</b>	<b>608</b>	<b>603</b>	<b>543</b>	<b>538</b>

[1] Based on 2x2 contingency tables analyzing the use-prevalence for each substance by the incidence of risky sexual practices at each wave. Estimates of statistical significance were determined by Chi-Square tests. The findings from the analyses are summarized here according to the symbols:

“++”: positive association and p-level < .01  
 “+”: positive association and p-level < .05, but > .01  
 “x”: no significant association, p-level > .05

[2] A “risk-index.” combining information on both number of partners for receptive anal sex (RAS) and condom usage, was constricted from the data at each wave of the Coping and Change Study. The measures for this analysis compared two risk-levels: “safe”-respondents who, during the prior one-month period, had been celibate, had refrained from RAS, or had had only one partner who always wore a condom: and “unsafe”-monogamous individuals, who had not used condoms, or individuals reporting multiple RAS partners, regardless of condom usage.

[3] Substance-use data are from the Chicago MACS questionnaires for the first 12 visits, spanning the years 1984-90. The variables denote the percentage of men who used each substance during the preceding 6-month period. The dichotomous alcohol measure contrasts abstemious or moderate with heavy drinking (an average of 60 or more drinks per month) over the previous six months.

[4] Not included as a separate item in the MACS interview until Visit 12.

[5] Dropped from the MACS interview after Visit 7.

[6] Dropped from the MACS interview after Visit 11.

seropositivity and reported NMPD use were reported in both cohorts, with users of all categories except barbiturates (downers) showing odds ratios with 95 percent confidence intervals greater than 1 for prevalent HIV infection. These odds ratios ranged from 1.6 (CI=1.3-2.0) for any NMPD use in the MACS cohort to 2.0 (CI=1.2-3.2) for marijuana use and 2.9 (CI=1.9-4.5) for popper use among the Boston Partners Study (Seage et al. 1992).

*Association of NMPD Use with Sexual Partners and Prevalence of HIV Infection.* All three of these studies have demonstrated an increased likelihood of HIV infection among those men reporting the use of certain NMPDs or combinations. Since the likelihood of becoming HIV infected is highly dependent on the numbers of partners with whom unprotected intercourse is engaged in, these analyses have controlled for either the numbers of sexual partners or specific practices. When this is done, it is consistently observed that the use of poppers and/or insufflated cocaine are associated with increased prevalence of HIV infection beyond that expected on the basis of numbers of partners or potential anal exposures. The investigators in the Boston Partners Study reported a particularly strong effect on risk of HIV infection among men who reported always using poppers whenever engaging in RAS. These men, who comprised approximately 10 percent of the study group, were almost 34 times more likely to be HIV infected than men with no history of unprotected RAS or popper use, and three times more likely to be HIV infected than men who only sometimes combined unprotected RAS and poppers. These and other findings (summarized below) have led to the suggestion by Seage and colleagues that the use of certain NMPDs, most notably poppers, during UAI may actually increase the likelihood of HIV infection for any given exposure (Seage et al. 1992). This possibility and possible biological mechanisms for such an interaction are discussed below.

*Association of Prior Change in NMPD Use and Changes in High-Risk Sexual Behavior and Incidence of HIV Infection.* Among men in the Chicago MACS/CCS cohort, those who reported the initiation of popper use were significantly more likely to lapse to unprotected RAS during the same 6-month period (Ostrow et al. 1993). Of particular interest in terms of potential mechanisms was the finding that the association was specific for lapsing and was not evident in the reverse direction (e.g., men giving up popper use did not exhibit greater propensity to move from unprotected to protected anal intercourse), and was only observed for receptive (not insertive) anal sex with nonmonogamous partners. While not accounting for all or most of the

reported lapses to unsafe RAS among men in the Chicago MACS/CCS cohort, it does indicate that at least a portion of relapses to unsafe sex occurs in conjunction with the return to use of a specific NMPD historically associated with RAS among gay men (Mayer 1983). These lapses, in turn, may be associated with a significant proportion of new HIV infections given the high likelihood that the insertive partner is already infected, and the possible facilitation of infection when poppers are used during RAS.

*Association of NMPD Use with Sexual Partners and Changes in High-Risk Sex and Incidence of HIV Infection, Including Within-Subject Event Analysis Studies.* None of the three prospective cohort studies summarized here employed a within-subject comparison of events that involved or did not involve specific NMPD use. However, the Toronto Sexual Contact Study recently published data showing that only NMPD use with sexual partners, in contrast to NMPD use outside sexual encounters, was associated with increased scores on a sexual risk index that summarized all reported sexual encounters (Calzavara et al. 1993). However, less than 10 percent of reported substance use in this cohort was not associated with sexual encounters. In multivariate analyses, only the use of poppers, marijuana, or alcohol during sexual encounters were significantly associated with higher sexual risk scores. When their study participants were asked whether drugs or alcohol had an effect on their sexual behavior, 45 percent said “yes,” and the majority of those respondents reported that they were more likely to have more partners, more likely to have casual partners, and less likely to use condoms. In the Chicago MACS/CCS cohort (Ostrow et al. 1993), incident seroconversion was associated with popper and cocaine use, although specific use of those NMPDs with sexual partners was not separately examined.

*Intervention Data Which Simultaneously Assesses Changes in NMPD Use and HIV Risk-Taking.* While studies that simultaneously assessed the effects of behavioral interventions on both substance use and HIV risk-taking behaviors might provide the most persuasive evidence for a direct causal link between NMPD use and sexual behavior change among men at risk of HIV infection, such data are essentially nonexistent. However, the Chicago MACS/CCS series of studies examined behavioral and psychosocial correlates of changes in popper use (Ostrow et al. 1991). Men remitting from popper use were at significantly lower anal sexual risk levels, more likely to have participated in individual psychotherapy, and more likely to report higher levels of social

interaction and education than men continuing to use poppers. In contrast, men lapsing to popper use were at higher anal sex risk levels, perceived themselves to be at higher risk of AIDS, and had experienced more adverse major life events (stressors) than men who consistently abstained from popper use. While not a controlled intervention study, these results indicate the potential for significant differences in sexual behavior risk in conjunction with stopping or starting the use of poppers.

## **DISCUSSION**

The studies reviewed above indicate that NMPD use is variably associated with high-risk sex among gay/bisexual men. Important variables that may affect the degree of consistency of these associations include the extent of an individual's NMPD use; sexual context of NMPD use; intentions regarding changes in sexual behavior; the type of outcome measurements obtained; geographic variables; and legal constraints.

The extent of NMPD use, in terms of number, duration, and frequency of the drugs used, and whether use is habitual or occasional, are important considerations.

It should be ascertained whether the NMPD use is nonspecific or specific for sexual contexts. For example, some NMPDs (such as poppers and ecstasy) are sold primarily in settings where high-risk sexual activities can take place with multiple partners (such as pornographic bookstores, bars with backrooms, and gay bathhouses), and are therefore more likely to be associated with unprotected or multiple partnered sexual encounters if studied only in terms of their global associations.

Measurement should be made regarding the stage of the individual's sexual behavior change effort—whether it is precontemplation, initiation of change, consolidation of change, or maintenance/relapse—that is under investigation (Peterson et al. 1992*b*). Temporary lapses to suppressed high-risk sexual activities that were previously preferred may be particularly susceptible to the disinhibiting effects of alcohol and NMPDs.

Another variable to be considered is the nature of the outcome measurements, i.e., whether they are self-reported sexual behaviors or actual HIV infections, and whether they are cross-sectional, retrospective,

or prospective measures. While prospective studies that include objective outcome measures, such as incidence of HIV infection rates, are necessary to probe the causal mechanisms of any cross-sectional associations between specific NMPD use patterns and sexual risk-taking, the “riskiest” respondents are the most likely dropouts from prospective studies due to either noncompliance or illness/death. Even the most powerful study designs may significantly underestimate the associations between NMPD use and high-risk sex and, conversely, to overestimate any intervention effects unless differential attrition is adequately controlled for in the analysis.

These limitations become even more serious when the study populations move from the well-established, mostly white and well-educated, gay identified male cohorts to more diverse and perhaps more vulnerable populations of men who have sex with other men. Such populations include men at extremely high risk of HIV infection, such as closeted bisexual men, ethnic minority men (Easterbrook et al. 1993), gay youth, homeless men, and men who engage in homosexual sex in exchange for money, drugs, or food. Given the high levels of gay community awareness concerning the dangers of high-risk sexual activities and the widespread community warnings about the possibility of increased risk of unprotected sex if intoxicated, it would not be surprising if men who do not self-identify as gay or bisexual were more likely to engage in high-risk sex and combine NMPD use with sex (Peterson and McKinnon 1990). Also, men who engage in sex with anonymous partners or who meet partners at settings where multiple casual sexual encounters can take place are less likely to self-identify as gay or bisexual and more likely to engage in high-risk sex (Peterson et al. 1992a).

Very few studies examine the impact of geographic factors, and methodological differences make it difficult to compare findings from various communities. Two studies performed by Gold and associates in Sydney and Melbourne (Australia) found no association between drinking and high-risk sex among gay men in Melbourne, but did find an association among Sydney gay/bisexual men who were HIV-negative (Gold et al. 1992). The investigators related these differences to the concentration of gay/bisexual men and gay bars within central Sydney, which made both NMPDs and casual sexual partners more available than in Melbourne. Sydney is also a larger and less conservative city than Melbourne, making it more attractive for gay/bisexual men to visit or migrate there with the intention of engaging in sexual activities with multiple partners.

Geographic differences found in the associations between high-risk sex and NMPD use can be at least partially explained as social in origin; differences in community norms regarding sexual and NMPD use practices, legal prohibitions or restrictions on the sale or use of alcoholic beverages or NMPDs in settings where sexual encounters may take place, and local variations in the types of drugs available may all be reflected in the resulting behavioral patterns of gay/bisexual men. For example, amphetamine has never been as popular in the Midwestern United States as in San Francisco, San Diego, or parts of New York City, and amphetamine use has been traditional among specific sectors of the gay/bisexual communities in those cities. To the extent that amphetamine use has been popularized as a sex drug, one can expect it to be cited in association with high-risk sex among subpopulations of gay/bisexual men not yet committed to safer sexual practices. Similarly recent increases in the popularity of the designer drugs ecstasy and ketamine (Special K) among all-night partygoers might herald their association with high-risk sexual activities.

In terms of legal constraints, it will be interesting to see if the nationwide prohibition on sales of volatile nitrites in the United States, which went into effect in mid-1992, has an effect on either the use of poppers or their association with unprotected RAS among gay/bisexual men previously reporting their use in sexual encounters. The recent proliferation of mail-order popper advertisements in gay publications and their continued availability at pornographic bookstores and movie theaters in some cities would suggest not.

Despite these reasons for variability in the observed associations between NMPD use and high-risk sex among gay/bisexual men, there appear to be several important trends in the existing studies reviewed above that should be emphasized. One trend is that as the studies move up the methodological hierarchy in terms of methods that are less likely to reveal coincidental associations or be subject to retrospective recall biases, the focus is increasingly on the “Big 3” drug categories of volatile nitrites, marijuana, and cocaine. The studies reviewed here all took care to control for the numbers of sexual partners or other potential confounders that one might expect to be involved with commonly used NMPDs. However, the lack of any positive findings from intrapersonal comparisons of sexual events that did or did not involve NMPD use does not permit rejection of mechanisms that involve common underlying factors for both types of behaviors. In fact, even if one or more of the direct causal mechanisms were underlying the observed associations

between specific NMPD use and high-risk sexual behaviors, any number of intrapersonal and interpersonal factors could be contributing to the observed behavioral relationships.

## **MECHANISMS**

The author and other researchers (Cooper 1989; Leigh 1990; Stall et al. 1986) have speculated upon the types of underlying causal mechanisms that might account for the frequently observed associations between NMPD use and high-risk sexual activity among adolescents and gay or bisexual men. While space constraints do not permit exhaustive consideration of the evidence supporting or refuting them all, an overview of the most frequently discussed potential causal mechanisms is included in the following paragraphs.

### **Behavioral Disinhibition**

Specific psychopharmacological activities of NMPDs and alcohol could potentially cause the release of strongly suppressed behaviors. It is perhaps important that alcohol, which has strong disinhibiting effects on a variety of suppressed behaviors (particularly under stressful or anxious conditions), has been linked to failure to use condoms by adolescent/young adult heterosexuals (Cooper 1989) and gay/bisexual men lapsing or relapsing to unprotected RAS after a period of change to safer sexual practices (Kelly et al. 1991*a*). However, it is likely that learned or innate expectancies about NMPD use effects are at least as responsible for the observed associations as are specific psychopharmacological effects (McKirnan and Peterson 1989*b*), again highlighting the difficulties of distinguishing direct from indirect causal pathways. It seems appropriate to begin to think of the combined interaction of underlying personality characteristics, social/environmental circumstances, and pharmacological effects that may ultimately underlie the observed associations.

### **Intoxication or Cognitive Effects Models**

Certainly recreational drugs and alcohol can affect information processing and psychomotor task performance, and their use is associated with accidents. If intoxicated enough, individuals can forget to take precautions or improperly utilize condoms. The next question is whether gay/bisexual men who combine NMPD use with high-risk sex decide first

that they are intending or desirous of the sexual or NMPD use activity. Is it coincidental that most popular meeting spots for casual sexual partnerships are places where alcohol and/or poppers are sold, or is this the result of marketing that takes advantage of the synergistic interaction of sex and drugs? The latter suggests the possibility that NMPDs differ in their relative abilities to diminish unpleasant affects associated with sexual intercourse (mainly anxiety and cognitive suppression of preferred but feared activities) and maximize pleasurable feelings, such as euphoria and sensual pleasure. The relative balance of such properties can be conceptualized as the aphrodisiac index of each NMPD, but the possibility should be considered that such pharmacological effects are subject to differences in dosage as well as individual, social, and cultural variations.

### **Social Influences and Social Setting Models**

Use of NMPDs is frequently associated with special types of behaviors or celebrations—a time out from normal social restraints and an inducement to unusual or otherwise prohibited behaviors. To the extent that modern societies have institutionalized times such as holidays and vacations, and commercialized settings such as pick-up bars or crack houses where NMPD use and sexual encounters are mutually available, people may learn to associate NMPD use with high-risk sexual activities. Certain personality types and heavy participants in either or both activities can be expected to be most susceptible to social influence or setting effects on subsequent behavioral patterns.

### **Intrapersonal Factors**

Most studies concerned with possible causal relationships have made mention of either the high-risk personality, characterized by impulsive and sensation-seeking behavior, or the addictive personality. Either of these personalities could predispose to both NMPD use and multiple casual sex partners or high-risk sexual behaviors. Researchers' inability to disentangle any direct effects of NMPD use upon sexual behaviors from cross-sectional or even prospective studies may ultimately be a relatively unimportant consideration. Such personality characteristics are probably represented more frequently among gay/bisexual men who combine NMPD use with high-risk sexual behaviors than among men who are abstinent from either type of activity, at least to the extent that men with impulsive, sensation-seeking, or addictive personalities are prevalent among gay/bisexual men.

The likelihood of intervention at the level of such basic personality characteristics or behavior patterns seems diminishingly small. Still, the examination of the use of specific NMPDs and their potential interaction with sexual behavior and personality patterns may shed significant light on the underlying bases of those associations, through both direct and indirect paths.

## **Biological Interactions**

In terms of specific drug use and HIV infection, the findings of Seage and colleagues (1992) in terms of prevalent HIV infection, and the Chicago MACS/CCS findings (Ostrow et al. 1993) concerning incidence of infection both suggest potential biological interaction(s) between the likelihood of infection and popper use *during* unprotected RAS. This finding has been hypothesized as due to vasodilation within the rectal mucosa, which increases the likelihood of rectal bleeding and the ability of infected semen to enter the bloodstream of the receptive partner (Seage et al. 1992). Equally plausible would be an acute immunosuppressive effect of NMPD use during intercourse that would decrease immune surveillance, thereby increasing the likelihood that HIV-infected cells entering the bloodstream would infect the receptive partner. In fact, a recent study of amyl nitrite exposure in HIV-seronegative men demonstrated acute suppression of circulating natural killer cell activity (Dax et al. 1991).

Researchers may never disentangle whether the observed associations between NMPD use and sexual risk-taking behaviors or HIV infection are the result of direct causal links, reflect common underlying personality or coping styles, or indicate more severe psychopathology. Obviously, a variety of mechanisms may be responsible for the associations between sexual and NMPD use behaviors. Perhaps a single causal mechanism may never be found. It may not matter in the long run if researchers can find effective prevention interventions that work in reducing the likelihood of unprotected sex occurring in the context of NMPD use.

## **Prevention Implications**

A crucial consideration at this time might be the issue of whether enough is known about these associations to launch controlled intervention trials, or whether further descriptive and causal studies need to be performed before such interventions are tested. The author believes that, while

enough is known in general about these associations and their real risk of propagating new waves of HIV infection among subpopulations of gay/bisexual men, descriptive ethnographic studies among target populations—in advance of or coincidental with the start of intervention activities—are needed to increase the likelihood of beneficial outcomes. This applies especially to those subpopulations of men who have sex with men and who are particularly at risk of engaging in HIV-transmitting sexual behaviors: antisocial risk takers; gay youth (especially street youth and hustlers); high school dropouts; minority men who are not gay self-identified; and men of lower socioeconomic background. The consistent finding that significant proportions of HIV-transmitting sexual behaviors among some specific populations are associated with NMPD use argues for vigorous attempts at targeted intervention programs with those populations.

Given the well-documented efficacy of community-based interventions that use either cognitive-behavioral techniques within small groups (Kelly et al. 1989) or community leadership norm-changing and dissemination (Kelly et al. 1991*b*, 1992), it seems appropriate to examine whether a combination of these approaches might be useful. While small group interventions are effective in helping individuals to recognize the behavioral patterns, including NMPD use, that place them at risk for lapse to unprotected sexual behavior, the skills for negotiating safer sex learned in such group interventions are frequently insufficient to prevent lapse when alcohol or NMPD use is involved. On the other hand, changing community norms about NMPD use through opinion leader interventions and social marketing techniques may help at-risk individuals avoid using substances or alter their use patterns to avoid them in sexual encounters.

The author recommends development of community-based interventions that combine knowledge about recreational drug use and sexual behavior interventions into effective programs to target this specific aspect of HIV prevention. Such interventions would explicitly acknowledge the links between recreational substance use and high-risk sexual behavior, while accepting the fact that there are no simple answers or explanations for those links.

Alternative intervention approaches may be needed for specific at-risk populations. For example, minority men who are not self-identified as gay or bisexual are unlikely to be reached through gay community-based media or social organizations. However, through preliminary

ethnographic research and focus groups, it is possible to identify those information sources and community leaders whom such men respect and find credible.

## **CONCLUSION**

By targeting multiple, culturally appropriate approaches that seek to support abstinence from both recreational substance use and unprotected sexual intercourse, researchers may be able to prevent future epidemics of sexually transmitted HIV and AIDS among specific at-risk populations. By simultaneously evaluating both the process and outcome of such interventions, researchers can learn how to mount more effective interventions and also improve the understanding of the mechanisms linking recreational substance use and HIV-transmitting sexual behaviors.

## **NOTES**

1. Throughout this chapter, the abbreviation HIV is used to indicate HIV-1 (or the human immunodeficiency virus, type 1), the predominant form of HIV in all but Western Africa.
2. The Multicenter AIDS Cohort Study (MACS) in Chicago is performed at the Howard Brown Health Center and Northwestern University Medical School under the direction of John Phair, M.D., and Joan Chmiel, Ph.D., and is supported by NIAID Contract #N01-AI-32535. The Coping and Change Study (CCS) of Men at-Risk of AIDS is performed at the Chicago MACS study sites and the University of Michigan, under the direction of John Maassab, Ph.D., David Ostrow, M.D., Ph.D., and Jill Joseph, Ph.D., M.D., and supported by NIMH grant #R01 MH39346. I am extremely grateful to the MACS/CCS participants and the staff and investigators of both studies for making these observations possible. In particular, Wayne DiFranceisco, M.S., prepared the table and figures used in this chapter. By answering detailed questionnaires about sexual and drug use behaviors every 6 months for almost 10 years, the study participants have generously permitted us to access the most intimate details of their lives. I hope that the resulting observations and insights will help them and others in their battle to overcome and recover from HIV infection.

## REFERENCES

- Calzavara, L.M.; Coates, R.A.; Raboud, J.M.; Farewell, V.T.; Read, S.E.; Fanning, M.M.; and MacFadden, D.L. Ongoing high-risk sexual behaviors in relation to recreational drug use in sexual encounters: Analysis of 5 years of data from the Toronto Sexual Contact Study. *Ann Epidemiol* 3:272-280, 1993.
- Chmiel, J.S.; Detels, R.; Kaslow, R.A.; Van Raden, M.; Kingsley, L.A.; Brookmeyer, R.; and the Multicenter AIDS Cohort Study. Factors associated with prevalent human immunodeficiency virus (HIV) infection in the Multicenter AIDS Cohort Study. *Am J Epid* 126:568-577, 1987.
- Cooper, M.L. "Adolescent High-Risk Sexual Activities and Alcohol Use." Paper presented at the Symposium on Recreational Drug Use and High-Risk Sexual Behaviours at the 4th ASAM Conference on Aids and Substance Abuse, Miami, FL, February 1989.
- Dax, E.M.; Adler, H.; Nagel, J.E.; Lange, W.R.; and Jaffe, J.H. Amyl nitrite alters human in vitro immune function. *Immunopharmacol Immunotoxicol* 13:577-587, 1991.
- Des Jarlais, D.C.; Friedman, S.R.; and Woods, J.C. Intravenous drug use and AIDS. In: Ostrow, D.G., ed. *Behavioral Aspects of AIDS*. New York: Plenum Publishing, 1991, pp. 139-155.
- Easterbrook, P.J.; Chmiel, J.S.; Saah, A.J.; Hoover, D.R.; Kaslow, R.A.; Rinaldo, R.A.; and Detels, R. Racial and ethnic differences in HIV-1 seroprevalence among homosexual and bisexual men. *Am J Epid* 138:415-429, 1993.
- Gold, R.S.; Skinner, M.J.; Grant, P.J.; and Plummer, D.C. Situational factors and thought processes associated with unprotected intercourse in gay men. *Psychol Health* 5:259-278, 1991.
- Kelly, J.A.; St. Lawrence, J.S.; and Brasfield, T.L. Predictors of vulnerability to AIDS risk behavior relapse. *J Consult Clin Psychol* 59:163-166, 1991a.
- Kelly, J.A.; St. Lawrence, J.S.; Diaz, Y.E.; Stevenson, L.Y.; Hauth, A.C.; Brasfield, T.L.; Kalichman, S.C.; Smith, J.E.; and Andrews, M.E. HIV risk behavior reduction following intervention with key opinion leaders of population: An experimental analysis. *Am J Public Health* 81:168-171, 1991b.
- Kelly, J.A.; St. Lawrence, J.S.; Hood, H.V.; and Brasfield, T.L. Behavioral intervention to reduce AIDS risk activities. *J Consult Clin Psychol* 57:60-67, 1989.

- Kelly, J.A.; Sikkema, K.J.; Winett, R.A.; Solomon, L.J.; Roffman, R.E.; Kalichman, S.C.; and Stevenson, L.Y. Outcomes of a 16-city field trial of a community-level HIV risk reduction intervention. *Proc 8th Int Conf AIDS*, Amsterdam, 1992.
- Leigh, B. The relationship of substance use during sex to high-risk sexual behavior. *J Sex Res* 27:199-213, 1990.
- Leigh, B.C., and Stall, R. Substance use and risky sexual behavior for exposure to HIV: Issues in methodology, interpretation, and prevention. *Am Psychologist* 48:1035-1045, 1993.
- Martin, J.L.; Dean, L.; Garcia, M.; and Hall, W. The impact of AIDS on a gay community: Changes in sexual behavior, substance use, and mental health. *Am J Community Psychol* 17:269-293, 1989.
- Mayer, K.H. Medical consequences of the inhalation of volatile nitrites. In: Ostrow, D.G.; Sandholzer, T.A.; and Felman, Y.M., eds. *Sexually Transmitted Diseases in Homosexual Men*. New York: Plenum Press, 1983, pp. 237-242.
- McCusker, J.; Westenhouse, J.; Stoddard, A.M.; Zapka, J.G.; Zorn, M.W.; and Mayer, K.H. Use of drugs and alcohol by homosexually active men in relation to sexual practices. *J Acq Immune Defic Synd* 3:729-736, 1990.
- McKirnan, D.J., and Peterson, P.L. Alcohol and drug use among homosexual men and women: Epidemiology and population characteristics. *Addict Behav* 14:545-553, 1989a.
- McKirnan, D.J., and Peterson, P.L. Psychosocial and cultural factors in alcohol and drug abuse: An analysis of a homosexual community. *Addict Behav* 14:555-563, 1989b.
- Myers, T.; Rowe, C.J.; Tudiver, F.G.; Kurtz, R.G.; Jackson, E.A.; Orr, K.W.; and Bullock, S.L. HIV, substance use, and related behavior of gay and bisexual men: An examination of the Talking Sex Project cohort. *Br J Addict* 87:207-214, 1992.
- Ostrow, D.G. Barriers to the recognition of links between drug and alcohol abuse and AIDS. In: Petrakis, P.L., ed. *Acquired Immune Deficiency Syndrome and Chemical Dependency*. U.S. Public Health Service Monograph. DHHS Pub. No. (ADM)87-1513. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1987.
- Ostrow, D.G.; Van Raden, M.; Kingsley, L.; Fox, R.; Dudley, J.; and Kaslow, R.A. Drug use and sexual behavioral change in a cohort of homosexual men. *Proc 3rd Int Conf AIDS*, Washington, DC, 1987.
- Ostrow, D.G.; Beltran, E.; and Wesch, J. "Changes in Sexual and Drug Use Behaviors, 1984-1989." *Proc Annu Meet Am Psychiatr Assoc* 135:234, 1990.

- Ostrow, D.G.; Beltran, E.; Chmiel, J.; Wesch, J.; and Joseph, J. Predictors of volatile nitrite use among the Chicago MACS cohort of homosexual men, *Proc 7th Int Conf AIDS*, Florence, 1991.
- Ostrow, D.G.; Beltran, E.D.; Joseph, J.G.; DiFranceisco, W.; Wesch, J.; and Chmiel, J.S. Recreational drugs and sexual behavior in the Chicago MACS/CCS cohort of homosexually active men. *J Substance Abuse* 5:311-325, 1993.
- Peterson, P.L., and McKirnan, D.J. Gay identity, substance abuse and AIDS risk. CME Syllabus and *Proc 143rd Annu Meet Am Psychiatr Assoc* 143:186, 1990.
- Peterson, J.L.; Coates, T.J.; Catania, J.A.; Middleton, L.; Hilliard, B.; and Hearst, N. High-risk sexual behavior and condom use among gay and bisexual African-American men. *Am J Pub Health* 82:1490-1494, 1992a.
- Peterson, P.L.; Ostrow, D.G.; and McKirnan, D.J. Behavioral interventions for primary prevention of HIV infection among homosexual/bisexual men. *J Primary Prev* 12:19-34, 1992b.
- Ray, O. *Drugs, Society and Human Behavior*. 2d ed. St. Louis: C.V. Mosby, 1978.
- Ross, M.W.; Wodak, A.; and Gold, J. Sexual behavior in injecting drug users. In: Schonnesson, L.N., ed. *Sexual Transmission of HIV Infection: Risk Reduction, Trauma, and Adaptation*. New York: Harrington Park Press, 1992, pp. 89-104.
- Schoenbaum, E.E.; Hartel, D.; Selwyn, P.A.; Klein, R.S.; Davenny, K.; Rogers, M.; Feiner, C.; and Friedland, G. Risk factors for human immunodeficiency virus infection in intravenous drug users. *N Engl J Med* 321:874-879, 1989.
- Seage, G.R.; Mayer, K.H.; Horsburgh, CR.; Holmberg, S.D.; Moon, M.W.; and Lamb, G.A. The relation between nitrite inhalants, unprotected receptive anal intercourse, and the risk of human immunodeficiency virus infection. *Am J Epidem* 135:1-11, 1992.
- Stall, R.; McKusick, L.; Wiley, J.; Coates, T.J.; and Ostrow, D.G. Alcohol and drug use during sexual activity and compliance with safe sex guidelines for AIDS: The AIDS Behavioral Research Project. *Health Educ Q* 13:359-371, 1986.
- Stall, R., and Wiley, J. A comparison of alcohol and drug use patterns of homosexual and heterosexual men: The San Francisco Men's Health Study. *Drug Alcohol Depend* 22:63-73, 1988.
- Watson, R.D., ed. *Cofactors in HIV-1 Infection and AIDS*. Boca Raton, FL: CRC Press, 1990.

Weatherbum, P.; Davies, P.M.; Hickson, F.C.I.; Hunt, A.J.; McManus, T.J.; and Coxon, A.P.M. No connection between alcohol use and unsafe sex among gay and bisexual men. *AIDS* 7:115-119, 1993.

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# Drug Use and HIV Risk Among Male Sex Workers: Results of Two Samples in San Francisco

*Dan Waldorf*

## INTRODUCTION

Shortly after it was discovered that the human immunodeficiency virus (HIV) could be transmitted by sexual activities, there was concern that prostitutes might be active HIV transmitters and might also be vectors of transmission to low-risk groups such as heterosexual men, women who were not prostitutes, and children. The first concerns were about female prostitutes, particularly after it was learned that prostitutes who worked along arterial highways in several African countries were transmitting HIV to men who traveled such routes. Somewhat later, male prostitutes also were considered as a potential high-risk group and a possible vector to bisexual family men, their wives, and children. This chapter summarizes the research that describes the contexts of HIV risk among prostitutes, with a particular emphasis on males.

## HIV SEROPREVALENCE TESTING AMONG PROSTITUTES

In response to the concern about female prostitution and the spread of HIV in the United States, the Centers for Disease Control and Prevention (CDC) undertook eight different studies of 1,396 female sex workers in the United States during 1986. A summary of these findings was reported in Scotland during 1989 and was subsequently published in 1990 (Darrow et al. 1990). The studies found that only 4.8 percent of the non-injecting drug using (non-IDU) female prostitutes were HIV positive. Among IDU female prostitutes, the percentage who were HIV positive was considerably greater at 19.9 percent. Among the 8 sites for the studies, HIV rates varied considerably for IDU female prostitutes, from 0 percent to 58.3 percent. The highest percentages of HIV-positive IDU female prostitutes were in New Jersey (42.9 percent in southern New Jersey and 58.3 percent in northern New Jersey) and Miami (26.6 percent). In Atlanta, the percentage was only 1.5 percent.

HIV seroprevalence studies among female sex workers outside the United States reveal rates of 0 to 88 percent. The highest rates have been in Nagoma, Rwanda, where 88 percent of 33 female prostitutes (IDU status unknown) were found to be HIV positive. In a study in Zurich only 1 percent of 103 prostitutes who were not IDUs were HIV positive, while 78 percent of the 18 IDU prostitutes were positive. Most of the studies that find high rates of HIV infection are those conducted in Africa (Darrow et al. 1990).

In general, there have been far fewer HIV seroprevalence studies of male sex workers for unknown reasons. Perhaps it is because most people do not realize how widespread the practice is and how criminal justice agencies respond to male prostitution; male prostitutes are not arrested for solicitation at the rate that females are arrested. A review of the literature reveals only five HIV seroprevalence studies of male prostitutes—one in New York City, another in New Orleans, a third in northeast Italy, and two (the most recent) in Atlanta. Chaisson and associates were the first to offer findings about male prostitutes. During 1986 and 1987, tests were conducted on 84 male prostitutes appearing at a New York City sexually transmitted disease (STD) clinic; more than half (52) reported exchanging sex for money with females only and 32 with males only. Among those who reported receiving money for sex from men, 17 of 32 (53 percent) were HIV positive, and 1 of 8 (12 percent) who reported intravenous (IV) drug use were positive (Chaisson et al. 1988).

Morse and associates conducted the study of New Orleans male street prostitutes in 1988 and 1989 (Morse et al. 1991). They found that 17.5 percent of 211 prostitutes were HIV positive, but there were no differences in rates of seropositivity between African-American and white prostitutes. Among IDUs (20.2 percent of 109), there was a slightly higher rate than among non-IDUs (14.7 percent of 102), but the differences were not statistically significant.

The third study took place in northeast Italy during 1987 and 1988 and included only 27 male prostitutes; 1 of 4 (25 percent) IDUs were positive, and only 1 of 7 (14 percent) homosexuals and 1 of 16 (6 percent) transvestites were positive (Tirelli et al. 1987, 1988).

The last two studies were funded by CDC and undertaken in Atlanta. The first, which was of 235 male street prostitutes (hustlers) working in 1988 and 1989, found that 29 percent were HIV positive. IDUs were HIV positive at greater rates than non-IDUs: 35 percent of 120 IDU male

prostitutes were HIV positive, as compared with 23.5 percent of the 115 non-IDUs. African Americans had higher rates than whites (33.9 percent versus 28.6 percent); self-identified homosexuals (43.9 percent) and bisexuals (35.3 percent) had greater seroprevalance rates than heterosexuals (17.9 percent). The longer respondents had engaged in prostitution, the greater the prevalence of HIV (Elifson et al. 1993a).

The second study in Atlanta took place during 1990 and 1991 and tested 53 transvestite prostitutes (Elifson et al. 1993b). This study found that more than 2 out of 3 (68 percent) were positive for HIV, and more than 7 out of 10 had seromarkers for syphilis (79 percent) and hepatitis B (76 percent). Among the African-American prostitutes in this study, seromarkers for syphilis were significantly associated with HIV infection.

## **INJECTION DRUG USE OF MALE SEX WORKERS**

In general, knowledge about the IDU behavior of male sex workers is sparse and lacking in detail. There have been only five studies that have reported drug use of male sex workers in the United States with any detail (Elifson et al. 1993a, b; Inciardi et al. 1991; Morse et al. 1991; Pleak et al. 1990). There have, however, been two other studies that report samples from Amsterdam (Coutinho 1988) and Edinburgh (Plant 1990; Thomas 1990).

In the U.S. studies, there are mixed findings of low and high percentages of IDU. Pleak found low levels among 52 street workers interviewed in New York City (3 of 52, or 5.8 percent), while both Morse and Elifson found relatively high levels. Among the street workers studied by Morse, more than half (51.7 percent) were IDUs. Among Elifson's samples, 51 percent of a sample of 235 male street sex workers were IDUs, but only 6 percent of 53 transvestite street workers were IDUs.

Inciardi, in a large study of seriously delinquent youth in Miami, found that 8 of 20 (40 percent) male prostitutes were presently IDUs and another 6 (30 percent) had been IDUs in the past; if one combines the two groups, then 70 percent were IDUs.

Among the European studies, again there are both low and high percentages. An Amsterdam study found only low levels; 1 of 37 (or 2.7 percent) of male sex workers working in brothels were IDUs. The

Edinburgh study found greater percentages—13 of 110 (11.8 percent)—and reported that female sex workers (28 of 101, or 27.7 percent) were more likely to be IDUs than males.

## **TWO STUDIES CONDUCTED IN SAN FRANCISCO**

During the period from 1987 through 1991, two different studies of male sex workers were undertaken in San Francisco. The first study, from 1987 to 1988, interviewed 360 male sex workers. The study was funded by the National Institute on Drug Abuse (NIDA) and focused on injection drug use and syringe-sharing practices. The second study was undertaken between 1989 and 1991 and interviewed 552 male sex workers. This study was funded by the National Institute of Child Health and Human Development. The study focused primarily on condom use but did ask questions about drug use as well. Neither study sample was random, as there was not enough information available to use such sampling methods. Both studies did, however, attempt to include substantial numbers of all the major types and subtypes of sex workers. It should be noted that these are the largest samples ever done of male sex workers.

The sampling methodology for the two studies was similar. The existence of different types of male sex workers was established from ethnographic studies conducted earlier by one of the project staff, and interview quotas were established for each type of sex worker. The first study identified two general types of sex workers and seven subtypes.<sup>7</sup> The two general types were hustlers and call men. The first type, hustlers, solicited clients face-to-face, most often in public places—on the streets, in bars, and at sex magazine and paraphernalia shops. The second type solicited clients most often over the telephone; this group is known as call men.

Among hustlers or workers who solicit clients face-to-face in public places, there are three subtypes: gay-identified youth, trade hustlers, and drag queen hustlers.

*Gay-identified youth* are young, gay-identified males who present themselves as being innocent and naive in the ways of the world but who participate in a wide spectrum of sexual activities. A substantial number of this group are juvenile runaways who generally present themselves as being adults when confronted by authorities.

*Trade hustlers* are usually heterosexual (straight) or bisexual males who typically express a rather ostentatious and aggressive maleness, trade sex for money, do not admit homosexual inclinations, and often profess no enjoyment of sex with men. They usually offer passive oral sex and seldom engage in anal intercourse.

*Drag queen hustlers* are transvestites and transsexuals who assume an exaggerated female identity, usually specialize in oral sex, and are localized in particular streets and bars in the Tenderloin, a sex trade zone.

The second type of prostitutes was call men who solicited clients over the telephone. Very often this type of sex worker is middle class, with more education and more stable living arrangements than prostitutes who solicit in public places. There were four subtypes of call men: call book men, models and escorts, erotic masseurs, and stars of the erotic industry.

*Call book men* are predominantly gay-identified and bisexual men who generally work from a call book of regular customers and who provide a wide range of sexual services. New clients usually are generated through referrals from other clients.

*Models and escorts* are men who generally obtain customers through advertisements placed in mainstream and special interest publications. They often entertain clients socially as well as sexually and participate in a broad range of sexual activities. They tend to develop networks of regular customers and also may operate simultaneously from a call book.

*Erotic masseurs* are men who advertise for new clients while serving regular customers and provide some elements of the legitimate massage business with an erotic twist. Very often they are certified by licensed massage schools and are guided by well-developed philosophical rationales for their work. Their primary sexual services are masturbation and oral sex, but they may participate in anal intercourse with selected clients. They charge relatively low prices compared to other call men and may be the least expensive in the industry. Some masseurs also operate out of athletic clubs.

*Stars of the erotic industry* are individuals who are well known from stage, screen, and magazines. They are an elite group among male sex workers, are very small in number, and charge the highest prices in the industry. The most common of this type of prostitute in the San Francisco Bay area are erotic dancers who strip in local nightclubs and

theaters for both male and female audiences and often provide sexual services to both male and female clients.

It should be noted that the first study, from 1987 to 1988, did not locate male sex worker agencies operating in San Francisco, although there were several female agencies operating. Male sex worker agencies had operated in the past in San Francisco, but police had conducted crackdowns against such agencies just prior to the first study, and not one was operating at that time.

The two additional subtypes identified during the second study were drag queen call men and agency-affiliated call men. During 1989, transvestite/transsexual sex workers began to place advertisements in specialty newspapers and magazines offering their services; this was a new development. Both sex worker agencies began operating in 1990 and advertised regularly up to the end of data collection in 1991. The second study gained unusual access to these agencies and interviewed all the workers at both agencies. Therefore, the second study conducted interviews of nine different subtypes of male sex workers rather than the seven subtypes interviewed during the previous study (table 1).

*Drag queen call men* are transvestite/transsexual men who generally provide the same kinds of services as drag queen hustlers but use advertisements and telephones to solicit clients.

*Agency-affiliated call men* are gay-identified men who operate similarly to models and escorts but get their clients through an agency rather than by advertisements.

Concurrent with the acquired immunodeficiency syndrome (AIDS) epidemic, there has been a paradoxical increase in the number of advertisements for call men appearing in San Francisco's gay and erotic newspapers. There may be many more call men than there were before the AIDS epidemic. Explicit erotic massage advertisements are also a fairly recent phenomena in San Francisco newspapers and have increased dramatically since the AIDS epidemic began. This increase in advertisements for sex workers seems to indicate that sex in San Francisco may have become much more commercialized with the AIDS epidemic.

**TABLE 1.** *Number of Completed Interviews According to Type of Sex Workers for the Two Samples*

Type of Sex Worker	First Sample (N = 360)	Second Sample (N = 552)
<b>Hustlers</b>		
Gay-Identified Youth	60	76
Trade Hustlers	60	75
Drag Queen Hustlers	60	75
Subtotal	180	226
<b>Call Men</b>		
Call Book Men	60	75
Model/Escorts	60	75
Erotic Masseurs	59	75
Drag Queen Call Men	-	69
Agency Affiliated	-	25
Erotic Stars	1	3
Other	-	2
Subtotal	180	324

### **Location Techniques**

Both studies utilized a variety of location techniques: observation of street hustling activities, personal contacts of a gay ethnographer, chain referrals (Biernacki and Waldorf 1981; Watters and Biernacki 1989), and telephone solicitation of telephone numbers listed for call men, model/escorts, and erotic masseurs. The study also employed former sex workers, gay and lesbian interviewers who had good contacts in sex work and gay communities. Transvestite/transsexuals were interviewed by female interviewers, a tactic that facilitated the development of rapport. All respondents were screened with a questionnaire that asked questions about the length of time they had worked as sex workers and the number of clients they had served during the previous 6 months. In general, the typology of various types of sex workers served as a theoretical overview and guide to locate sex workers for the study.

In general, the studies were represented in the gay community by a gay-identified ethnographer who worked on the project for the full duration of

the first study and most of the second. This was a conscious strategy to offset possible hostile reactions in the gay community to nongay staff. From the onset, the study endeavored to develop good relationships in the gay community to facilitate interviewing.

During the second survey, each respondent was asked if he had been interviewed during the previous study conducted 2 years earlier. Only 1 in 12 (8.0 percent) reported that they had been interviewed previously; this seems to indicate that the population of male sex workers may be large or transitory with a high turnover. The high turnover of the population was further revealed in data about other cities where workers had sold sex. Only a third (34 percent) reported that they had worked as sex workers only in San Francisco, while two-thirds (66 percent) mentioned at least two cities. More specifically, 8 percent mentioned 6 different cities, 14 percent 5 cities, 25 percent 4 cities, and 40 percent 3 cities. Hustlers had worked in more cities than call men. The most frequently mentioned other cities were Los Angeles and New York City.

## **SELF-REPORTS ABOUT AIDS AND ARC DIAGNOSES AND HIV TESTING**

The first study was conducted during the period when HIV testing was very controversial in San Francisco. Many people in the gay community were suspicious of and hostile to agencies and projects that proposed widespread HIV testing. Testing was considered during that study, but the idea was abandoned because the climate around testing was so volatile at the time. The study did gather data about self-reports of medical diagnoses of AIDS and AIDS-related complex (ARC) and results from HIV testing from both samples and found very consistent findings. During the first study, self-reports revealed that 12.7 percent were either HIV positive or had been diagnosed as having AIDS or ARC. One in 20 (5.5 percent) reported that they had been diagnosed as having AIDS or ARC, and another 7.2 percent reported that they were HIV positive. Call men reported being HIV positive and diagnosed with ARC or AIDS slightly more often than hustlers, but the differences were not statistically significant.<sup>2</sup>

The second study did not consider or plan HIV testing, but interviewers asked about diagnoses and the results of the last HIV test. Reports were similar to the first sample; 12.1 percent reported being either HIV positive or diagnosed, and again call men reported being positive or

diagnosed slightly more often than hustlers. In general, self-reports may under-estimate the actual rates.

## **DRUG USE SCENES IN SAN FRANCISCO**

The Tenderloin is an area in San Francisco where a large number of male prostitutes work and live. Unlike other cities in the United States, there appears to be considerable diversity of drug use in San Francisco. For example, phencyclidine (PCP) and methamphetamines, which are only occasionally available in many cities and appear to be used by only small percentages of people in most cities, are readily available in San Francisco and are widely used in selected drug scenes. In the Mission District, a Hispanic community, PCP is readily available and is used quite extensively by Hispanic youth, but it is seldom used by African Americans or whites. Methamphetamines are readily available in the Tenderloin and Castro Districts of the city, which are areas where many male sex workers live and work, and are used regularly by gay-identified males and sex workers who live in those communities. These drugs are in addition to staple drugs such as marijuana, cocaine hydrochloride, and heroin, which are also readily available. Despite the ready availability of methamphetamines, there is very little “ice” (a smokeable methamphetamine) available in the city, so use of that drug is low.

Cocaine hydrochloride has been widely available since the mid-1970s and continues to be readily available up to the present day. Rock cocaine, or crack, was relatively slow arriving in San Francisco; it did not become widespread until 1988 and 1989, unlike in other cities such as Miami, New York, and Los Angeles. It was not readily available during the first study but was during the second study.

The use of amyl nitrates (or poppers), widely used in the San Francisco gay community during the 1970s and the early 1980s, declined sharply during the early days of the AIDS epidemic when it was believed that AIDS was a direct result of amyl nitrate use. Amyl nitrates never reemerged as a widely used drug.

### **Injection Drug Use**

Drug use was generally high for both samples; virtually everyone interviewed for both studies reported some illicit drug use. Respondents in the first study reported very high incidence of injection drug use; more

than two-thirds (67.8 percent) of the hustlers and nearly two-fifths (38.9 percent) of call men reported having ever injected (table 2). Levels of educational achievement were associated with injection drug use; men who reported low levels of education more often reported injection drug use than those with high levels. In the second sample, the percentage of those reporting ever injecting drugs was even greater; nearly three-quarters (74.8 percent) of the hustlers and more than half (56.1 percent) of the call men had injected illicit drugs (table 3). In both instances, the most frequently reported injected drugs were methamphetamines, cocaine, and heroin.

## **Syringe Sharing and Problems Designing Questions To Explore the Topic**

In general, there were considerable problems formulating and asking questions about syringe sharing. The surveys were limited by the amount of time required to gather good quality data, the caution and reluctance that many drug injectors feel about admitting unsafe injection practices, and the variable ways that IDUs define sharing. These limitations all became evident during the first study.

The initial wording for all syringe questions (32 questions in all) in the first study was devised to include a simple screening question that, if answered ‘yes,’ was followed by a series of questions that explored who respondents shared with, occasions of sharing, and situations of sharing.

The screening question was worded as follows: “Have you ever shared needles or syringes with any person? By needle sharing, we mean sharing with anyone.” The codes for this answer were simple enough-shared or not shared. And if a person said that he did not share, then interviewers skipped the series of other sharing questions.

Before actual interviewing took place for the first study, the questions were tested with 20 respondents. Some of the other sharing questions were revised, but no problems were observed with the screening question. After the first 90 interviews were completed, the results were reviewed and investigators came to the conclusion that respondents were underreporting syringe sharing. Underreporting was suspected because of the sizeable proportion of injectors who never reported sharing. Roughly 30 percent of those who reported drug injection also reported that they had never shared, although some of these responses were from men who reported injecting more than 1,000 times. In San Francisco,

**TABLE 2.** *Injection Drug Use by Type of Sex Worker—First Sample (N=360) 1987-1988*

Injection Drug Use	Type of Sex Worker					
	Hustlers (N = 180)		Call Men (N = 180)		Total (N=360)	
Ever Injected Drugs	122	67.8%	70	38.9%	192	53.3%
Drugs Injected*						
Metham- phetamines	113	92.6%	62	88.6%	175	91.1%
Cocaine	72	59.0%	45	64.3%	117	60.9%
Heroin	52	42.6%	26	37.1%	78	40.6%
Ever Shared Syringes*	88	72.1%	51	72.9%	139	79.4%
Ever Shared Syringes at Shooting Gallery**	30	24.6%	12	23.5%	42	30.2%
Ever Shared Syringes at Bath House or Sex Club**	9	10.2%	12	23.5%	21	15.1%

\* Of those sex workers who reported ever injecting drugs.

\*\* Of those sex workers who reported injecting drugs and ever sharing syringes.

syringes were not readily available; California has had a prescription law for syringes since 1929 and a paraphernalia law since 1958, and illicit syringes were selling for \$3 to \$5 on the street.<sup>3</sup> Furthermore, the investigator's long experience with IDUs over several studies (1966-1986) indicates that it is the exceptional person who does not share syringes, especially when they first use the drug. Beginning users seldom, if ever, have their own syringes; they almost always share with persons who introduce them to the drug and the injection.

**TABLE 3.** *Injection Drug Use by Type of Sex Worker--Latest Sample (N = 552) 1989-1991*

Injection Drug Use	Type of Sex Worker					
	Hustlers (N = 226)		Call Men (N = 326)		Total (N = 552)	
Ever Injected Drugs	169	74.8%	183	56.1%	352	63.8%
Number of Times Injected*						
1-10	23	13.6%	51	27.9%	74	21.0%
11-250	33	19.5%	28	15.3%	61	17.3%
250-1,000	21	12.4%	26	14.2%	47	13.4%
> 1,000	92	54.4%	78	42.6%	170	48.3%
Drug Injected.						
Methamphetamine	157	92.9%	159	86.9%	316	89.8%
Cocaine	110	65.1%	94	51.4%	204	58.0%
Heroin	110	65.1%	93	50.8%	203	57.7%
Number of Times Injected Last Week						
Zero	62	36.7%	118	64.4%	180	51.1%
1-5	51	30.2%	47	25.6%	98	27.8%
6 or more	56	33.1%	18	9.8%	74	21.0%
Shared Syringe The First Time Injected*	97	57.4%	101	55.2%	198	56.3%
Ever Used a Used Syringe Without Cleaning It	97	57.4%	96	52.5%	193	54.8%
Interviewed in Previous Study	17	7.5%	27	8.3%	44	8.0%

\* Of those sex workers who reported ever injecting drugs.

\*\* Of the total number of sex workers.

By the 100th interview, the screening question was revised to open up the answers. The revised questions were: “Tell me about the first time you ever injected any illicit drugs. How did you get the needle or syringe to inject the drug?” “For how long did you ever use other people’s syringes or works?” “How many people did you share a syringe with?” “Did you ever share needles with anyone else after the first time?” At the conclusion of the remaining 260 interviews, the same kinds of disparities were found as in the first 100: roughly 30 percent who reported injection stated that they had never shared. In other words, the revised wording did not elicit any better responses than the simple screening question had.

The investigator decided to simply take people at their word and used two codes for the question: shared or did not share. However, the investigator was suspicious of these reports and believes that a sizeable number of the respondents underreported sharing.

Despite these problems, the study found that there was considerable sharing and a good deal of it took place in communal settings such as shooting galleries, sex clubs, and bath houses. More than 7 out of 10 (79.4 percent) of 192 injectors from the first sample reported sharing syringes. Syringe sharing occurred among a variety of relationships and social situations: with friends, roommates, and intimates and in communal settings such as shooting galleries, sex clubs, and bath houses. More than 3 out of 10 (30.2 percent) of those who had shared syringes reported sharing in shooting galleries, and a sixth (15.1 percent) reported sharing in bath houses and sex clubs. (Refer to Waldorf et al. 1990 and Waldorf and Murphy 1990 for more detailed findings.)

For the second survey, which focused primarily on condom use but also asked about drug injection, the syringe-sharing questions were redesigned and consolidated into two questions. Here is how the questions were worded: “Tell me about the first time you ever injected any drug. Did you have your own syringe, or did you use someone else’s?” “Have you ever been forced by circumstances to use a needle that someone else had used previously without cleaning it with bleach?”

This revision produced the following results for the second survey: nearly two-thirds of the sample reported injecting drugs (63.8 percent), and only 56.3 percent of injectors reported that they shared syringes the first time they injected. Roughly half (54.8 percent) reported that they had used another person’s syringe without cleaning it with bleach.

The investigator believes that the questions in both studies were not as good or extensive as they should have been to overcome the reluctance of respondents to report unsafe injection practices and gather good reliable data. Perhaps a future study should ask a number of questions about the setting and occasion of first injection and subsequent injections to gather more details about first injection and other occasions when sharing might take place. Hopefully, it will reveal better results.

## **Condom Use**

In addition to HIV risks involved with drug injection, male sex workers also are at risk for unsafe sexual practices. Self-reports about condom use were generally high in the second survey; more than 9 out of 10 reported the use of condoms in the previous year, and nearly three-quarters in the previous week they had sex. There were significant differences in the rates of condom use for different types of sexual behaviors, different partners, and different types of sex workers. Hustlers, or sex workers who solicit clients in public places, reported less frequent condom use during anal intercourse than call men. Oral sex with condoms varied by levels of education, but unexpectedly; men who reported attending some college (usually call men) also reported that they used condoms during oral sex less frequently than men with lower education levels.<sup>4</sup> The variation by different sexual partners was as expected; condoms were used more frequently with customers than intimate or other nonpaying partners (Waldorf and Lauderback 1992). It also was found that condoms slip off and break 2.39 percent of the time and that hustlers report more condom failures than call men (Waldorf and Lauderback 1993). These findings suggest that many male prostitutes, and hustlers in particular, regularly engage in unsafe sexual practices.

## **AIDS Prevention Efforts Among Sex Workers**

San Francisco has generally done a good job of providing AIDS prevention information, condoms, and bleach to sex workers in the city. During the second study, sex workers reported they had received free condoms from 15 different social agencies, as well as information about HIV risks. In many bars in the Tenderloin, condoms are provided in large bowls as a regular service. During January 1992, Prevention Point, the large and successful needle exchange program, began to provide syringe exchanges near Polk Street with a particular focus on sex workers in the area. Another site in the Tenderloin generally did not reach male sex workers.

## **SUMMARY AND CONCLUSIONS**

In general, large numbers of male sex workers in San Francisco participate in considerable injection drug use, most particularly methamphetamines and cocaine. It is expected that much of this has to do with the particular drug scenes of Polk Street, the Tenderloin, and the Castro District, neighborhoods that have very active drug scenes and where many sex workers work and live. Male sex workers also report considerable syringe sharing, but it is felt that many workers underreported sharing. Both practices, along with unsafe sexual activities, place many sex workers at risk of HIV. Other studies of male street sex workers in Atlanta and New Orleans also have found substantial percentages of IDUs among street workers in those cities, but this was not the case in New York City.

With the exception of the San Francisco study, most studies of male sex workers have focused on street workers and have neglected call men, or men who solicit clients over the telephone. To date there has not been any study that has tested call men for HIV, and none of the other studies included them in their samples. Any future work should consider call men as well as street workers.

Studies that undertake to explore syringe sharing should take care in how questions are worded and attempt to find ways to overcome sex workers' reluctance to report unsafe injection practices. Simple screening questions will not be adequate. The author recommends that future research use indepth qualitative questions to explore the phenomena.

## **NOTES**

1. In general, most male sex workers will take clients wherever they find them-in the street, in bars, at social gatherings, via advertisements-but most have some general modus operandi that allows them to be categorized by the principal method they use to locate clients.
2. Whenever differences are mentioned they will be statistically significant (at the .01 level). When differences are not significant, they will be designated as not statistically significant.

3. Prevention Point, the large needle exchange program that began its exchanges in the Tenderloin, was not operating at the time, so there was no sudden availability of syringes.
4. Shortly before and during the second survey there was an ongoing debate in the gay community, particularly in the gay press, about the safety of oral sex. Many believed that HIV could not be transmitted via oral sex, and this may have had some impact on call men's attitudes and behaviors about condom use and oral sex.

## REFERENCES

- Biernacki, P., and Waldorf, D. Snowball sampling: Problems and techniques of chain referral sampling. *Sociol Meth Res* 10 (2):141-163, 1981.
- Chaisson, M.A.; Lifson, A.R.; Stoneburner, R.L.; Ewing, W.; Hildebrandt, D.; and Jaffe, H.W. HIV-1 seroprevalence in male and female prostitutes in New York City. Abstract. 6th International Conference on AIDS, Stockholm, Sweden, June 1988.
- Coutinho, R.A.; van Andel, R.L.M.; and Rysdyk, T.J. Role of male prostitutes in spread of sexually transmitted diseases and human immunodeficiency virus. [Letter] *Genitourin Med* 64:207-208, 1988.
- Darrow, W., and the Centers for Disease Control Collaborative Group for the Study of HIV-1 in Selected Women. Prostitution, intravenous drug use, and HIV-1 in the United States. In: Plant, M., ed. *AIDS, Drugs and Prostitution*. London: Tavistock/Routledge, 1990.
- Elifson, K.W.; Boles, J.; and Sweat, M. Risk factors associated with HIV infection among male prostitutes. *Am J Pub Health* 83(1):79-83, 1993a.
- Elifson, K.W.; Boles, J.; Posey, E.; Sweat, M.; Darrow, W.; and Elsea, W. Male transvestite prostitutes and HIV risk. *Am J Pub Health* 83(2), 1993b.
- Inciardi, J.A.; Pottieger, A.E.; Forney, M.A.; Chitwood, D.D.; and McBride, D.C. Prostitution, IV drug use, and sex-for-crack exchanges among serious delinquents: Risks for HIV infection. *Criminology* 29(2):221-235, 1991.
- Morse, E.B.; Simon, P.M.; Osofsky, H.J.; Balson, P.M.; and Gaumer, H.R. The male street prostitute: A vector for transmission of HIV infection into the heterosexual world. *Soc Sci Med* 32(5):535-539, 1991.

- Plant, M. Sex work, alcohol, drugs and AIDS. In: Plant, M., ed. *AIDS, Drugs and Prostitution*. London: Tavistock/Routledge, 1990.
- Pleak, R., and Meyer-Bahlberg, H. Sexual behavior and AIDS knowledge of young male prostitutes in Manhattan. *J Sex Res* 27:557-587, 1990.
- Thomas, R.M. AIDS risks, alcohol, drugs, and the sex industry: a Scottish study. Plant, M., ed. In: *AIDS, Drugs and Prostitution* London: Tavistock/Routledge, 1990.
- Tirelli, U.; Vaccher, E.; Diodatao, S.; Bosio, P.; De Paoli, P.; and Crotti, D. HIV infection among female and male prostitutes. Abstract. *Third International Conference on AIDS*, June 1-5, 1987. Washington, DC: U.S. Department of Health and Human Services and the World Health Organization, 1987.
- Tirelli, U.; Vaccher, E.; Bullian, P.; Saracchini, S.; Errante, D.; Zagonel, V.; and Serraino, D. HIV-1 seroprevalence in male prostitutes in Northeastern Italy. [Letter] *J Acquir Immune Defic Syndr* 1:414-415, 1988.
- Waldorf, D., and Murphy, S. IV drug use and syringe sharing practices of call men and hustlers. In: Plant, M., ed. *AIDS, Drugs and Prostitution*. London: Tavistock/Routledge, 1990.
- Waldorf, D.; Murphy, S.; Lauderback, D.; Reinerman, C.; and Marotta, T. Needle sharing among male prostitutes: preliminary findings of the Prospero Project. *J Drug Issues* 20:309-334, 1990.
- Waldorf, D., and Lauderback, D. The condom use of male sex workers in San Francisco. *AIDS Pub Pol J* Summer: 108-119, 1992.
- Waldorf, D., and Lauderback, D. Condom failure among male sex workers in San Francisco. *AIDS Pub Pol J* Summer 8(2):79-90, 1993.
- Watters, L., and Biernacki, P. Targeted sampling: options for the study of hidden populations. *Soc Probl* 6:1989.

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# HIV Risk in Drug-Using Adolescents

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Studies of adolescents and young adults have examined the prevalence of acquired immunodeficiency syndrome (AIDS) and human immunodeficiency virus (HIV) infection, knowledge and attitudes about HIV and AIDS, alcohol and other drug use, sexual behavior, and sexually transmitted diseases (STDs). Findings document substantial risks for HIV and AIDS and provide insights into similarities and differences in risk across subgroups of adolescents. The current body of knowledge on adolescents and their risk behaviors is valuable in the development and targeting of interventions (e.g., Bowler et al. 1992; DiClemente 1992). Design and targeting of HIV prevention strategies would be enhanced by further elucidation of factors that may contribute to or protect from risk. Potentially critical factors include the context of risk behaviors, developmental variation in risk behaviors, and effects of competing risks—all of which are likely to be diverse across adolescent subgroups and changeable over the course of adolescent development. Contextual variables include the individual's cognitive and emotional status, the social grouping in which behavior occurs, economic conditions, and prevalence of substance abuse and HIV infection in the environment.

Reviews of data provided by Boyer and Ellen (this volume) and by others (e.g., Bowler et al. 1992) indicate that although the cumulative number of AIDS diagnoses in the 13- to 19-year-old age group is low, when the long intervals between HIV infection and AIDS are taken into account and HIV seroprevalence data are considered, infection risks during the adolescent years are striking. Through June 1993, a cumulative total of 1,301 AIDS cases among adolescents 13 to 19 years of age had been reported in the United States (Centers for Disease Control and Prevention 1993). For the same period, the cumulative number of AIDS cases was 11,840 in young adults 20 to 24 years of age (the majority of whom are assumed to have been infected during adolescence), and 47,777 in the 25- to 29-year-old age group (a substantial portion of whom are likely to have been infected during adolescence). The 60,918 AIDS cases for the 13- to 29-year-old age group constitute almost 20 percent of all reported AIDS cases in the United States. HIV seroprevalence data indicate wide variation in infection rates within the adolescent population, including,

for example, 3.7 per 1,000 in a sample of 13- to 19-year-olds receiving ambulatory health services in a Washington, D.C., hospital (D'Angelo et al. 1991), and 53 per 1,000 in a high-risk group of 15- to 20-year-olds who were clients at a facility for runaway and homeless youth in New York City (Stricof et al. 1991). Gender, racial, ethnic, and geographic comparisons in infection rates have been provided in numerous reports (e.g., Bowler et al. 1992).

Boyer and Ellen (this volume) review and discuss adolescent risk-taking behaviors and adolescent developmental processes as they may relate to HIV infection risk. They consider specific behavioral risk factors (e.g., age at onset of sexual activity and use of alcohol and other drugs) and possible antecedents of some of these behaviors (e.g., personality, school, and family factors). Rotheram-Borus and colleagues (this volume), following a discussion of developmental changes and challenges in adolescence, focus on high-risk adolescents. By examining case studies developed during ethnographic research, these authors provide indepth analyses of the context of HIV risk behaviors, routes into a specific drug-using subculture, and life patterns while using illicit drugs (i.e., methamphetamine). Rotheram-Borus and colleagues then make suggestions for intervention strategies to help adolescents cease or modulate drug-related activities, reduce HIV risk behaviors, and continue the identity search that is interrupted by contact with the methamphetamine subculture.

## REFERENCES

- Bowler, S.; Sheon, A.R.; D'Angelo, L.J.; and Vermund, S.H. HIV and AIDS among adolescents in the United States: Increasing risk in the 1990's. *J Adolesc* 15:345-371, 1992.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance. Second Quarter Edition*. Atlanta: Centers for Disease Control and Prevention, 1993.
- D'Angelo, L.J.; Getson, P.R.; Luban, N.L.C.; and Gayle, H.D. Human immunodeficiency virus infection in urban adolescents: Can we predict who is at risk? *Pediatrics* 88:982-986, 1991.
- DiClemente, R.J., ed. *Adolescents and AIDS: A generation in jeopardy*. Newbury Park, CA: Sage, 1992.
- Stricof, R.L.; Kennedy, J.T.; Nattell, T.C.; Weisfuse, I.B.; and Novick, L.F. HIV seroprevalence in a facility for runaway and homeless adolescents. Supplement. *Am J Public Health* 81:50-53, 1991.

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# HIV Risk in Adolescents: The Role of Sexual Activity and Substance Use Behaviors

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## INTRODUCTION

In order to understand adolescents' risk for acquiring the human immunodeficiency virus (HIV), it is first imperative to have knowledge of the sociodemographic characteristics of the adolescent population as well as the significance of developmental and psychosocial changes during adolescence that influence their behavior. Moreover, it is necessary to understand differences in the prevalence and patterns of risk behaviors in adolescents as well as the context in which these behaviors occur, since exposure to HIV is not equal among *all* adolescents. Therefore, this chapter includes an overview of the prevalence of negative health outcomes of adolescent risk-taking behaviors, with a particular focus on acquired immunodeficiency syndrome (AIDS), HIV, sexually transmitted diseases (STDs), and pregnancy; a description of the primary risk factors that are associated with acquisition and transmission of STDs/HIV; and a brief overview of the antecedents and correlates of sexual and alcohol/drug-using behaviors, with an emphasis on sociodemographic and psychosocial factors.

### **Sociodemographic Factors: Who Are the Youth at Risk?**

There are approximately 28 million youth and adolescents in the United States between the ages of 10 and 17. Most individuals between these ages are white (81 percent); 15 percent are African American; and 4 percent are of other ethnic and racial backgrounds. Of all adolescents, 10 percent are categorized as being of Spanish/Latin ancestry. However, in the West and Southwest regions of the country (primarily California and Texas), the majority of the schoolage children are Hispanic or of other nonwhite origin. The nonwhite population is increasing, due largely to higher rates of birth and immigration. By the year 2000, 20 percent of adolescents in the United States will be African American and 18 percent will be Hispanic; by 2010, Hispanic adolescents will

comprise 23 percent of all adolescents, while African-American teens will make up 21 percent of this population (Dryfoos 1990).<sup>1,2</sup>

One in four of the Nation's youth and adolescents currently live in single-parent-headed households. However, among African-American adolescents, more than half live in female-headed households. Although 70 percent of women with teens between the ages of 14 and 17 are in the workforce, living in a female-headed household increases the likelihood that an adolescent lives in poverty. While 11 percent of all families live in poverty, 46 percent of female-headed households with schoolage children live in poverty (Dryfoos 1990).

Race and geographic place of residence are strongly associated with poverty status. African-American and Hispanic youths are more likely to be impoverished than white youth; 45 percent of African-American and 41 percent of Hispanic youths live in poverty, compared to 13 percent of white youths who also live in poverty (Dryfoos 1990). Almost half of all individuals under the age of 18 live in suburban areas, 30 percent live in inner cities, and 23 percent live in rural areas; however, African-American teens are more likely to live in inner cities. While 35 percent of all white inner-city teens live in poverty, 57 percent of all African-American inner-city teens live in poverty (Dryfoos 1990). These factors are significant in that poverty is strongly associated with poor health status. In general, adolescence is a time of excellent physical health, but rates of morbidity and mortality in this age group have increased dramatically in recent decades (Irwin 1990; Rosen et al. 1990), due largely to many of the behaviors that are prevalent in adolescents.

## **Adolescent Development and Risk-Taking Behavior**

Adolescence is the period between childhood and adulthood that is marked by rapid biological, emotional, cognitive, and social change. It is also a period of tremendous exploration and experimentation, when many teenagers perceive themselves to be invulnerable to accidents and disease and often engage in a wide range of risk-taking behaviors. The term "risk-taking" describes the patterns of behaviors initiated during adolescence that are responsible for many negative health outcomes that occur during this time period. Specifically, adolescent risk-taking is defined as follows: "young people with limited or no experience engage in behaviors with anticipation of benefit and without understanding the immediate or long-term consequences of their actions" (Irwin 1990).

In addition, risk-taking behaviors are deemed to be volitional in nature and account for the majority of morbidity during adolescence.

Although risk-taking behaviors such as initiation of sexual intercourse and experimentation with alcohol and drugs are thought to be a part of “normal” adolescent development, often these behaviors have grave negative health consequences that last well into adulthood. Adolescents who engage in such risk-taking behaviors are at increased risk for a host of problems, including acquisition and transmission of HIV and other STDs.

## **OUTCOME OF ADOLESCENT RISK-TAKING BEHAVIOR: SCOPE OF THE PROBLEM**

### **AIDS and HIV Infection**

As of June 1993, the Centers for Disease Control and Prevention (CDC) had reported 315,390 cases of AIDS in the United States. While these numbers are of epidemic proportions, adolescents ages 13 to 19 represent 1,301 or less than 1 percent of the total cases. Adolescent males represent 913 cases (less than 1 percent of all the male cases), and adolescent females comprise 318 cases (reflecting 1 percent of all the female cases) (CDC 1993*a*). The number of AIDS cases may not reflect the actual rate of HIV infection among adolescents, since the incubation period is long and varied (Gayle et al. 1989). Therefore, it is probable that many of the 59,617 young adults ages 20 to 29 diagnosed with AIDS (19 percent of reported cases) acquired HIV during their teen years.

A profile of the currently reported adolescent AIDS cases in the United States by exposure category reveals that most adolescents with AIDS were infected as a result of high-risk sexual behavior or injecting drug use (IDU): 299 (23 percent) are males who reported sex with other males; 143 (11 percent) reported IDU behavior; 42 (3 percent) are males who reported sex with males and IDU behavior; and 236 (18 percent) reported heterosexual contact with a person who was HIV-infected or at high risk. Of the individuals in the last group, 208 (88 percent) are females.

National AIDS surveillance data indicate that minority adolescents are overrepresented among persons with AIDS relative to their proportion in the population: whites represent 530 (41 percent) of the adolescent cases; African Americans total 515 (40 percent) of the cases; Hispanics total

232 (18 percent) of the cases; and Asians, Pacific Islanders, Alaskans, and Native Americans together comprise 23 (2 percent) of all adolescent cases (CDC 1993*a*).

Although AIDS surveillance data reveal patterns of HIV transmission, the extent of asymptomatic HIV infection remains largely unknown. To date, seroprevalence data regarding adolescents have been reported from military recruits, Job Corps entrants, STD clinic patients, and from street and other disenfranchised youth. The rates have ranged from 22 per 1,000 among STD clinic patients (Quinn et al. 1988) to 3.6 per 1,000 among Job Corps students (St. Louis et al. 1991). While these data offer some insights into the prevalence of HIV infection among certain groups of adolescents, they are not generalizable to all adolescents.

However, a more accurate indicator of trends of HIV infection may be found in rates of STDs in adolescents, since the behaviors associated with the acquisition and transmission of STDs also are associated with HIV transmission. In addition, other STDs may serve as cofactors for HIV acquisition. It is suggested that genital tract ulceration, which is associated with STDs such as syphilis, chancroid, and herpes, can increase the likelihood of HIV transmission (Greenblatt et al. 1987; Holmes 1988).

## **STDs**

STDs are the most pervasive and destructive infectious diseases confronting adolescents in the United States. Of the estimated 20 million cases reported annually, two-thirds are among individuals under the age of 25 (CDC 1991*a*), with one-fourth of the cases occurring in adolescents ages 15 to 19. The high rate of STDs among sexually experienced adolescents is accompanied by a parallel increase in their sequelae of pelvic pain, tubal infertility, ectopic pregnancy, genital and cervical carcinoma, neonatal transmission of infections causing perinatal death or illness, and HIV leading to AIDS (Cates 1990; CDC 1991*a*; Shafer and Sweet 1990).

Given the large number of cases and the stability of reporting, trends in gonorrhea and syphilis (the only two reported diseases) provide the most accurate assessment of STDs in adolescents (Cates 1990). Overall, the CDC reported a decline of gonorrhea cases between 1975 and 1989 (Cates 1990), yet rates have increased among teenage males 15 to 19 years of age in the past 2 years and have remained unchanged among

15-to 19-year-old teenage females during the same time period (CDC 1991a). Racial and gender differences among adolescents also are apparent in trends of gonorrhea; while rates among white males and females have steadily declined over the last decade, rates among African-American males and females have increased during this time period (Cates 1990). Currently, 15- to 19-year-old females have the highest rates of gonorrhea among all females, and 15 to 19-year old males have the second highest rates among all males (CDC 1991a). Moreover, recent data indicate that in 1990, rates of primary and secondary syphilis increased among adolescent males and females ages 15 to 19 (CDC 1991b).

*Chlamydia trachomatis*, which causes nongonococcal urethritis in males and mucopurulent cervicitis in females, is estimated to be the most prevalent bacterial STD in the United States (Schydlower and Shafer 1990); it is most commonly associated with pelvic inflammatory disease (PID) in sexually experienced adolescent females (Coupey and Klerman 1992; Schydlower and Shafer 1990). In adolescent males, the prevalence rates of asymptomatic chlamydia range from 8 percent to 35 percent in various populations. Although complications of chlamydial infections in males are unusual, a major risk of transmission to female sexual partners is of tremendous concern. It is estimated that 30 to 60 percent of adolescent females have asymptomatic chlamydial infections, and 10 to 30 percent of cervical chlamydial infections infect the fallopian tubes (Schydlower and Shafer 1990). Chlamydia is frequently asymptomatic and goes undiagnosed and untreated unless routine clinical screening occurs.

The human papillomavirus (HPV) causes genital warts and is associated with cervical cancer many years after the first infection. Prevalence rates of up to 38 percent have been documented in adolescent females, depending on the population and the method used to detect the infection (Moscicki 1990; Rosenfeld et al. 1989).

In essence, the prevalence data reported from various studies indicate that inner-city, racial or ethnic minority adolescents have higher rates of STDs when compared to their white counterparts (Boyer 1990; Cates 1990). In addition, socioeconomic factors are associated with STDs in adolescents. This finding comes from data that is reported from urban juvenile detention centers where poor, inner-city minority teens are overrepresented (Boyer 1990; Cates 1990).

Although these data provide an overview of trends of STDs in adolescents, they are subject to biases due to differences in the reporting by public and private-sector clinics. While public health clinics are more likely to report STDs of poor and minority patients who often utilize these clinics, reports from private physicians who tend to treat more affluent patients are affected by the lack of diagnostic validation of their findings (Cates 1990). Thus, no firm conclusions can be drawn from STD surveillance data. Nonetheless, specific research on determinants of STDs in various groups of teens is necessary to control future acquisition of STDs, especially HIV infection in adolescents.

## **Pregnancy**

The risk of STDs/HIV being vertically transmitted from an infected mother to her infant is reflected in recent data on teenage pregnancies. The pregnancy rates among teenagers have remained high over the last decade and are reflective of the increasingly high level of sexual activity among adolescents (Rosen et al. 1990). Almost one in four teens (23 percent) who engage in sexual activity experience pregnancy, resulting in 1 million pregnancies each year (Dryfoos 1990). Of these teens, approximately 32 percent are under the age of 15 (Rosen et al. 1990). Eighty-four percent of the pregnancies among adolescents are unintended, of which 45 percent result in live births, 42 percent end in abortions, and 10 percent result in either miscarriages or stillbirths (Coupey and Klerman 1992). It is estimated that among teens who experience pregnancy, 6 percent are white and 13 percent are African American between the ages of 15 and 17 years. Fifteen percent are white and 26 percent are African Americans between the ages of 18 and 19 years. Data regarding other racial/ethnic groups were not reported.

## **BEHAVIORAL RISK FACTORS ASSOCIATED WITH STDs/HIV INFECTION**

To further place adolescents' exposure to HIV and other STDs in context, it is imperative to understand the prevalence and patterns of the primary risk behaviors that are associated with disease transmission, including a young age at sexual debut, multiple sexual partners, anal intercourse, inadequate or no use of barrier-method contraceptives, and use of alcohol and drugs (including both injectable and noninjectable substances). These behavioral risk factors are interrelated and are prevalent among adolescents.

## **Sexual Risk Behavior**

More adolescents are commencing sexual intercourse at younger ages than ever before; therefore, they are placing themselves at risk for STDs and unintended pregnancies at younger ages than ever before. The incidence of sexual behavior increased significantly from 1971 to the mid-1980s in all age cohorts between the ages of 15 and 19. In 1988, 26 percent of white females, 24 percent of African-American females, 24 percent of white males, and 69 percent of African-American males initiated sexual intercourse by age 15 (Irwin and Shafer 1992).

Epidemiologic data of high school students grades 9 to 12 indicate that 54 percent reported experiencing sexual intercourse at some point, of which 39 percent reported sexual experience during the 3 months prior to being surveyed. Differences in the prevalence of sexual experience by gender and race also were found. Sixty-one percent of males and 48 percent of females reported sexual contact, as did 52 percent of white students, 72 percent of African-American students, and 53 percent of the Hispanic students. The percentages of students engaging in sexual intercourse increased significantly with each higher grade (CDC 1992). In a sample of urban middle school students ages 10 to 14, 21 percent reported engaging in sexual intercourse at least once. Males also were more likely than females to have engaged in sexual intercourse (35 percent versus 8 percent, respectively) (Irwin and Shafer 1992).

In addition to engaging in sexual intercourse at early ages, some adolescents have nonmonogamous sexual relationships or have multiple sexual partners within a short period of time in a pattern of serial monogamy. Having multiple sexual partners, in addition to inadequate use of barrier-method contraceptives, increases the risk of STDs, HIV transmission, and unintended pregnancies. Based on national samples of sexually experienced adolescent and young adult females ages 15 to 24, 75 percent had two or more lifetime sexual partners, and 45 percent reported four or more lifetime sexual partners (Forrest and Singh 1990). Among males 15 to 19 years of age, over 50 percent reported more than one lifetime sexual partner, and 32 percent reported six or more lifetime sexual partners (Forrest and Singh 1990; Sonenstein et al. 1989). Recent data from an urban public STD clinic reveal that among adolescents and young adults ages 12 to 20, the mean number of lifetime sexual partners among the males was 33 (45 percent had 7 to 25 sexual partners), and the mean number for females was 9 (35 percent had 4 to 6 sexual partners).

Most of these were unprotected sexual encounters; 48 percent of males and 64 percent of females never or rarely used condoms (Boyer et al. 1993).

In addition, some teenagers engage in other sexual risk behaviors that also increase their risk of negative health outcomes, especially HIV transmission. For example, some adolescent males engage in anal intercourse without the use of barrier methods to protect against disease transmission (Remafedi 1990). Clinical surveys of adolescent females attending family planning clinics found that 12 to 26 percent engaged in anal intercourse (either as a form of birth control or as a means of sexual experimentation), which also may increase their risk for certain STDs (Catania et al. 1990; Moscicki et al. 1988).

### **Contraceptive Use Behavior**

The concurrent epidemics of STDs and unintended pregnancies among adolescents suggest that most teens, like many adults, do not use contraceptives effectively. The role oral contraceptives play in the acquisition of STDs and their sequelae of PID is unclear. It appears that while the use of oral contraceptives provides some protection against gonococcus-related PID, it may increase the risk of chlamydia-related PID (Shafer and Sweet 1990).

Use of the latex condom is effective in reducing the risk of STDs, including HIV. However, the extent to which teens use them is unclear; differences in samples and in questions asked of adolescents make it difficult to compare results of the studies.

National epidemiologic data from high school students reveal that, among students who engaged in sexual activity within the 3 months prior to the survey, 78 percent of females and 79 percent of males reported use of some form of contraception (birth control pills, condoms, withdrawal, or another method) during their last sexual encounter. However, when queried specifically about the use of condoms, the number decreased; only 40 percent of the females and 49 percent of the males reported use of this form of protection (CDC 1992). In addition, ethnic/racial differences in the use of contraceptives have been found. A large survey of adolescent and adult women ages 15 to 44 indicates that, compared to their white counterparts, African-American women are significantly more likely to use oral contraceptives and are less likely to use condoms or

diaphragms, suggesting that these women are at increased risk of acquiring a disease (Mosher and Pratt 1990).

Other patterns in teens' use of contraceptives also have been noted. As sexual experience increases, the use of oral contraceptives also increases, and the use of condoms and other barrier methods decreases (Morrison 1985). Thus, many teens initially attend family planning clinics with the intent of changing from the use of condoms to the use of oral contraceptives. Moreover, with the recent push for use of hormonal implants among adolescents, research is needed to determine the role of nonbarrier forms of contraception in influencing adolescents' risk for acquiring sexually transmitted infections. It is also evident that adolescents need to be educated about the important differences in the use of contraceptives for birth control and for disease prevention.

### **Antecedents of Sexual Risk Behaviors**

Adolescents' decisions to initiate and consistently use barrier-method contraceptives are as complex as their reasons for initiating sexual intercourse or for engaging in behaviors that place them at risk for STDs and HIV transmission. Many reviews exist that attempt to explain this phenomenon (Boyer 1990; Brooks-Gunn and Furstenberg 1989; Irwin and Shafer 1992; Kegeles et al. 1988). This research addresses the need to understand the role of sociodemographic, cultural, biological, developmental, psychosocial, and academic factors. For example, Brooks-Gunn and Furstenberg (1989) underscore the importance of understanding the psychosocial and emotional needs that sexual intercourse fills for some adolescents. In contrast, Talmadge (1985) describes the influence of contextual factors such as attitudes, beliefs, and social interactions.

### **Alcohol and Drug Use Behavior<sup>3</sup>**

The high prevalence of alcohol and drug use in adolescents poses a significant threat to their health and well-being. Use of these substances is associated with motor vehicle accidents, homicides, and suicides among adolescents and is responsible for major medical, psychological, and social morbidity in teens (CDC 1989; Dryfoos 1990).

Although adolescents' use of illicit substances has declined in recent years, their overall level of use continues to be high, while their use of alcohol has remained constantly high (Bachman et al. 1991). A recent

national epidemiologic survey of high school students grades 9 to 12 indicates that 31 percent of the students used marijuana at least once in their lifetime, and 14 percent used this substance within 30 days prior to the survey. Cocaine was tried at least once by 7 percent of the students and recently (within 30 days) by 2 percent of the population. In addition, these data clearly demonstrate that alcohol is the substance of choice for high school students: 88 percent of the students consumed alcohol at some point in their lifetime, and 59 percent consumed alcohol at least once within the preceding 30 days, with 37 percent consuming five or more drinks on one occasion (CDC 1991*b*). A national study of high school students from both public and private schools found a prevalence of 2.7 percent for students who reported a history of illicit drug injection. Of these students, 0.8 percent reported sharing a needle at some point in time. Similarly, within the previous year, 1.7 percent of the students reported IDU behavior and 0.5 percent shared a needle (Holtzman et al. 1991). A more recent national study by CDC reported IDU behaviors among 2 percent of its student population (CDC 1993*b*). Grade, age, and gender differences in overall rates of illicit substance and alcohol use have been noted; use of all substances increased with each higher grade level (seniors demonstrated highest rates of use for all substances) and was more prevalent among males than females for both lifetime and recent use (CDC 1991*b*).

A national longitudinal study (combined data from 1985 to 1989) of licit and illicit use of substances among high school seniors revealed significant ethnic/racial differences (Bachman et al. 1991). Annual prevalence rates for marijuana were found to be highest among white males and females, followed by Native American males and females and Mexican-American males. Although rates among other Hispanic and African-American males were somewhat lower, rates were lowest among Hispanic females, African-American females, and Asian-American males and females. Regarding use of cocaine, prevalence rates were highest among Native American males and females and Hispanic males; somewhat lower rates were found for Hispanic females and white males and females, and the lowest rates were among Asian Americans and African Americans. However, among Hispanic males and African-American males and females, the prevalence was almost twice as high for males than females.

Alcohol consumption among white and Native American males and females was relatively higher than among Asian-American and African-American students; about half of the males and one-third of the females

consumed alcohol in the previous month. Moreover, significant ethnic/racial differences also were found; almost half of the white, Mexican-American, and Native American males reported consuming five or more drinks in one setting in the 2 weeks preceding the survey. Significantly fewer Hispanic, Asian-American, and African-American males reported such abuse of alcohol. The prevalence of alcohol abuse among females generally paralleled that of males, albeit at lower levels.

As striking as these data are, they are not reflective of teens who drop out or are chronically absent from school, who are in juvenile detention centers, and who are homeless; these teens are thought to be at highest risk. Therefore, these data clearly underrepresent the actual prevalence of alcohol and drug use among all adolescents.

### **Antecedents of Substance Use and Abuse Behavior**

Many studies have examined risks for substance abuse and initial patterns of use. Numerous factors have been identified as significant markers of substance use (Dryfoos 1990; Hawkins et al. 1992); however, there is little empirical evidence that describes the relative significance and interactions between the risk factors (Hawkins et al. 1992). Moreover, there is no consensus about how to categorize or measure substance abuse risk factors. For example, Dryfoos (1990) identified 21 risk factors across 4 domains: (1) demographic (e.g., age, gender, race/ethnicity); (2) personal (e.g., school performance, peer influences, psychological factors); (3) family (e.g., poverty, parental influences, culture); and (4) community (e.g., quality of school and neighborhood).

In contrast, Hawkins and his colleagues (1992) identified 17 factors across two broad domains: (1) contextual factors, including societal and cultural influences related to legal and normative expectations for substance use behaviors as well as economic factors; and (2) individual and interpersonal factors that take into account the individual within the context of social, behavioral, and biological influences on adolescent decisionmaking and subsequent substance use behavior.

Although there is no consensus about risk domains, there is agreement regarding the significance of several key risk factors (Dryfoos 1990;

Hawkins et al. 1992; Newcomb et al. 1987). The risk factors are as follows:

- Early initiation of drug use predicts later abuse. Most research concurs that there is a linear relationship to early onset and severity of abuse.
- School problems such as academic failure in school and a low degree of commitment to education have been identified as significant predictors of substance abuse.
- Personality characteristics such as rebelliousness, nonconformity (alienation), and a strong sense of independence are positively associated with substance abuse.
- Lack of family support and guidance, resulting in family conflict, noninvolvement, and detachment between adolescents and their parents have been related most significantly with initiation of substance use. Conversely, adolescents' reports of trust, warmth, and involvement with parents have been associated with nonuse or less frequent use of cigarettes, alcohol, and marijuana.
- Of particular significance are findings related to the role of peers in determining adolescents' use of substances. Peer influences on adolescents' substance use have been empirically demonstrated by adolescents' association with peers who also use substances, conforming to peer pressure and perceptions that peers are engaging in substance use behaviors (perceived social norms), as well as relying on the opinions of peers rather than on parents or other adults.

While knowledge about risk factors for substance abuse in adolescents does not offer a total solution for preventing substance use behavior, it does point to key elements to target when designing intervention strategies for prevention. Moreover, prevention strategies are most likely to be effective if they are based on an understanding of the antecedents to substance use. Thus, it is unlikely that a focus on one risk factor will lead to prevention, nor is it likely that one prevention strategy will be effective.

## **Co-Occurrence of Risk Behaviors and Negative Health Outcomes**

Although alcohol consumption and use of noninjecting drugs are not directly linked to acquisition of STDs/HIV, youths who use one or more of these substances also tend to engage in sexual risk behaviors, including earlier initiation of sexual intercourse and inconsistent use of barrier-method contraceptives, when compared to youth who abstain from using these substances (Bagnall et al. 1990; Ensminger 1990; Keller et al. 1991; Mott and Haurin 1988; Rosenbaum and Kandel 1990). Moreover, a recent study found a significant association between abuse of alcohol and drugs and failure to use condoms (Hingson et al. 1990). Specifically, the authors reported that adolescents who consumed five or more drinks daily or used marijuana within the month prior to the survey were significantly less likely to use condoms. In addition, of the teens who reported sexual activity after drinking alcohol, 16 percent indicated that they were less likely to use condoms, and 25 percent reported using condoms less often after using drugs.

While the co-occurrence of adolescent substance use behavior and sexual activity is well established, the role of this relationship to transmission of STD/HIV infection has recently received attention. Use of crack cocaine has been linked to increased rates of syphilis and gonorrhea in some urban adolescent populations; this increase is postulated to be due to drug-related sexual disinhibition and the exchange of sex for drugs (Fullilove et al. 1990; Goldsmith 1988; Schwarcz et al. 1992; Zweig et al. 1991).

### **Summary of Adolescents' Risk for STDs/HIV**

From the data reported thus far, one can conclude that:

- risk-taking behavior among adolescents is prevalent and interrelated;
- adolescents commence sexual intercourse at earlier ages than ever before, and many of them do not use effective measures to protect themselves from diseases;
- STD and pregnancy rates among adolescents are high;
- use of substances, especially alcohol, is common in teens and thought to be associated with increased risk of STDs/HIV;

- higher rates of HIV/AIDS in adolescents than those currently reported are probable;
- males who engage in sexual intercourse with other males, as well as African-American and Hispanic youth, are over-represented among teens with AIDS relative to their proportion in the population;
- given the high rates of pregnancy in teens, higher rates of perinatal HIV transmission are likely to occur in teen mothers; and
- peers and family play an important role in determining adolescents' decisions to engage in risk-taking behaviors. Together, these factors must be taken into account when planning strategies to prevent further spread of STDs/HIV infection in adolescents.

## **CONCLUSIONS**

Currently, AIDS in adolescents is rare; however, many more teens are thought to be HIV-infected given the long latency period between infection and manifestation of disease. Teenagers are at increased risk for HIV transmission because many of them engage in sexual and substance use behaviors; they are initiating sexual intercourse at younger ages than ever before; many of them have multiple sexual partners; and some use substances that may directly or indirectly place them at risk of exposure to STDs/HIV infection. In addition, many teens do not consistently use condoms when engaging in sexual intercourse.

To prevent further spread of sexually transmitted infections, prevention programs that emphasize cognitive and behavioral skills-building are necessary (Bandura 1992; Boyer and Kegeles 1991). Such programs should be theory based and must take into account the risk behaviors and their associated antecedents. To be most effective, these programs should include a variety of educational and communication strategies that may differ depending on the target population and the site where they are to be implemented. Finally, although current research has begun to elucidate the mechanisms by which adolescents make health decisions and subsequently engage in health-promoting or health-damaging behaviors, more research is critically needed.

## NOTES

1. The data reported from Dryfoos (1990) was compiled primarily from the US. Bureau of the Census, Statistical Abstract of the United States, Washington, DC: U.S. Government Printing Office, 1988.
2. Adolescents, teens, teenagers, and youth(s) are used interchangeably in this document. However, when referring to 10- to 12-year-olds, the term “youths” is used to denote this younger age group.
3. Alcohol and drug use is interchanged with substance use or substance use behavior.

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## REFERENCES

- Bachman, J.G.; Wallace, J.M., Jr.; O'Malley, P.M.; Johnston, L.D.; Kurth, C.L.; and Neighbors, H.W. Racial/ethnic differences in smoking, drinking, and illicit drug use among American high school seniors, 1976-89. *Am J Public Health* 81:372-377, 1991.
- Bagnall, G.; Plant, M.; and Warwick, W. Alcohol, drugs, and AIDS-related risks: Results from a prospective study. *AIDS Care* 2:309-317, 1990.
- Bandura, A. A social cognitive approach to the exercise of control over AIDS infection. In: DiClemente, R.J., ed. *Adolescents and AIDS: A Generation in Jeopardy*. Newbury Park, CA: Sage, 1992. pp. 89-116.
- Boyer, C.; Moscicki, A.B.; Barrett, D.; and Flynn, P. “Evaluation of AIDS Intervention in High Risk Youth.” Paper presented at the 10th Annual AIDS Investigators Meeting of the University of California, Universitywide AIDS Research Program and Task Force on AIDS. San Francisco, March 9, 1993.

- Boyer, C.B. Psychosocial, behavioral, and educational factors in preventing sexually transmitted diseases. In: Schydlower, M., and Shafer, M.A., eds. *Adolescent Medicine: State of the Art Reviews: AIDS and Other Sexually Transmitted Diseases*. Vol. I(3). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 597-613.
- Boyer, C.B., and Kegeles, S.M. AIDS risk and prevention among adolescents. *Soc Sci Med* 33(1):11-23, 1991.
- Brooks-Gunn, J., and Furstenberg, F.F. Adolescent sexual behavior. *Am Psychol* 44:249, 1989.
- Catania, J.A.; Coates, T.J.; Greenblatt, R.M.; Puckett, S.; Carman, M.; and Miller, J. Predictors of condom use and multiple partnered sex among sexually active adolescent women: Implications for AIDS related health interventions. *J Sex Res* 26:514-524, 1990.
- Cates, W., Jr. The epidemiology and control of sexually transmitted diseases in adolescents. In: Schydlower, M., and Shafer, M.A., eds. *Adolescent Medicine: State of the Art Reviews: AIDS and Other Sexually Transmitted Diseases*. Vol. I(3). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 409-427.
- Centers for Disease Control. Results from the National Adolescent Student Health Survey. *MMWR* 38:147-150, 1989.
- Centers for Disease Control and Prevention. *Center for Prevention Services, Division of STD Prevention, Annual Report*. Atlanta: Centers for Disease Control and Prevention, 1991a.
- Centers for Disease Control and Prevention. Alcohol and other drug use among high school students-United States, 1990. *MMWR* 40(45):776-777 and 783-784, 1991b.
- Centers for Disease Control and Prevention. Health objectives for the nation: Current tobacco, alcohol, marijuana, and cocaine use among high school students-United States, 1990. *MMWR* 40(38):659-663, 1991c.
- Centers for Disease Control and Prevention. Health objectives for the nation: Sexual behavior among high school students-United States, 1990. *MMWR* 40(51/52):885-888, 1992.
- Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report. July 5(2):10-11, 1993a.
- Centers for Disease Control and Prevention. Selected behaviors that increase risk for HIV infection, other sexually transmitted diseases, and unintended pregnancy among high school students-United States, 1991. *JAMA* 269(3):329-330, 1993b.
- Coupey, S.M., and Klerman, L.V. *Adolescent Medicine: State of the Art Reviews: Adolescent Sexuality-Preventing Unhealthy Consequences*. Philadelphia: Hanley & Belfus, Inc., 1992.

- Dryfoos, J.G. *Adolescents at Risk: Prevalence and Prevention*. New York: Oxford University Press, 1990.
- Ensminger, M.E. Sexual activity and problem behaviors among black, urban adolescents. *Child Dev* 61:2032-2046, 1990.
- Forrest, J.D., and Singh, S. The sexual and reproductive behavior of American women, 1982-1988. *Fam Plann Perspect* 22:206-214, 1990.
- Fullilove, R.E.; Fullilove, M.T.; Bowser, B.P.; and Gross, S.A. Risk of sexually transmitted disease among black adolescent crack users in Oakland and San Francisco, CA. *JAMA* 263:851-855, 1990.
- Gayle, H.; Manoff, S.; and Rogers, M. "Epidemiology of AIDS in adolescents USA." Paper presented at the Fifth International AIDS Conference, Montreal, June 1989.
- Goldsmith, M.F. Sex tied to drugs = STD spread. *JAMA* 260(14):2009, 1988.
- Greenblatt, R.M.; Lukehart, S.L.; Plummer, F.A.; Quinn, T.C.; Critchlow, C.W.; and D'Costa, L.J. "Genital Ulceration as a Risk Factor for Human Immunodeficiency Virus Infection in Kenya." Paper presented at the Third International Conference on AIDS, Washington, DC, June 1987.
- Hawkins, J.D.; Catalano, R.F.; and Miller, J.Y. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychol Bull* 112(1):64-105, 1992.
- Hingson, R.W.; Strunin, L.; Berlin, B.M.; and Heeren, T. Beliefs about AIDS, use of alcohol and drugs, and unprotected sex among Massachusetts adolescents. *Am J Public Health* 80:295-299, 1990.
- Holmes, K.K. "Heterosexual Transmission of HIV: Current Evidence and Future Prospects." Paper presented at the Fourth International Conference on AIDS, Stockholm, Sweden, June 1988.
- Holtzman, D.; Anderson, J.E.; Kann, L.; Arday, S.L.; Truman, B.I.; and Kolbe, L.J. HIV instruction, HIV knowledge, and drug injection among high school students in the United States. *Am J Public Health* 81(12):1596-1601, 1991.
- Irwin, C.E., Jr. The theoretical concept of at-risk adolescents. In: Strasburger, V.C., and Greydanus, D.E., eds. *Adolescent Medicine: State of the Art Reviews: The At-Risk Adolescent*. Vol. I(1). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 1-14.

- Irwin, C.E., Jr., and Shafer, M.A. Adolescent sexuality: Negative outcomes of a normative behavior. In: Rogers, D.E., and Ginzberg, E., eds. *Adolescents at Risk: Medical and Social Perspectives*. Proceedings of the Cornell University Medical College Seventh Conference on Health Policy. Boulder, CO: Westview Press, 1992. pp. 35-79.
- Kegeles, S.M.; Adler, N.E.; and Irwin, C.E., Jr. Sexually active adolescents and condoms: Changes over one year in knowledge, attitudes, and use. *Am J Public Health* 78:460, 1988.
- Keller, S.E.; Bartlett, J.A.; Schleifer, S.J.; Johnson, R.L.; Pinner, E.; and Delaney, B. HIV-relevant sexual behavior among a healthy inner-city heterosexual adolescent population in an endemic area of HIV. *J Adolesc Health* 12:44-48, 1991.
- Morrison, D.M. Adolescent contraceptive behavior: A review. *Psychol Bull* 98:538, 1985.
- Moscicki, A.B. Genital human papillomavirus infections. In: Schydlower, M., and Shafer, M.A., eds. *Adolescent Medicine: State of the Art Reviews: AIDS and Other Sexually Transmitted Diseases*. Vol. I(3). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 451-470.
- Moscicki, B.; Millstein, S.G.; Broering, J.; and Irwin, C.E., Jr. "Adolescent Beliefs and Behaviors Concerning Sexually Transmitted Disease and Acquired Immunodeficiency Syndrome." Paper presented at the Annual Conference of the Society for Adolescent Medicine, New York, March 1988.
- Mosher, W.D., and Pratt, W.F. *Contraceptive Use in the United States, 1973-88*. National Center for Health Statistics, Series 81, No. 1. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1990.
- Mott, F.L., and Haurin, R.J. Linkages between sexual activity and alcohol and drug use among American adolescents. *Fam Plann Perspect* 20(3):128-136, 1988.
- Newcomb, M.D.; Maddahian, E.; Skager, R.; and Bentler, P.M. Substance abuse and psychosocial risk factors among teenagers: Associations with sex, age, ethnicity, and type of school. *Am J Drug Alcohol Abuse* 13(4):413-433, 1987.
- Planalp, S., and Honeycutt, J. Events that increase uncertainty in personal relationships. *Hum Commun Res* 11:593-604, 1985.
- Quinn, T.C.; Glaser, D.; Cannon, R.O.; Matuszak, D.L.; Dunning, R.W.; Kline, R.L.; Cambell, C.H.; Israel, E.; Fauci, A.S.; and Hook, E. W. Human immunodeficiency virus infection among patients attending clinics for sexually transmitted diseases. *N Engl J Med* 318:197-203, 1988.

- Remafedi, G. Sexually transmitted diseases in homosexual youth. In: Schydlower, M., and Shafer, M.A., eds. *Adolescent Medicine: State of the Art Review: AIDS and Other Sexually Transmitted Diseases*. Vol. I(3). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 565-582.
- Rosen, D.S.; Xiangdong, M.; and Blum, R.W. Adolescent health: Current trends and critical issues. In: Strasburger, V.C., and Greydanus, D.E., eds. *Adolescent Medicine: State of the Art Reviews: The At-Risk Adolescent*. Vol. I(1). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 15-32.
- Rosenbaum, E., and Kandel, D.B. Early onset of adolescent sexual behavior and drug involvement. *J Marriage Fam* 52:783-798, 1990.
- Rosenfeld, W.D.; Vermund, S.H.; Wentz, S.J.; and Burke, R.D. High prevalence rate of human papillomavirus infection and association with abnormal Papanicolaou smears in sexually active adolescents. *Am J Dis Child* 143:1443-1447, 1989.
- Schwartz, S.K.; Bolan, G.A.; Fullilove, M.; McCright, J.; Fullilove, R.; Kohn, R.; and Rolfs, R.T. Crack cocaine and the exchange of sex for money or drugs: Risk factors for gonorrhea among black adolescents in San Francisco. *Sex Transm Dis* 19(1):7-13, 1992.
- Schydlower, M., and Shafer, M.A. Chlamydia trachomatis infections in adolescents. In: Schydlower, M., and Shafer, M.A., eds. *Adolescent Medicine: State of the Art Review, AIDS and Other Sexually Transmitted Diseases*. Vol. I(3). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 615-628.
- Shafer, M.A., and Sweet, R. Pelvic inflammatory disease in adolescent females. In: Schydlower, M., and Shafer, M.A., eds. *Adolescent Medicine: State of the Art Reviews: AIDS and Other Sexually Transmitted Diseases*. Vol. I(3). Philadelphia: Hanley & Belfus, Inc., 1990. pp. 545-563.
- Sonenstein, F.L.; Pleck, J.H.; and Ku, L.L. Sexual activity, condom use and AIDS awareness among adolescent males. *Fam Plann Perspect* 21:152-158, 1989.
- St. Louis, M.E.; Conway, G.A.; Hayman, C.R.; Miller, C.; Petersen, L.R.; and Dondero, T.J. Human immunodeficiency virus infection in disadvantaged adolescents: Findings from the U.S. Job Corps. *JAMA* 266:2387-2391, 1991.
- Talmadge, W.C. Premarital sexuality. In: L'Abate, L., ed. *The Handbook of Family Psychology and Therapy*. Homewood, IL: The Dorsey Press, 1985.

Zweig Greenberg, MS.; Singh, T.; Htoo, M.; and Schultz, S. The association between congenital syphilis and cocaine/crack use in New York City: A case-control study. *Am J Public Health* 81(10):1316-1318, 1991.

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# Going Nowhere Fast: Methamphetamine Use and HIV Infection

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## INTRODUCTION

Adolescents who are unconventional or atypical often are drawn and pushed into environments and subcultures where illicit drug use is endemic. Their sexual behavior is influenced by the settings, norms, and values of other members of these substance-using subcultures. To decrease the level of human immunodeficiency virus (HIV) risk for these youths, it is necessary to understand the contexts of adolescents' sexual behavior in order to develop successful intervention programs. In addition to focusing on the age of initiation, types of acts, and rates of sexual activities by specific members of marginalized subcultures, one must understand the behavioral practices and patterns that typify subcultural groups and consider the accompanying developmental and life challenges (Commission on Behavioral and Social Sciences Education 1993). This chapter describes the contexts and activities of gay and bisexual male youths that may place them at high risk for HIV infection. To understand and appreciate the characteristics of these subcultures, descriptive and ethnographic research strategies are required.

This chapter presents selected life episodes and case studies of three gay or bisexual youth living with HIV or acquired immunodeficiency syndrome (AIDS). Their lives were characterized by substance use and methamphetamine abuse. This chapter examines how their developmental course was effected as the youths came to terms with their sexual orientations while functioning within methamphetamine-addicted subcultures. The chapter discusses common paths into methamphetamine use or "getting high"; describes the behavioral patterns while addicted, including "tweaking, freaking, and over-amping"; and explores individual attempts to adapt, function, curtail, or discontinue methamphetamine use and self-destructive practices that pervaded their environments. After examining the context of their HIV-risk behaviors, the authors suggest

the types of intervention strategies that appear to help youths modulate or cease methamphetamine use and thereby to reduce future HIV-risk activity.

## **BACKGROUND**

Sexual activity typically begins during adolescence. About 80 percent of adolescents experience intercourse by the age of 18. Adolescent intercourse often is unprotected, placing youths at risk for acquiring HIV (Rotheram-Borus et al., in press). In developing interventions to reduce youths' risk for HIV infection, adolescent sexuality cannot be separated from their broader developmental task of exploring and committing to their sexual role and personal identity (Erikson 1968; Miller and Rotheram-Borus in press; Rotheram-Borus 1989). The context of adolescent sexual behaviors and substance use (with whom, what acts, where, at what age, in what place, why, and under what circumstances) critically influences the risk of contracting HIV and the type of intervention program needed. It also impacts the adolescent's long-term adjustment.

Knowledge of the contexts of adolescent sexual behavior and substance use is very limited (Commission on Behavioral and Social Sciences Education 1993). Epidemiological data from schools and national household surveys indicate that the age and sequencing of sexual activities (e.g., oral, anal, or vaginal sex) vary by gender, ethnicity, and socioeconomic status (Boyer, this volume). In the last 7 years, researchers have identified subgroups of youths at relatively higher risk of HIV infection than their peers: gay and bisexual youths, runaway and homeless youths, delinquents, those who are sexually abused, teenage mothers, and injecting drug users (IDUs) and their partners (Rotheram-Borus et al., 1994). Among these subgroups of youths at high risk for HIV infection, sexuality is linked to other problems in their lives (Ibid). These youths are not only at risk for unprotected sexual activity, but are also more likely to abuse alcohol and drugs, experience academic and behavioral problems at school, have contact with the criminal justice system, and feel depressed or suicidal (Dryfoos 1990; Jessor and Jessor 1977).

Certain youths are at risk for HIV infection, are involved in early sexual activity, and have multiple problem behaviors in part because they are atypical from their peers in some way. For example, youths who

self-identify as homosexual may feel different from the majority of their peers in their sexual orientation. Often youths who recognize they are homosexual have no adult role models for developing sexual identity, feel isolated from their peers, and lack opportunities to establish relationships that are not highly sexualized with same-sex partners (Martin and Hetrick 1988). Fearing discovery as homosexual, many of these youths leave home or lead multiple lives, masking their homosexuality (Ibid). Parents who learn of a youth's homosexual orientation often reject and then eject these youths from home, leaving them with few housing options (Hunter and Schaecher 1990). Without a stable living situation or social support network, some of these youths become marginalized. Marginalization often is associated with involvement in substance-abusing subcultures.

While some unconventional adolescents seek situations that may involve them in multiple problem behaviors, others involuntarily find themselves in social settings or life situations where high-risk HIV activities are common. One-third of the girls identified as HIV seropositive at one hospital in New York City had previously had fewer than three sexual partners at the time of their diagnosis and had never injected drugs (Futterman et al. 1993). Yet these girls live in neighborhoods that have high HIV seroprevalence rates, which is related to the endemic substance abuse in these same neighborhoods. Girls living in rural environments with low seroprevalence rates may engage in the same behaviors as those in urban environments, yet have very little risk of HIV infection. Similarly, homeless youths are at increased risk for HIV infection due to their living situation. Some of these youths become homeless because of unconventional behaviors. However, many are homeless because their families are homeless (20 percent), their families have rejected them, or the family environment is victimizing. For example, 42 percent of runaway girls were found to be victims of sexual abuse (Rotheram-Borus et al. 1992). Many youths at high risk for HIV infection are at risk due to their living situations-situations they were not responsible for creating.

## **METHODOLOGY**

The life episodes and case studies that follow were obtained from October 1992 to April 1993 in ethnographic interviews and observations as part of a larger project on secondary prevention of HIV and AIDS conducted in San Francisco and Los Angeles and supported by the National Institute on Drug Abuse (NIDA). These cases were selected

from a study group of 52 youths who were HIV seropositive and had been interviewed repeatedly. Focus was on youths already seroconverted. The ranges of lifestyles, scenes, and subcultures that characterize their lives were identified. Youths were recruited from community-based agencies, support groups, and snowball sampling from street contacts. Some had participated in other studies before this project began.

The strength of the qualitative data presented here rests on the observational and networking skills of the researchers. Therefore, the personal and professional backgrounds and expertise of the ethnographers in working with the population and in conducting ethnographic work were central assets of the current study.’ This expertise allowed for rapid identification of the ranges and characteristics of the social roles and niches occupied by youth living with HIV and AIDS.

Involvement in homosexual activity was a pathway for each of these youths’ becoming substance users and their subsequent activities. Because the youths were gay-identified, they often were stigmatized and marginalized from families or peers. The degree of marginalization varied depending on the degree of financial disenfranchisement. Some lived in underclass sex and drug trade zones in the inner city and were totally disconnected. Other middle-class youths were connected to the support services of community-based agencies.

The cases selected for this chapter represent themes emerging from the total study group. In general, youths varied in how and when they identified themselves as gay or bisexual, in their socioeconomic backgrounds and resources, and in the circumstances of their initiation and continuation of substance use. Nevertheless, similarities in behavioral patterns and themes illustrate how social settings, subcultural groupings, and activities affect HIV risk-seeking and risk-taking behavior. There were also parallels in their reasons for involvement in methamphetamine-using subcultures. However, the youths’ methods and abilities for ending methamphetamine use and disassociating from these social worlds differed, and those differences suggest factors that must influence prevention programs.

## **ADOLESCENT PATHS, TASKS, AND RESOURCES**

Methamphetamine (known as meth, speed, crystal, and crank) has gained popularity as a hard drug in many western cities (Currie 1993).

Thousands of illicit methamphetamine laboratories are estimated to be in the United States, mainly in the West and Southwest; as evidence, there were 775 reported seizures of methamphetamine labs in 1987 alone (Currie 1993). In San Francisco and Los Angeles, methamphetamine use defines a lifestyle and subculture characterized by activities that place disenfranchised youths at higher risk for HIV and dominate their lives (Marotta 1989, 1991, 1992). Many of these marginalized young people already have become infected with HIV (Bermudez and Shalwitz 1992).

Youths who become enmeshed in this subculture are not short-term runaways who are rescued easily and reintegrated into foster care or families. These are long-term disenfranchised youths. Physically, these youths may sometimes appear threatening, offensive, obnoxious, or generally disagreeable. These features are consequences of lives permeated with chronic substance use and the effects of permanent or intermittent street life. Three case studies illustrate the social and behavioral contexts that characterize HIV-risk activity for three young men enmeshed in methamphetamine-using subcultures and social worlds.

### **Mark**

Mark was 13 when he first arrived in San Francisco from the suburbs. He was ejected from his home for being gay. As a result, he has been responsible for his own survival for the last 6 years. Similar to other disenfranchised youth, he soon learned that he could earn easy money through full-time sexual activity for money on the streets and in gay bars. He liked the attention paid to him; his previous family and peer relationships were isolating. He remembers that he was “high” the first time that he had sex with another male, an adult, when he was 13 years old. Marijuana made the whole “sexual thing” easier. He later experimented with crack cocaine and heroin and had a long stretch of alcohol abuse that “clouded over” his life the past 5 years. In fact, he has a hard time remembering his specific activities during this period because his long- and short-term memory have been affected. He does remember clearly that he began using speed in pill form at age 16 and has injected speed almost continuously since he was 17 years old. His first injectable speed experience was with an older man who “kept” him for a short period of time. He remembers the older man “shooting him up” in the

forearm during a sexual episode. At that time he believed he was in love. He stated that he has not had similar beliefs since that time.

## **Jim**

Jim is an outgoing 21-year-old male who identifies himself as bisexual. He reported a troubled childhood in Tucson. His mother was a heavy drinker, a “bar-woman” who ignored him and her other children. He was frequently cared for by his stepfather’s father, who regularly got him drunk on alcohol when he was a child. His older brother taught him how to smoke marijuana and chew tobacco before he was 10 years old. For as long as he can remember, he used illicit substances. He “got high” every day, except during the long stretches of time he spent in reform school or jail.

Throughout his early adolescence he was in and out of reform school, usually taking “raps” for his older brother, until one particularly threatening crime and the prospect of jail caused him to run away. Previous problems with the criminal justice system led him to the Southeast, where he found that his relatives and friends smoked locally grown marijuana.

Subsequently he hitchhiked to Portland, OR where he stole a motor, scooter and traded it for some speed. After getting into trouble with the local police when he was “wired,” Jim decided to go to Los Angeles and then San Francisco.

“From the way I heard it, this was the place to be if, it was real liberal. They called it the ‘Gay Bay,’ down here. I figured I’ll go check out the Gay Bay! (laughs) I never left! This is where I fit in! I think I fit in.”

## **Rob**

Rob discovered that he was homosexual at 15. He was able to develop a gay lifestyle in the Northwest United States without losing the love and support of his family. His upbringing was middle class. In his early adolescence, Rob encountered a variety of drugs being used among his friends:

“Acid basically, acid, cocaine, marijuana. I never injected anything, I would never put a needle in my arm. I never have. I’ve tried crack,

I've freebased, I've done acid, I've done mescaline, mushrooms, cocaine, crank."

Rob's first homosexual experiences were with men in their 20s who also had "good jobs" (a disk jockey, a grocery store bagger). His first boyfriend was a man he met in a "cruising" area in downtown Denver. He turned out to be a hustler who was hooked on methamphetamine. His mother moved to California with Rob and his sister about 5 years ago. She began to use speed when forced to work graveyard shifts. One day, when Rob "was going through one of her boxes," he discovered her "cross-tops." With the move to California, methamphetamine became the central feature of his life. He arrived in the Bay Area when he was 20.

Mark, Jim, and Rob came from different geographic areas, and their families had varying personal and economic resources at their disposal. However, their lives took a similar path after they began their drug-using activities. Three central themes permeate their stories: "getting high" or the initiation into substance use and the perceived functional value of this activity; "tweaking and freaking" or the behavioral patterns during substance-using episodes or careers, including unprotected sexual activity; and "over-amping" or an extended state of anxiety and discomfort ("hitting the wall") when substance use activities are perceived as clearly self-destructive or negatively affect the course of their lives. Usually at this point they realize drug use must stop. Examples of each of these themes provide insight into the motivations for methamphetamine use and the rhythm and life patterns once involved in the drug-using subculture, and suggest intervention strategies for ceasing or moderating speed use.

## **GETTING HIGH: PATTERNS OF INITIATION AND METHAMPHETAMINE USE**

Getting high serves many functions and means many things to disenfranchised inner-city youths, as demonstrated by the actions and beliefs of Mark, Jim, and Rob. For example, methamphetamine use results in a strong pleasurable feeling, so strong that it can become the meaning of one's existence, as Jim reported after his first high.

"He hit me (i.e., injected drugs). I started coughing and the rush hit me! The room started shaking and right from then, I knew what my mission was! (laughs) To keep that feeling up!...It made me feel like

I was nice looking, like I can do anything, really. Made me feel like I was it, like I was really good.”

Mark’s experience of intense physiological pleasure was similarly overwhelming:

“It made my hair feel like it was crawling up the back of my neck. Like I was buzzing, wired... I just snorted a couple of lines, so, it lasted probably 12 hours. I was high for 12 hours.”

Similarly, Rob reported:

“I used speed with everything, wherever. To stay awake. I used it with him for sex... I used it just to feel good. There was always a reason to use it.”

These euphoric feelings often are accompanied by strong feelings of sexual potency when first using methamphetamine. Jim summarized the aphrodisiac qualities.

“It made me feel real sexy; it made your sex drive real strong, too.”

Rob reported the same experience.

“I mean it’s sort of euphoric in a sexual way.”

To youths who feel depressed, uprooted, disconnected, or unsure of their future, the rush of a drug high initially provides meaning and a purpose to their lives. The need for meaning and structure that drugs seem to provide is even stronger among gay youths, whose lives are typified by social isolation. According to Rob,

“There wasn’t anyone my age, there still isn’t hardly...I mean there’s more as I get older, but at the time, 17 years old, walking around in this gay neighborhood, there wasn’t very many 17-year-olds that weren’t screaming queens, you know, that were just normal people, walking around.”

Given this isolation, methamphetamine use often provides a way for gay youths to connect with others. As Mark stated:

“I had been alone for so long that I was desperate, and I had found someone and I wasn’t alone anymore. I felt like I had a real somebody in the world. I had a place in the world and I didn’t want to lose that.”

This isolation may enhance the importance of romantic partnerships, and lead to shared needle use and unprotected sexual activity as a way of demonstrating love and commitment to partners. For example, Jim had unprotected sex with an HIV seropositive partner to show that the partner was “somebody in the world.” Jim “loved” the partner and wanted to share his fate.

“Finally, I knew that’s how you caught it but I didn’t care at the time. Me and him have a pact that when we go, we’re just gonna go together.”

Rob expressed his fears that if he did not engage in unprotected sex, he may lose his partners.

“I thought if I didn’t make them use it (the condom) maybe they’d want to be with me, or stay, and I just didn’t care, I didn’t think it would happen...I mean, I don’t know if I could say, give a reason for every time why, there’s too many times to count.”

Thus, drug use and sexual risk often occurred while searching for love and affection.

In addition to enabling youth to connect with others, one effect of methamphetamine use is to disinhibit behaviors otherwise perceived as taboo. Adolescents who are uncomfortable exploring homosexual or bisexual feelings may place responsibility for their homosexual acts on their drug-induced state. Jim described his first homosexual encounter while under the influence of methamphetamine.

“I was staring at my brother and I didn’t know why (laughs). My brother did bad things too, he used to play with me and stuff. When he was high. Even when he wasn’t high, when we was kids, he’d touch me and stuff...that’s the first time I really thought about it. In a homosexual way.”

It is unclear whether the disinhibition reported by youths is solely the physiological consequence of the speed use or whether it provides a rationale that allows the youth to engage in taboo behavior and maintain self-esteem. Other youths may be less honest with themselves regarding sexual desires that may only be acted upon while under the influence of methamphetamine. Rob, for example, minimized the differences in his sexual behaviors in a “stoned” versus an “unstoned” state.

“I mean maybe they made me a little less inhibited, yeah, but I wouldn’t blame anything on these drugs... Because I was doing these things anyway, or was wanting to do these things anyway.”

The association between drug use and sexual orientation existed in the recollections of each youth but in different contexts. For example, Rob identified as gay at 15. Social isolation and masking his orientation were primary precipitants of Rob’s drug use. He did well in high school, where he was “out.”

“People usually didn’t mess with me. I very rarely had any trouble, and when I did, I just ignored it, so I figured the only way it’s gonna hurt me is if I let it hurt me. Of course, it wasn’t the best feeling, to be excluded for that, but I had my own friends.”

Rob was a successful and productive student. However, at age 16, his partner was using methamphetamine, and the relationship ended abruptly and dramatically.

“I was tired of the Midwest, I was upset. Ben (my partner) was doing things I didn’t like...he would go out and not come home, and even hustling or whatever he was doing...I just needed to get out.”

Rob left home and moved to San Francisco. Because there were no openly gay students in his new suburban high school, Rob went “back into the closet.” He explained:

“Well, I knew I was gay. My mom knew I was gay, but she and I never really talked about it, and when I went to high school, I just let everyone think I was straight. I mean I didn’t act gay, so... I went out with girls, and I went with the guys, and whatever... I don’t remember having any sex during that time. It was about 6 months... my brother who is gay, one of my brothers from my father... came down a couple of weeks after I moved out here and he took me up to

the city. It was the first time I'd ever been to this one gay area, and I said 'Wow. I don't believe this.' There was guys holding hands walking down the street together, it's amazing... But I didn't go back up there for a while just because I was busy doing things with straight people, with people my own age, which was also something very strange, cause I never hung out with people my own age in the Midwest."

It was during this period of masking his sexual orientation that Rob started using drugs.

Most of the youth in the larger study group experienced conflict over "coming out" and choosing a gay or bisexual lifestyle. This conflict was interconnected with methamphetamine use for Mark, Jim, and Rob. Many youths who identify as gay or bisexual do not adopt substance-abusing patterns. However, negative societal reactions to gay and bisexual youths appear to lead some youths out of traditional mainstream cultural practices in order to find acceptance, personal worth, and value. Some social worlds and subcultures are more accepting of diversity and welcome gay youths. Once accepted into alternative subcultures, some youth become vulnerable to the negative or destructive activities or practices characteristic of these adopted social worlds.

While many youths experienced an increased sense of meaning, self-worth, pleasure, and disinhibition associated with initial methamphetamine use, eventually there were negative consequences of chronic use. For each benefit, a contrasting cost arose-costs far higher than the benefits and almost unavoidable. As Jim summarized:

"So it just kept going down, down, down, and so he moved, and kept doing more drugs, and I did drugs with him. We stayed up all night and we'd fight, and we'd get back together again and have great sex."

Most youths experienced a downward spiral and were addicted to the drug and to the lifestyle that surround usage. Activities and relationships of physical and emotional ecstasy and disinhibition became dysfunctional. For example, while methamphetamine was initially an aphrodisiac, it soon became necessary for sexual arousal. Episodic or

continual sexual dysfunction was reported in each interview with young homosexually active methamphetamine users. As Rob stated:

“You know, it’s hard to get an erection when you’re on crystal or a lot of crank.”

Jim’s account also points to how methamphetamine use potentially may lead to high-risk situations.

“You can’t get an erection when you’re on speed, it’s concentration. He (meaning, his lover) can never get an erection! (laughs) Hardly ever. When he’s high, if we play games, it’s easier for him to get it up ... (laughs). Like play sex games like handcuffs.”

Mark also became disinterested in sex and only engaged in sexual activities for money or as a means of getting personal validation from others.

“I have to be on drugs to have sex with anybody. Period, ‘cause I do not enjoy having sex. I do not go out and look for sex. I don’t even masturbate. I don’t, like it’s part of my manic depressiveness. Depressed people do not like to have sex... That doesn’t appeal to me. I won’t (have sex) unless I’m on speed.”

Methamphetamine use is characterized by increased sexual activity not only because of myths suggesting increased potency but also in circular fashion due to an interdependency with sex work as a means of support for the “meth habit.” Two of the three youths described in this paper traded sex for drugs or money. As Jim’s comments illustrate, involvement in the drug-using subculture may place youths in situations where sex is bartered.

“We bought this bag and we went back to my hotel...and I split it with him. He did half and I did the other half, and it instantly sobered me up, I remember. I didn’t know what was going on and stuff like that, and I thought I was beautiful and all this stuff, and I came out to try to make some more money, and I did, and that was how I got into that whole trap of money, making money for sex and constantly doing speed.”

The methamphetamine subculture has clear normative roles for sex work. For example, Mark distinguishes between “johns” and “tricks.” “Tricks”

are short-term sexual partners from whom Mark receives money, whereas “johns” can be “worked” over long periods of time, as is the case with “sugar daddies.” The youths’ descriptions of bartering sex demonstrate how initial attributions of self-worth and potency associated with chronic drug use eventually are replaced by alienation, as demonstrated by Mark’s account.

“He is in love with me too, another sorry guy who fell in love with me (laughs), I kept saying, well I want to buy some dope with you... so she (sic) says, here’s the money go buy the coke...She likes to get people real full (high) and give them dope and have sex.”

Methamphetamine use as a means of connecting and experiencing intimacy with others eventually evolves into situations where drug use increases, and the relationships dissolve in conflict. Rob’s description of his problems with Alex demonstrates this pattern.

“Alex was addicted and at first he told me he was gonna quit. And then he didn’t, and then, when he and I started to fall apart, he started to do methamphetamine a lot more, and then I started to do it with him, cause it was one way we could be together.”

Youths get high and use methamphetamine for various reasons that often influence their present circumstances. Rob succinctly summarized the reasons for his former partner’s speed use.

“He said he was doing it to lose weight, but that wasn’t the truth. The truth was he was trying to forget that his father abandoned him, his uncle molested him, or his mother didn’t love him; his brothers were messed up, and he was gay.”

Youths who become part of the methamphetamine-using subculture find that their sexual satisfaction is enmeshed with their survival needs and feelings of self-worth. To them, getting high is characterized by a euphoric physiological rush, and is used to increase personal feelings of self-worth and sexual potency, to connect with others, and to explore one’s sexual orientation without guilt. Getting high also makes it easier to participate in undesirable but necessary sex work in order to provide for one’s immediate survival needs. However, in time, the long-term consequences of chronic methamphetamine use become more apparent: sexual dysfunction, alienation from others, and marginalization into destructive interdependent subcultural social networks.

## **TWEAKING, FREAKING, AND OVER-AMPING: LIFE ON METHAMPHETAMINE**

In street vernacular, shooting speed and having sex are linked together and referred to as “tweaking and freaking.” Tweaking and freaking represent a pattern and rhythm to the lives of some young people. For example, Jim reported that once he became a regular tweaker, he exhibited mood swings and self-destructive phases as effects of his drug use. Every time he injected speed, he would try to stay as high as he could for as long as he could for as many days as possible. His goal was to get as high as he could (get full) without over-amping (too many drugs for too long). Over-amping would make him too nervous and too irritable to be comfortable. To avoid the manic-like state that accompanied crashing, he stayed high by shooting up “just the right amount” of “just the right stuff” at “just the right time” intervals. The goal was to stay awake until he was so exhausted that he could put himself to sleep with a little alcohol.

This cycle of tweaking, freaking, and over-amping methamphetamine leads to acts that further marginalize youths. Theft and petty crime are characteristic activities of the methamphetamine-using subculture. For example, Jim was hustling full-time when he joined in the petty crime that is a feature of the local speed scene.

“If I was tweaked enough, I’d get a trick and he’d invite me to stay. I’d spend the night and tweak around, drawing and scribbling. If they were dumb enough to go to sleep when I was tweaking (laughs) in their house, they’d get robbed most of the time....Because that way I wouldn’t have to go back on the street and hustle....I’d go to my dealers. With a new flight jacket, get 1/2 gram for it. Jewelry, I had a gold class ring that I took, it had a sapphire in it, I got 1/16th for it!”

In addition to the economic relationship between drugs and sex, drugs may have a psychologically numbing effect in sexual activity. Pleasure and self-worth are disassociated from behaviors. Mark explained how drugs allowed him to participate in otherwise unpleasurable sexual activity.

“Just like the big fat guy that picked me up one time, gave me \$300. But she (sic) wasn’t the most attractive thing in the world... but all she wanted to do was lay on top of (you), and do nothing, but lay on

top of (you). If I wouldn't have been high on something I never would have went with her (laughs)."

Survival often is dependent on drug connections. Other "players" and their gatherings provide the context for unprotected sexual activity to occur. For example, Mark identified Daniel as the person he would go to for help. Daniel is his 34-year-old "former lover" who is also one of the main methamphetamine suppliers in his neighborhood. Daniel provides Mark with a free \$20 bag of speed daily, and does not make any sexual or financial demands in return. According to Mark, "He loves me." Mark reported that he is not now actively involved full-time in sexual activity for money, although he does sometimes run into former clients and "falls into old patterns." Occasionally he will walk down the main male sex worker street ("my daily stroll") while high on methamphetamine, and if a car stops, he does not say no to advances.

HIV-risk behavior can escalate within the context of sex-for-money exchanges. Jim's first experience with anal receptive intercourse occurred with a trick. He had not anticipated being the receptive partner when sexual activity began.

"The first time I did do it and it was for money, we had already got to his house and we agreed that he'd pay me \$50 to have oral sex. Right in the middle of it, he told me he'd give me an extra \$100 if I'd let him do that (anal sex). I said okay and he put on a rubber and did it....It hurt! I felt that feeling, for months, ugh! I couldn't stand it, I hated it! It made me feel like a woman! I felt real cheap."

Similar routine, negotiated, or forced sexual situations or behaviors are dictated by immediate survival needs. Relationships often are entered into only for support, protection, or survival. Mark, for example, emphasized that he is not attracted to men his own age because he feels they are "generally stupid and without direction." While Mark likes the financial stability usually characteristic of older men (age 40 to 50), he describes these men as generally dysfunctional, saying they "fall in love too easily." While discounting those his own age, Mark's choice of partners usually is based on the potential benefits he can obtain. Money to purchase speed is a frequent benefit of his cross-generational relationships.

"...My track record, I mean it's not exactly, you know, making the best time, the best mileage, I've left a lot of accidents (laughs) on my

highway of love. It's like, I'd be the first person to tell you, excuse me, but you really don't want to be in love with me (laughs). Because I'll work you, because if I know that somebody is going to do anything for me, I will work them. Not really bad, but I will work them, just like Daniel. Daniel came to pick me up in jail and gave me money and sex, that's why she's (sic) the first person that I called, I knew he'd pick me up and I knew he'd have sex with me."

For Mark, chronic methamphetamine use has also had negative social side-effects, including periods of self-imposed isolation and paranoia.

"I mean I was so tweaked out from the weekend it wasn't even funny, I was in my room, I had my little friend, my little mouse, see, to this day I don't even know if I actually saw that little mouse or not, but I thought I saw this little mouse, and for a whole weekend I was in my room and I'd pick up my coat, and I was trying to leave, and I go like this (gestures) making sure there was no mouse in my coat...I woke up Sunday morning and the first thing I did was, like throw up stomach acid, and I said gee, girl, (sic), when was the last time you ate (laughs)?"

Following long periods of sleep, the postcrash depression is less pronounced and the exhaustion gone. The task then is to arrange for a new supply of speed, the sooner to begin another "high"—another "run."

## **MODERATING OR DISCONTINUING METHAMPHETAMINE USE**

Given the interconnected nature of sexual activity and speed use, it is difficult to prevent HIV sexual-risk activity if methamphetamine use continues. Some youth, especially those already living with HIV and AIDS, are fatalistic, experience hopelessness, and do not want to change their drug use practices. For example, Mark described his unwillingness to change his life situation and patterns in the following way:

"... as far as I can see, I'm just going to die anyway, so why bother getting my life together when I'll probably die before I do it (laughs). Tomorrow I could be in the hospital with some tubes coming out of me."

Hopelessness is the rationale for Mark to continue using drugs. While Rob's explanation is different, similarly he was not motivated to protect himself from HIV infection. Rob initially perceived himself as invulnerable.

“Of course there were general things out and around (about AIDS), you know, in the city or whatever, but not in the suburbs. I don't remember anything...It wasn't a priority with me, and it never became a priority with me...I don't know why. I guess it never got into my head that I could be infected...I had problems with self-esteem. I didn't care, for a long time. I didn't care if I got infected, it was like, what does it matter.”

Even if these adolescents were motivated to change their drug use and sexual behaviors, most do not know what to do and how to change. In fact, many say there were few prevention messages. For example, Jim's knowledge about HIV transmission upon arrival in San Francisco was incomplete.

“I thought the only way to get AIDS was through anal sex. I thought that as long as I didn't do that, then I was cool!... I couldn't figure out why them outreach workers were passing bleach out on the streets (laughs). Then I learned about bleach your needles, clean 'em. I figured my needle works just fine, I clean them with water...Within a week or two, them outreach workers said don't share needles, you'll get AIDS! I had already done a bunch of them things.”

Information is understood and acted upon slowly and over time in informal settings and communities. Eventually, group norms and subcultural practices have to be changed for consistent self-protective behavior to occur. Rob, for example, would only use condoms if a partner took the initiative, supplied them, and insisted that he put one on. First and foremost, he wanted to please.

“There may have been very few times that I did (use a condom). I mean, this is the Northwest, it (condom use) didn't happen in the Northwest, you know, it was like no one knew anyone that had ever had HIV there...There wasn't even really any prevention messages. I went through sex education in high school and I never heard diddly about it...it seemed to have been a far-off thing to me, you know...it was not there.”

Unprotected sexual activity is more complicated and difficult to understand when one partner is an AIDS educator and is aware of infection precautions. One of Jim's partners was employed on a study of male prostitution, HIV, and intravenous (IV) drug use. Jim received his AIDS education face-to-face from his first "boyfriend."

"Yeah, he told me about sharing needles. We'd usually buy a 10-pack, but we'd get so tweaked that we'd just grab any one! He told me to be careful. He told me he'd been at this a long time and he'd taken a lot of chances, that he didn't want me to take any chances. At that time, I didn't care 'cause I wanted me and him, it sounds real stupid and it is real stupid, I figured that if he's gonna die, then I want to die! That's weird, huh?"

Most methamphetamine-using youths have tried at one point or another to quit and get their "lives in order." Total cessation of speed use is very difficult, as reflected in Jim's account of his first experience with a court-ordered drug treatment program.

"You had to go to groups. Wake up in the morning, go to breakfast and go to group. After that group, you'd have a small break. After break, go back to group (laughs). Groups all day long, talking about your drug history, drug abuse. All it really does is make you want to use more drugs! Talking about drugs all day, you kind of want to use them!"

The 6-week treatment program Jim was forced to enter was intended to discourage him from patterns of drinking and drug use he had known since childhood. Jim did not take his treatment sessions seriously.

"I didn't really want to be there in the first place! I told them what they wanted to hear! I never planned on quitting!"

Jim's primary partner, Scott, overtly discouraged and yet subtly encouraged Jim's substance abuse. Scott took Jim to various treatment programs in San Francisco without lasting success. Finally, Scott succeeded in getting Jim to give up alcohol by persuading him that booze made Jim too contentious and violent. However, speed was tolerable so as long as Jim refrained from over-amping or using too much of a batch that was too strong. Jim's own efforts to stop regular speed use ran aground because his partner had grown so accustomed to tweaking and

freaking that he could no longer have sex without using methamphetamine. Their lives contained many poignant contradictions.

As evident in the recollections of all three young men, methamphetamine use was initiated and maintained in order to facilitate intimacy with others. Implementation of HIV prevention strategies by using condoms and stopping drug use was limited by fears of alienating others, conflict, or losing a partner. Rob reported that he was depressed because he did not have an intimate partner. He began to attend a youth rap group sponsored by a gay-affiliated advocacy group. He also “cruised” gay bars. Regardless of the setting, Rob’s condom use was dependent on his partner’s desires.

“If I wanted someone, if I wanted to date someone, I wouldn’t make them wear one, but if it was just a one-night thing, I would.”

The same fear of rejection was evident in Jim’s relationship, even when it was known that his partner was seropositive. Jim and his partner used condoms inconsistently. Fear of HIV was less salient than demonstrating their love and loyalty.

Given these complicated circumstances, it might appear impossible for youth to be able to stop using methamphetamine. However, in almost every instance an opportunity existed when interventions could be successful. Chronic methamphetamine use characteristically is sequential, from getting high and running to the inevitable crash or coming down. Youth seem to be especially receptive to interventions during that period when they are coming down (or immediately following) and before they begin another run.

Unfortunately, Mark rarely comes down, and his periods of sobriety are few. He currently is living alone in a downtown Tenderloin “skid row” hotel room provided by a program for seropositive youths. He listens to the radio when home and while high on speed. The rest of his day is spent borrowing, stealing, or “scamming” money for “shopping sprees” to obtain more speed. He does not socialize with others at the hotel, most of whom are also drug users and sex workers. His immediate primary social world is composed of his speed supplier, his regular johns, and other youths from the seropositive youth program.

The goals for HIV prevention with an adolescent like Mark are to promote his self-esteem, to provide him with realistic and achievable life

alternatives and opportunities, and to develop within him a future orientation and a will to live. He currently describes his life as “running on autopilot.” He does not feel he controls his destiny but is resigned to his fate. Mark continues his speed usage without any plans to quit. He remains in a sort of social and developmental limbo, without plans for the future or employment possibilities. He lives with the assistance of service providers who have taken care of him for years. Currently, he is awaiting general assistance and eventually social security. His high-risk sexual activity ceased years ago, and while his IV drug use continues, clean needles are more accessible. He plans to live in this state indefinitely.

For Jim, intervention opportunities existed following a drug-related incident when Scott, after a 9-day drug “run,” “raped” Jim. The police were called, and Scott was put in jail. Jim was again destitute and denied access to his belongings. Following this episode, Jim spoke about giving up methamphetamine. He talked of getting a job and securing his own living space. This period was short in duration. Unfortunately, Jim could not act quickly enough to take advantage of his resolve to improve his life situation. Given his lack of knowledge of available services and the long waiting list to access drug treatment, he soon returned to familiar people and activities and old behavioral patterns.

After a couple of weeks, Jim resumed a life of getting high and sexual activity for money in adult bookstores. After the period had passed when interventions could have helped, his concern about himself and his risk for HIV infection diminished. Jim considered HIV the least of his worries. Most of all, he struggled with daily survival, and he could not imagine doing so without speed. As long as he was out of jail, he remained trapped in his world of tweaking and freaking. Drugs, alcohol, and sexual activity for money were the foundations of his street-based lifestyle. He continued his drug-related activities. This pattern had become the only life he knew.

Having more personal abilities and resources, Rob experienced fewer stressful events. Rob had accepting parents and a home life, had succeeded academically, held a job, and owned a car. Nevertheless, when Rob decided to stop using methamphetamine, his desire for the intimacy he associated with speed use continued. This need led Rob to seek social support at a community-based agency. He decided to try a rap group for gay youth.

“There were like 20 people or so, but most of them I didn’t, I wasn’t interested in being associated with, they were queeny or whatever... But it was good to have it, because I did meet some people that I could relate to, that I’m still friends with today, and I met someone I became involved with.”

Rob successfully used this therapeutic youth group to connect with others. After donating to a campus blood drive in the fall of 1992, Rob learned that he had been infected with HIV. For help adjusting to his new status, Rob went to a support group for youth living with HIV and AIDS. In the winter of 1993, he was working up the courage to tell his family and his lover his HIV status. He had started using condoms regularly, stopped using drugs, and decided never again to use speed.

The steps Rob had taken—joining a support group, seeing a therapist, finding new employment, taking an apartment with another person living with HIV, beginning an intimate relationship with a non-drug-user—were examples of the dramatic life changes that are associated with drug use cessation (Kandel and Raveis 1989; Stall and Biernacki 1986). With a variety of social supports, Rob’s resolve to change the conditions of his life may be reinforced and succeed. Unfortunately Mark and Jim do not share the same resolve or have positive support networks available.

## **IMPLICATIONS FOR INTERVENTIONS AND CONCLUSIONS**

Methamphetamine use can provide youths with an illusion of excitement and satisfaction in their lives. Initially it is a means to an end: to get high, to increase sexual potency, to facilitate intimacy with others. Eventually, chronic use becomes an end in itself, as waking hours are spent from one run to the next and all efforts are geared towards getting more drugs. Instead of sexual potency, sexual dysfunction results; instead of intimacy, further isolation and paranoia occur. The developmental tasks that face all youth are distorted or retarded. Metaphorically and in reality, methamphetamine use is equivalent to going nowhere fast.

Youths like Mark, Jim, and Rob who participate in methamphetamine-using activities and subcultures clearly are at risk for HIV infection. These youths have multiple problems in their lives, and the contextual factors that influence their HIV risk are on many levels. At the most basic level, some youths frequently are concerned with finding shelter for

the night and food for the morning. With such immediate and basic concerns, youths are not thinking about dying from AIDS 10 years in the future. Unless the youth's life is considered holistically, the salience of primary and secondary HIV prevention will be transient at best. A needs-hierarchy approach must be adopted to the design of intervention strategies (Maslow 1970). Therefore, the authors make following recommendations.

1. Unless immediate needs for survival (food, shelter), security (food and shelter tomorrow), safety (some protection from violence), and social support are met, youths will be unlikely to practice HIV-preventive behaviors consistently. Youths whose survival needs are not met often need to trade sex for money and drugs (Abel-Peterson 1992). In such bartering, the person who needs money is in a less powerful negotiating position (Cohen 1992). Reid and colleagues (1993) found that gay youths who bartered sex were far less likely to decrease their HIV-risk behaviors. Youths living with HIV or AIDS who have received housing supplements feel more secure and may choose to remain at home instead of going out to barter sex. They know they will have shelter the next day. The need to raise quick money for housing is eliminated.
2. Alternatives must be developed and encouraged whereby youths can meet their needs for intimacy and community in ways other than unprotected sexual activity and shared drug use. Providing youths with a positive social support network can reduce the need for seeking sexual intimacy in risky ways. The challenge in developing interventions and programs for these youths is whether programs should address short- or long-term needs, or both.
3. There are not enough long-term placements to serve the numbers of disenfranchised, alienated youths (Rotheram-Borus et al. in press). Federal, State, and municipal agencies typically have devoted their resources to emergency or temporary shelters instead of more stable, long-term facilities. A major goal for social service agencies should be to develop a system to relocate youths gradually from drug-saturated environments to less seductive and less toxic long-term settings. They also must provide vocational and employment opportunities whereby youths can satisfy their basic survival needs in more conventional ways. The program at Larkin Street Youth Center in San Francisco is an example of a successful approach (Kennedy 1989). The Center offers street outreach services, daily drop-in

counseling, meals, a medical clinic, crisis management, long-term housing, and job development and placement opportunities. Community-based agencies like the Larkin Street Center with active outreach and drop-in services are a bridge for youths to begin building new social support networks.

4. An understanding of youths' substance use practices and patterns is central to determining the features of interventions to reduce HIV-risk activity. When youths are high, condom use often is overlooked. Chronic substance use allows for the disinhibition of unprotected sexual acts, avoidance of difficult life situations and negative emotions, and temporary enhancement of feelings of self-worth. It eventually prohibits the development of truly intimate and supportive relationships with others. These factors derail adolescents' healthy development and eventually may have consequences in their adult life. Counselors must help each youth identify and chronicle their behavioral patterns and activities.
5. Repeated and consistent consciousness-raising activities on drug use and sexual activity are needed. These activities are crucial for youth functioning in the "fast lane" who have little time for introspection. The development of personal projects could be beneficial (Etwart 1991). For some, personal projects are a prerequisite to behavioral change. A project could be disclosing sexual orientation or HIV status to family, returning to school, or learning skills to reduce stress and increase relaxation. Underlying feelings of low self-worth (e.g., "I'm no good; I'm a user") associated with youths' self-destructive acts must be confronted and addressed in personal projects. Youths must be convinced they are entitled to better lives. Positive reinforcements should be included in the definition of personal projects. Setting career goals, finding employment opportunities, and establishing specific plans for the future are basic to motivating behavioral change. Each of these components of a comprehensive program with case management appears necessary to effect behavioral change and facilitate exiting methamphetamine-using social worlds.
6. The existential dimension of life should be emphasized in interventions. This area typically is not addressed in most programs or theories. Posing questions such as "Why am I here?" or "Where am I going?" and the discussions that follow can help individuals develop meaning and purpose in their lives. Discussions of this type

also can help youths explore and commit to personal projects and encourage a future orientation.

7. In addition to the necessary service interventions, a research agenda is needed to detail the risk behaviors associated with methamphetamine use and HIV transmission. Longitudinal field studies must be conducted, following youth in depth and over time to ascertain strategies individuals have employed for moderating or discontinuing their drug-use habits. Specific attention must be given to identifying and chronicling the “turning points“ in their drug-using patterns and sexual careers. These turning points may be the only times when interventions and outreach programs can be truly effective.

## NOTES

1. G. Cajetan Luna has conducted local, national, and international research and policy development on street youth and AIDS for 12 years (Luna 1987, 1991; Luna and Rotheram-Borus 1992). He worked out of the main San Francisco youth service agencies. He interviewed youth in natural locations and studied their friends living with HIV or contacts who were not clients of service agencies. All but one of these youth were currently using methamphetamines. None was receiving experimental AIDS treatments; all believed that their drug use was not detrimental to their HIV status; and all lived on a day-to-day basis. Mark is typical of the youth Luna interviewed.

Toby Marotta has been studying sexual and drug-using subcultures in San Francisco since 1976 (Marotta et al. 1982). While doing ethnography with youth living with HIV in San Francisco, he has been interviewing moderate and heavy speed users for the first behavioral study funded by the National Institute of Mental Health entitled “Ice and Methamphetamine Use: A Three Year Exploration.” Marotta employed longtime key informants to access and study youth living with HIV and AIDS in the downtown area who were not attending youth service agencies. To compare the lives of these youth with those who receive support, he subsequently is studying youth served through the Public Health Department. Jim and Rob are typical of the youth he has been studying through both informal and formal channels.

Hilarie Kelly is an anthropologist and ethnographer with cross-cultural experience studying sexual and drug use practices in Africa and young people in Los Angeles and Orange County. She accessed youth through the main service agency for gay and lesbian youth in Los Angeles and through formal and informal networks in Orange County, CA.

## REFERENCES

- Abel-Peterson, T. "Street Youths and HIV." Paper presented at the Second International Encounter on the Health Problems of Street Youths. Rio de Janeiro, Brazil, September 3-5, 1992.
- Bermudez, R., and Shalwitz, J. Report on HIV seroprevalence and transmission factors in young people using special programs for youth clinics. In: Baxter, M., and Reyes, M., eds. *HIV and Adolescence: Issues in San Francisco - 1992*. San Francisco: Special Programs for Youth, 1992.
- Cohen, J. "Different Types of Prostitution Show Wide Variation in HIV and Other Sexually Transmitted Disease Risk." Paper presented at the Eighth International Conference on AIDS, Amsterdam, the Netherlands, July 1992.
- Commission on Behavioral and Social Sciences and Education. *Losing Generations: Adolescents in High-Risk Settings*. National Research Council. Washington, DC: National Academy Press, 1993.
- Currie, E. *Reckoning: Drugs, the Cities, and the American Future*. New York: Hill and Wang, 1993.
- Dryfoos, J. *Adolescents at Risk: Prevalence and Prevention*. New York: Oxford University Press, 1990.
- Erikson, E. *Identity: Youth and Crisis*. New York: Norton, 1968.
- Etwart, C. Social action theory for a public health psychology. *Am Psychol* 46:931-946, 1991.
- Futterman, D.; Hein, K.; Reuben, N.; Dell, R.; and Schaffer, N. HIV virus infected adolescents: The first fifty patients in a New York City program. *Pediatrics* 91(4):730-735, 1993.
- Hunter, J., and Schaecher, R. Lesbian and gay youth. In: Rotheram-Borus, M.J.; Bradley, J.; and Oblolensky, J., eds. *Planning to Live: Evaluating and Treating Suicidal Teens in Community Settings*. National Resource Center for Youth Services. Tulsa, OK: University of Oklahoma, 1990.

- Jessor, R., and Jessor, S.L. *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. New York: Academic Press, 1977.
- Kandel, D.B., and Raveis, V.H. Cessation of illicit drug use in young adulthood. *Arch Gen Psychiatry* 46:109-116, 1989.
- Kennedy, M. "HIV Prevention with Adolescents Who are HIV Seropositive." Paper presented at the Annual Conference on HIV Prevention, Washington, D.C., March 1989.
- Luna, G.C. HIV and homeless youth. *Focus* 2(10), 1987.
- Luna, G.C. Street youth: Adaptation and survival in the AIDS decade. *J Adolescent Health* 12(7):497-582, 1991.
- Luna, G.C., and Rotheram-Borus, M.J. Street youth and the AIDS pandemic. Supplement. *AIDS Educ Prev* 4:1-13, 1992.
- Marotta, T.; Fisher, B.; and Pincus, M. *Adolescent Male Prostitution, Pornography, and Other Forms of Sexual Exploitation*. San Francisco: Urban and Rural Systems Associates, 1982.
- Marotta, T. *Midnight Cowboys*. San Francisco: Self-Published Ethnography, 1989.
- Marotta, T. *Snowballing Sex Workers*. San Francisco: Self-Published Ethnography, 1991.
- Marotta, T. *Doing Sex Work*. Self-Published Ethnography, 1992.
- Martin, A.D., and Hetrick, E.S. The stigmatization of the gay and lesbian adolescent. *J Homosex* 15:163-183, 1988.
- Maslow, A.H. *Motivation and Personality*. 2d ed. New York: McGraw Hill, 1970.
- Miller, R., and Rotheram-Borus, M.J. Growing up biracial in the United States. In: Salett, E.P., and Koslow, D., eds. *Race, Ethnicity, and Self Identity in Multicultural Perspective*. Washington, DC: National Mutlicultural Institute Publications, 1994.
- Reid, H.; Rotheram-Borus, M.J.; Rosario, M.; and Gwadz, M. "Effectiveness of HIV Prevention with Homeless Youth Over Two Years." Paper presented at the Ninth International Conference on AIDS, Berlin, June 1993.
- Rotheram-Borus, M.J. Therapeutic issues in assertiveness training. *Psychol Q J Hum Behav* 21(1):28-33, 1984.
- Rotheram-Borus, M.J. Ethnic differences in adolescents' identity status and associated behavior problems. *J Adolesc* 12:361-374, 1989.
- Rotheram-Borus, M.J., and Tsemberis, S.J. The role of ethnicity in social competency training programs. In: Bond, L; Compass, B.; and Swift, C., eds. *Prevention Research in the Schools*. Fontana, CA: Sage Publications, 1989. pp. 297-3 18.

- Rotheram-Borus, M.J.; Feldman, J.; Rosario, M.; and Dunne, E. Preventing HIV among runaways: Victims and victimization. In: Diclemente, R., and Peterson, J., eds. *Preventing AIDS: Theories and Methods of Behavioral Interventions*. Newbury Park, CA: Sage Publications, 1994. pp. 175-188.
- Rotheram-Borus, M.J.; Koopman, C.; and Ehrhardt, A. Homeless and runaway youth and HIV infection. *Am Psychol* 46:758-766, 1991.
- Rotheram-Borus, M.J.; Meyer-Bahlburg, H.; Koopman, C.; Rosario, M.; Exner, T.; Henderson, R.; Matthieu, M.; and Gruen, R. Lifetime sexual behaviors among runaway males and females. *J Sex Research* 29:15-29, 1992.
- Rotheram-Borus, M.J.; Rosario, M.; and Koopman, C. Minority youths at high risk: Gay males and runaways. In: Gore, S., and Colten, M.E., eds. *Adolescent Stress: Causes and Consequences*. Hawthorne, NY: Aldine de Gruyter, 1991.
- Rotheram-Borus, M.J.; Mahler, K.; and Rosario, M. AIDS prevention with adolescents. *AIDS Educ Prev*, in press.
- Stall, R., and Biernacki, P. Alcohol and drug use during sexual activity and compliance with safe sex guidelines for AIDS: The AIDS Behavioral Research Project. *Health Educ Q* 13:1-13, 1986.

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# The Context of Risk: Methodological Issues

*Zili Sloboda*

The behaviors that put most adolescents and adults at risk for human immunodeficiency virus (HIV) infection are those that enable the transmission of the virus through the sharing of bodily fluids from an infected to an uninfected person. This is the epidemiologic approach to the problem. Much of the available information that is derived from both epidemiologic and prevention intervention studies has been based on the numeric counts of specific behaviors that become surrogate measures of this exposure. Although useful, these measures generally fail to take into consideration partners' HIV status and to elucidate the behaviors themselves; the decisionmaking processes that underlie the choices to perform these behaviors; the values or perceptions of norms and expectancies that are associated with these behaviors; and other environmental, social, and cultural determinants of the behaviors.

The previous sections of this monograph discuss the context and, within population groups, the values and circumstances that have been found or are thought to influence the engagement in and performance of these behaviors. This section presents three chapters that grapple with the issues related to measurement of these behaviors in the context of the dyadic or group relationships involved and the social, temporal, cultural, and environmental circumstances that define their performance.

Brunswick, in her chapter, *Bringing the Context in From the Cold: Substantive, Technical, and Statistical Issues for AIDS Research in the Second Decade*, challenges the reader and her research colleagues with a multidimensional matrix that she terms an ecological model, representing several levels of influence on the behaviors of individuals and populations. Brunswick suggests that the theoretical models that underlie the HIV prevention strategies currently being assessed depend greatly on the Health Belief Model. The limitations of such a cognitive model are that it principally examines behaviors from the individual viewpoint and does not adequately include the social influences of the family, peers, and the community on the extent to which individual behaviors are self-determined and self-controlled.

Brunswick goes on to discuss the levels of circumstances that modify HIV risk behaviors, including the macrosystem, the exosystem, the microsystem, and the ontogenic system. In the macrosystem, the major influences are gender, cohort, ethnoracial factors, and historic period. The importance of these influences creates a need to assess and measure not only how these factors shape the expression of risk behaviors, but also how society dictates the roles and patterns of behaviors for people within these characteristics.

The exosystem includes situational and institutional arrangements that impact behaviors. The status of knowledge regarding HIV infection and its prevention as well as the availability of testing, counseling, and treatment services obviously impact risk perceptions and behaviors. Simply knowing the prevalence of HIV infection and AIDS diagnoses within a geographic area is an important determinant of risk behaviors in some instances.

Roles and expectancies within interpersonal settings such as social networks, the family, peer groups, and the neighborhood (the microsystem) impact the performance of risk behaviors. Brunswick specifically addresses the need to measure “perceived” behaviors as well as “real” behaviors, using self-report, collaborative information, and direct observations. The last system, the ontogenic, refers to characteristics within the individual: attitudes, beliefs, and self-image.

It is apparent that there are many contexts that influence behaviors. In Brunswick’s chapter, as in the following chapter by Koester, the importance of determining what factors are most salient to the behaviors under question is underscored. The need to integrate both qualitative and quantitative measures of these factors also is emphasized in Brunswick’s chapter. She discusses the technical issues associated with studies of risk behaviors, specifically those related to sampling design, instrument development, and analysis. She concludes with an emphasis on the phenomenon of serendipity and on the impact of the data collection process itself on individual behaviors.

The next chapter, *The Context of Risk: Ethnographic Contributions to the Study of Drug Use and HIV*, is a natural extension of the framework established by Brunswick. In this chapter, Koester discusses the many contributions made by ethnographic research to the understanding of HIV risk behaviors, particularly those relative to drug use. He points out that the focus of ethnography is to understand “how people organize and

make sense of their world.” Koester discusses the two ethnographic approaches to data collection, participant observation and open-ended interviews, and how these approaches are combined over time to gain insights and a fuller understanding of a particular group of people. However, he observes that the traditional ethnographic approaches have been modified within the context of HIV research to solve a narrow research question.

Specifically, Koester discusses the contributions of ethnographic research on the meaning of risk and on the micro and macro contexts in which risk behaviors take place. In addition to the review of the qualitative methodology for the collection of information on HIV risk behaviors, he points out the importance of the phrasing and context of the questions asked by the researcher in a variety of settings and the relationship of the responses received to time, situation, and role of the respondent.

In conclusion, Koester relates the importance of having a multidimensional measure of risk behaviors in order to gain sufficient information to intervene and alter or modify these behaviors through planned community, environmental, and individual programs.

Finally, Gibson and Young in their chapter, *Assessing the Reliability and Validity of Self-Reported Risk Behavior*, examine the issues of the meaning of data collected through quantitative approaches, specifically structured questionnaires. This chapter reviews the authors and others’ research that examines the extent to which drug abusers report certain behaviors reliably and the degrees to which self-report instruments obtain valid responses. Three aspects of these issues are discussed: (1) the truthfulness of the information on HIV risk practices provided by intravenous drug users; (2) the extent to which the tendency to provide socially desirable responses “contaminate” self-report(s); and (3) methods researchers can use to reduce response bias when collecting information on sensitive behaviors.

Gibson and Young present the analyses of their studies with intravenous drug users, which show that questions regarding drug use—particularly sharing of injection equipment—were threatening to the respondents, and questions regarding oral and anal sex were sensitive areas of inquiry. They tested different data collection techniques to determine which were best for these two behavioral areas. They found that response bias was reduced by utilizing a questionnaire format that used long,

permission-giving introductions to each set of questions and by asking sensitive questions later in the interview.

It is clear that these chapters do not cover all the methodological issues associated with using multidimensional approaches to collecting information to better understand HIV risk-taking behaviors. One obvious omission is analytic approaches that can address the needed temporal and multilevel analyses. However, conceptualization of substantive issues must of necessity precede a focus on analytic techniques. Until this technical review, substantive contextual issues had not been addressed by such a diverse group. This monograph should serve as a stimulus to researchers focusing on HIV transmission to begin to broaden their conceptualization of their measures and to be challenged not only to include the many dimensions suggested in these chapters, but also to include researcher colleagues who represent disciplines other than their own to work with them on studying this very serious public health problem. It is only through a clear understanding of these decisionmaking processes that the scientific community will be able to prevent the spread of HIV and other infectious diseases.

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# Bringing the Context in From the Cold: Substantive, Technical, and Statistical Issues for AIDS Research in the Second Decade

*Ann F. Brunswick*

This chapter discusses an ecological model of health that has guided the author's research for 25 years. Its articulation is derived from Bronfenbrenner's (1979) paradigm of behavioral influences. The idea of applying a behavioral model to guide conceptualizations about an illness follows from a cross-fertilization of social psychology and health. This model is particularly apt for studying illnesses incurred through human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS), which undeniably have strong behavioral linkages. The behavioral underpinning refers not only to understanding that contagion comes about through specific behaviors, but also to the behavioral responses HIV exacts at multiple social levels and the cross-currents of social response it has evoked at different social levels. Following from table 1, which summarizes the model discussed here, these include: moral (macrosystem), legal and institutional (exosystem), interpersonal (microsystem), and individual knowledge, belief, and attitudes (ontogenic or intrapersonal system) (Brunswick 1985).

The ecological model is a reminder of what needs to be considered when attempting to bring the context in from the cold. It bridges the spheres of interest of different social science disciplines: political science, anthropology, social psychology, and sociology. The model provides a heuristic device for conceptualizing the nature of the epidemic(s) and identifying how HIV infection is experienced differently by low-income people of color, as compared to the experience of the mostly middle-class gay community on whom earlier scientific findings were based.

This basic ecological paradigm serves as a guide to variables to be included in HIV/AIDS studies and identifies some measurement pitfalls to avoid in the context of injection drug users (IDUs). The need for a contextual approach in HIV-related research, policies, and programs is underscored by the fact that HIV-related disease is not randomly distributed, either geographically or socially, nor does symptom

conversion and perhaps even seroconversion occur *pari passu* among all who are exposed (Brunswick et al., forthcoming).

It is easier to give lip service to the social nature of the disease and to the need for incorporating different social levels into its analysis than to do so. The most frequently tested research model in AIDS prevention research is the health belief model (HBM). Yet the HBM is of questionable validity when applied to IDU and minority populations because of its predominantly cognitive dimensions of cost-benefit and vulnerability appraisals, behavioral and outcome efficacy, and because the model operates primarily if not solely in the ontogenic (within the individual) sphere (Brunswick and Banaszak-Holl, unpublished data). A major architect of the HBM movement recently has critiqued the current health promotion movement in words that are equally applicable to the neglect of the social context in HIV research, policy, and programs:

Finally, I turn to what, in my estimation, is the most disturbing aspect of the contemporary health promotion movement: its tendency to locate the responsibility for the cause and the cure of health problems in the *individual*. Three assumptions appear to underlie this approach: personal health-related behaviors are discrete and independently modifiable; anyone can decide to alter his/her behavior and then go on to do so successfully; and everyone has a personal responsibility to 'live well' through self-discipline and behavior modification.... These assumptions do not fit very well with what we know about the major determinants of health and the prevention of illness.

I would argue, first, that health habits are acquired within social groups (i.e., family, peers, the subculture).... The lifestyle approach enables us to ignore the more difficult, but at least equally important, problem of the social environment which both creates some lifestyles and inhibits the initiation and/or maintenance of others (Becker 1993, p. 3-4).

The three areas identified in this chapter's title are discussed in the remainder of the chapter: substantive, technical, and statistical issues that might be helpful in rethinking existing research models and methods for studying HIV. They are guided by the ecological model and concern for situational and environmental factors that have been articulated above.

## SUBSTANTIVE ISSUES

Following the ecological model, structural or macrosystem attributes are considered first, including gender, cohort, period, and ethnoracial issues that are closely tied to social stratification. Analysis of these factors is expected to capture differences, not only in types of risk behaviors and risk exposures, but also in the societally imposed roles and patterns of behavior that apply to minority versus white groups and women versus men within those groups. Macrosystem factors would take into account not only the patterns and norms that prevail generally in society, but also those within specified subcultures. Examples of some of these issues are: Do women IDUs share works with their sex partners relatively more often than do men? Does this sharing occur in Hispanic subgroups (which ones) or among African Americans? Do men universally go first when sharing occurs? Cohort effects also need to be considered at this level (e.g., broad changes over time in norms governing standards for drug or sexual behavior and for sex roles). Cohorts born at varying times experience these changing norms differently. In addition, the macrosystem calls into question singular historic changes that impact all cohorts simultaneously (although not necessarily all social strata), such as economic and industrial “revolutions” and economic recession and depression.

Secular time also enters at the next level of analysis—the exosystem (table 1). Policy and related factors that influence institutional allocation of resources are subsumed here. These reflect situational variations in time and place. Particularly in HIV/AIDS research, time cannot be ignored as a situational variable: the time when data are collected, analyzed, and reported must be given primary consideration because of the rapid changes in primary transmission vectors, host population, biotechnological and pharmaceutical developments, and even in the agent itself (e.g., HIV-2 now is reported in West Africa and among West African immigrants) (Onorato et al. 1993). For HIV/AIDS research, it is of interest, for example, to note what effect an announcement of infection on the part of a public figure such as Magic Johnson has upon public perceptions and awareness. It is less clear whether changes at this level are translated into changes in risk and risk avoidance behavior (Kalichman and Hunter 1992).

Some have analyzed changes in rates of infection, latency periods, and the nature of symptoms as the epidemic progresses over time. Additionally, data need to be specified by place—region and specific

**TABLE 1.** *Ecological paradigm of contextual influences on behavior*

Moral	Legal and Institutional	Interpersonal	Intrapersonal ONTOGENIC SYSTEM (within person)
MACROSYSTEM	EXOSYSTEM	MICROSYSTEM	
Values, Norms and Social Expectancies Governing Behavior, Defined by:	Situational and Institutional Arrangements Spatial and Temporal Factors:	Interpersonal Settings, Social Networks and Interpersonal Relationships of All Types and Sizes:	Biopsychosocial Attributes and Life Histories:
General economic and political climate Gender Ethnicity/race Birth cohort	Timing of specific events: Isolation of virus Pharmacological advances (AZT, etc.) Availability of and access to sterile injection equipment Treatment availability Neighborhood violence	Familial (Spousal, parental, children) Peer Educational Neighborhood groups and organizations Networks within and outside own neighborhood	Attitudes Beliefs Self-image Health

SOURCE: Adapted from Brunswick 1985

locale. More discussion of geographic variations in HIV/AIDS epidemiology appears in this chapter under the section on technical issues. For now, attention is called to such place-related concerns as availability of injection drugs and of free sterilized needles and proximity to crack houses, abandoned housing, and red light districts when considering the role of exosystem variables in HIV/AIDS risk-related behavior.

The next level addressed in the ecological model is the microsystem. This level subsumes the life settings in which the individual interacts with others. Research on peer networks and on sibling sets falls into this domain (Brunswick et al., forthcoming). The difference between perceived and so-called real measures at this level—between what a respondent reports about network characteristics and behavior (perceived) and actual observations or interviews with the network (real)—is a particularly cogent issue. Both of these are measuring real (though distinct) domains and not substitutes for one another. Ideally, both should be modeled.

The fourth level in table 1, that of ontogenic factors, requires little discussion because most of the HBM research has been focused on these factors. Allusion was made earlier to the shortcomings of the HBM because it ignores the social settings of the individual's life and, further, it imbues that life with a regularity and coherence that oftentimes are not present. As an example, when the HBM was tested with cross-sectional data from the Longitudinal Harlem Health Study, those individuals who reported the most concern about HIV/AIDS were the ones who engaged in riskier behaviors. While seemingly logical, this finding turns the HBM on its head, since the model suggests that the most concerned individuals will undertake risk avoidance practices.

Regardless of what other particular concerns arise from the ecological model, one closing note must be sounded of a more general nature: always leave room for serendipity. Though guided by theory, researchers need to be open to the unexpected correlation—and to report it. Too often, research is conducted either without any conceptual-theoretical orientation or with too much of it, resulting in the neglect or oversight of unexpected patterns that might appear in the data. While research needs to be focused, it should be done with sufficient latitude for the unexpected to come into view.

## TECHNICAL ISSUES

Technical issues include those factors that affect the validity (predictiveness) and reliability (consistency/generalizability) of research findings. Quite obviously these issues have statistical as well as procedural implications, and in some cases their classification here is moot. Placing what is measured and how it is measured in context requires that new methods be improvised or old methods be adapted or readapted, always with a mind to preserving (not merely measuring) reliability and validity.

The need to study HIV in the social contexts within which individuals are embedded requires a wedding or merger between ethnographic and quantitative statistical methods. In survey research in the “good old days,” this combined approach was pro forma during the exploratory or pilot stage in developing the larger survey. Site observation and unstructured interviews were conducted to determine appropriate content, wording, and sequence of the final survey items. A beneficial byproduct of integrating these types of procedures in the early stages of research was the investigator’s increased involvement in, and knowledge of, data collection. Recent trends in computerization and specialization have led to increased separation of data analysis from knowledge of how the data were collected and from the raw data. The author speculates that this separation has led at times to acceptance of erroneous results and misinterpretation of findings—severely limiting both their validity and reliability, Cronbach’s alpha notwithstanding (Nunnally 1978).

An example of a simple technique that demonstrates the ethnographic-quantitative merger is use of open-ended questions in developing quantitative surveys. With such questions, categories are built up from the responses. These categories can then be quantified. A case in point from the author’s research concerns data collected beginning in 1975 in reply to the simple question, “How have things been going for you?” (very well/pretty well/so-so, etc.), followed by “How do you mean?” Replies led to the development of a catastrophe scale, akin to what, in the literature now, is usually referred to as a life events scale. Since then, the author has used the scale in closed-end form as a measure of stress (Brunswick et al. 1992). In the fifth round of study, now in the field, the open-ended followup is being used again to identify new events and circumstances wrought over time in the lives of an inner-city African-American cohort. The categories of reply comprise a population

subgroup relevant measure, a topic discussed later in this chapter as important in studying contextual effects.

Laumann and colleagues (1993) have applied a social network and statistical strategy to investigate the undercount in HIV/AIDS prevalence estimates. Their strategy is an application of multiplicity sampling, and it is essentially useful as a proxy method for counting cases of a phenomenon too rare to measure by using normal area probability sampling procedures. This technique takes into account the respondent's probability of selection into the sample and the number and characteristics of infected individuals identified in the network. Demographic characteristics of network cases from the multiplicity sample then are compared to those in official counts to estimate the location(s) and rate(s) of undercounting. Such a method, combined with what is known about geographic concentration of HIV/AIDS cases, might provide important insights not only into changing rates and undercounts but networks of infection diffusion as well. It is an example of how the requirements for valid and reliable HIV/AIDS reports might lead to improvisation of existing methods while preserving rigorous standards for reliability and validity in measurement.

In that same article, Laumann and colleagues (1993) identified sources of bias or error in AIDS case reporting and specifically cited those factors they inferred as biasing against report of middle-class white infection at the various reporting levels. They cite an estimated undercount of up to 30 percent in 1989 across the three levels of reporting that comprise the Centers for Disease Control and Prevention's (CDC's) case counts (Laumann et al. 1993).

Record bias of a different kind appeared in the author's study and concerned the failure to report AIDS infection on African-American females' death certificates in the mid-1980s. Deaths from pneumonia were reported for three female IDUs, and a fourth death was reported from acute renal failure with notations about narcotics use. The women were not tested for HIV/AIDS from 1985 to 1987; consequently, none of these deaths was ascribed to HIV infection or AIDS. Of course, failure to report an AIDS/HIV diagnosis on a death certificate also occurred before CDC's modifications of the AIDS case definition (Centers for Disease Control 1987, 1992).

The issues of question wording, question order, question context, and question format are discussed next, and all have repercussions for data

reliability. It seems obvious that questions need to be clear to the respondent, whether structured or nonstructured interview methods are used. For example, one woman self-identified as bisexual because “it’s only me and my husband.” Words should be selected that are familiar to the population(s) under study. Involving representatives of the study group during instrument preparation is one helpful approach. Pilot testing and pretesting are essential. In HIV/AIDS studies using questions—whether written or oral, structured or unstructured—deliberate steps need to be taken to vary the positive-negative direction of questions and prevent respondents’ inference of desirable responses. Risk behaviors, especially when evaluating before-after interventions, are quite transparent with respect to what is good and bad. The same information needs to be sought in different ways and in contexts that are not conducive to bias. A case in point occurred in the author’s research, when an individual gave an affirmative reply that he or she had increased condom use since hearing about AIDS (Brunswick, unpublished data). Earlier in the interview, however, the same respondent reported no current condom use. The author has little faith in direct questions about changing specified actions because of AIDS as a valid measure of actual behavior, although responses might be useful as measures of changing awareness of risk behaviors.

Wording questions to elicit *intentions* to perform certain actions, behavior *preferences*, and actual behavior *practices* are distinctions demanding particular attention. Each of these questions reflects a different reality, just as the perceived environment (e.g., what is reported by the individual about another’s behavior) differs from objective reality. The distinctions can be informative, but these questions cannot be used as proxies for one another (e.g., Would you want to know if you were infected? Would you want your partner to know? Would you tell him/her? Did you tell him/her?).

The order or context in which questions are presented also influences responses. Colasanto and colleagues (1992) elicited a significant difference (9 percent) in agreement responses by varying the order of survey questions regarding transmissibility of AIDS through blood donation. The difference hinged on whether a question about AIDS and blood donation preceded or followed another question about whether AIDS could be transmitted through blood transfusion. The sample who was asked about donation first had the higher proportion who accepted the erroneous mode of transmission. The authors believe that asking first

about transfusion clarified the meaning of and the distinction with the subsequent question on blood donation.

Concern for the social context implies a recognition of the variability of human behavior. Some things are done with some people at some times. To obtain complete and accurate accounts, time (e.g., last time, first time), type of relationship, and type of activity (when, what, with whom) need to be specified in inquiries into risk behaviors and risk exposures. Many are guilty of framing questions to ask about what the respondent *usually* does, which elicits answers that depend on the varying ability of respondents to abstract and generalize about behavior.

The serendipity or new knowledge principle discussed earlier as a substantive issue has technical implications as well. Observations (whether verbal or visual, structured or unstructured) should be broad enough to capture unanticipated responses. Some examples have been given above.

Changing temporal and spatial (geographic) dimensions of HIV/AIDS in the second decade exact technical considerations for data collection and design, as well as substantive considerations. How frequently must new data be collected to capture changing incidence and prevalence, vectors of infection, and rates of infection? Spatial and geographic concentration of infection and the requisite consideration of contextual factors require integration of data from different sources which are often recorded in different units of observation.

By way of example, in attempting a test of neighborhood influence on HIV rates in the longitudinal African-American study, the area HIV rates that were available were in broadly defined neighborhoods, which included up to eight zip codes in a single neighborhood, and between 4 and 45 census tracts within one zip code. Special permission and requests were required in order to obtain infection rates at the zip code level.

The contextual parameters that were sought included crime statistics (which were available at the police precinct level) and socioeconomic characteristics (provided at the census tract level). Zip codes appeared to be the most useful level for uniform measurement, since that was the smallest geographic unit for reporting AIDS cases. However, these areas do not embrace census tracts in an orderly fashion. Even though they are smaller, census tracts are frequently split between two zip codes and

sometimes as many as three zip codes. Collecting geographic area information, therefore, involves different units of analysis that have to be disaggregated or reaggregated into uniform measures.

Another consideration is that appropriate boundaries of HIV risk areas are yet to be determined. High-rate cities have been identified but, as the National Research Council (NRC) (1993) report emphasized, cases are concentrated in certain areas within those cities. These areas coincide with concentrations of gays or impoverished minority groups. A future study may determine whether these concentrated areas conform better to census tract boundaries, zip code boundaries, health areas, or none of the above. Investigating the natural geographic boundaries of infection might yield information about the spread of disease as well as the role of spatial factors (e.g., crack houses, sex trade) in that spread (National Research Council 1993; Wallace 1988). The author's study compared proportions of infected and noninfected individuals in New York City neighborhoods identified as high infection centers. The study found that equivalent proportions of infected and uninfected individuals resided in those neighborhoods.

Perhaps the preeminent technical challenge facing researchers is the need for ethnic, gender, and cultural sensitivity and specificity in research methods. Ethnogender response differences arise from the differential norms governing the same behaviors that are of particular interest and relevance in assessing HIV/AIDS risk. These differences are more readily understood in reference to the ecological model that enlightens a comparison of HIV/AIDS infection among gays and minorities and between different minorities as well (Diaz et al. 1993).

Gender differences are important both within and among cultural groups. One example from the author's experience concerns the honesty that African-American men and women attributed to replies regarding sexual behavior (Brunswick, unpublished data). The differences were split not only by gender but, as further evidence of differential gender norms, by HIV infection status as well. When asked how honestly they thought others in the survey had answered questions about sexual behavior, infected men were more likely to answer "completely honestly" (31 percent) compared to uninfected men (12 percent) and infected women, none of whom attributed complete honesty to others. Uninfected women (20 percent) were more likely than infected women and uninfected men to attribute complete honesty to others in reporting sexual experiences. The question was intended as an indirect measure of

reliability of self-report, but instead was a further example of perceived reality being a phenomenon in its own right.

Assumptions about attitudes toward transmission risk behaviors, toward the disease itself, and toward medical care for HIV infections need to be subjected to empirical testing, especially when those assumptions may impede accumulation of knowledge. As most researchers have learned, often the reticence is with the questioner, not the respondent. Varying sensitivities among ethnogender and cultural groups can only be established empirically.

What researchers are trying to study and the people being studied are criteria for selecting the particular data collection mode. In the case of perceived or self-reported data, choices need to be made between written and oral responses and between self-administered protocols and those administered by an interviewer or other trained research worker. If oral responses are solicited, a choice must be made between in-person and telephone interviews. The reliability and validity of the selected mode may vary with the ethnic and gender identity of the study population.

In a study focused specifically on interracial differences in reliability of drug use reports, Aquilino and LoSciuto (1990) found that distortions in alcohol and drug use reports on telephone surveys as compared to personal interviews were greater for African-American respondents than for whites. This finding was independent of the sample bias that resulted from the exclusion of households without telephones (sample coverage) and the consequent demographic bias in the obtained sample (the telephone sample disproportionately included upscale African Americans). Distribution on educational attainment is a good indicator of an African-American adult sample's reliability or representativeness. If the findings of a community-drawn sample deviate markedly from 20 percent who fail to complete high school, 60 percent who are high school graduates, and 20 percent who have gone beyond high school, the author would infer that selection factors have been at work (Brunswick et al. 1993).

Note the distinction between the three types of bias that may be incurred according to the selected study mode: sample exclusion (e.g., exclusion of those with no telephone or even not household-based); biased representation of those included; and response bias—the quality of response obtained from in-person interview settings versus those conducted by telephone or self-administered instruments.

Resources and effort are required to surmount potential biases that are linked to study mode. In the author's longitudinal study of African Americans, HIV risk behaviors differentially impacted on men's and women's accessibility to interview. Women who reported multiple HIV risk behaviors required more attempts to interview. The correlation was less predictable for men; some with multiple risk factors could be accessed readily, while others required so many attempts to contact that interviewers did not keep accurate records of the number of attempted contacts (Brunswick 1991).

The difficulty in predicting AIDS risk behavior among minorities and drug users based upon their attitudes and knowledge (Brunswick and Banaszak-Holl, unpublished data; Longshore et al. 1992) is not so much one of mode of study as of insufficiently sensitive measurement tools. The difficulty reflects the need to develop sensitive and contextually relevant subpopulation measures and to improve the reliability of those measurements. Longshore and coworkers (1992) noted that additional difficulties arise in interpreting findings when the measuring instruments are found to have differential reliability between ethnic or gender population subgroups. These differences can lead to erroneous interpretation of data and erroneous conclusions unless transformations or other corrective steps are undertaken to remove the measurement heterogeneity.

## **STATISTICAL ISSUES**

Statistical issues, for the most part, have been addressed in the discussion of technical issues, especially those concerning sampling bias and response bias. If modifications of conventional random or probability sampling methods occur, standard error calculations also require modification. Thus, as the disciplinary representation of a research team is broadened to reflect a multidimensional inquiry, the inclusion of a sampling statistician is crucial to ensure that study methods and statistical assumptions are congruent.

## **CONCLUSION**

In conclusion, the context to be brought in from the cold in HIV/AIDS research must include broadened health, psychosocial, and social contexts. A model for doing this has been described in this chapter,

along with discussion of some technical and statistical difficulties in conducting research (and by extension, intervention programs) that is more sensitive and specific to people in their settings. Like the ecological model, other research models need to become multidimensional and to incorporate indicators and measures across different strata of social complexity.

The issue of serendipity referred to above has application to contextual effects of the study mode itself. The interview process itself may (and does) have an effect. When both groups have had before-and-after interviews, this serendipitous effect could work to restrict the differences that are observed between experimental and control groups in intervention studies and between alternative intervention strategies. Whether or not this effect is a variation of the Hawthorne effect (Roethlisberger and Dickson 1939) of test-retest, it does suggest the need to modify the study design. The study could be modified by adding another group to be interviewed only at followup (carefully matched to the before-and-after experimental and control groups) or by statistically matching the results for the control and experimental groups with data obtained in the same period from equivalent populations outside of the study. These supplementary data could be used to estimate how much of an intervention effect being interviewed and being part of a study group comprises in and of itself.

## REFERENCES

- Aquilino, W.S., and LoSciuto, L.A. Effects of interview mode on self-reported drug use. *Pub Opin Quart* 54:362-395, 1990.
- Becker, M.H. A medical sociologist looks at health promotion. *J Health Soc Behav* 34:1-6, 1993.
- Bronfenbrenner, U. *The Ecology of Human Development*. Cambridge, MA: Harvard University Press, 1979.
- Brunswick, A.F. Impairment, disability and/or handicap: An ecological paradigm. *J Adolesc Health Care* 6(2):141-151, 1985.
- Brunswick, A.F. Health and substance use behavior: The Longitudinal Harlem Health Study. *J Addict Dis* 11:119-137, 1991.
- Brunswick, A.F.; Aidala, A.; Dobkin, J.; Howard, J.; Titus, S.P.; and Banaszak-Holl, J. HIV-1 seroprevalence and risk behaviors in an African American community cohort. *Am J Public Health* 83:1390-1394, 1993.

- Brunswick, A.F.; Lewis, C.S.; and Messeri, P.A. Drug use and stress: Testing a coping model in an urban African-American sample. *J Comm Psychol* 20:148-162, 1992.
- Brunswick, A.F.; Messeri, P.A.; Dobkin, J.; Flood, M.; and Yang, A. Sibling homophily in HIV infection: Biopsychosocial linkages in an urban African American sample. In: Needle, R.H.; Genser, S.; and Coyle, S.L. *Social Networks, Drug Abuse, and HIV Transmission*. National Institute on Drug Abuse Research Monograph. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., forthcoming.
- Buehler, J.W.; Berkelman, R.; and Devine, O. "Estimate of HIV-related Deaths in Young Adult Men, United States, 1988." Abstract presented at the Fifth International Conference on AIDS, Montreal, June 1989.
- Centers for Disease Control and Prevention. Revision of the CDC surveillance case definition for acquired immunodeficiency syndrome. *MMWR* 36:1-15S, 1987.
- Centers for Disease Control and Prevention. 1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. *MMWR* 41:RR-17, 1993.
- Colasanto, D.; Singer, E.; and Rogers, T.F. Context effects on responses to questions about AIDS. *Pub Opin Quart* 56:515-518, 1992.
- Diaz, T.; Buehler, J.W.; Castro, K.G.; and Ward, J.W. AIDS trends among Hispanics in the United States. *Am J Public Health* 83:504-509, 1993.
- Kalichman, S.C., and Hunter, T.L. The disclosure of celebrity HIV infection: Its effects on public attitudes. *Am J Public Health* 82:1374-1376, 1992.
- Laumann, E.O.; Gagnon, J.H.; Michaels, S.; Michael, R.T.; and Schumm, L.P. Monitoring AIDS and other rare population events: A network approach. *J Health Soc Behav* 34:7-22, 1993.
- Longshore, D.; Hsieh, S.; and Anglin, M.D. AIDS knowledge and attitudes among injection drug users: The issue of reliability. *AIDS Educ Prev* 4(1)29-40, 1992.
- National Research Council. *The Social Impact of AIDS in the United States*. Washington, DC: National Academy Press, 1993.
- Nunnally, J. *Psychometric Theory*, 2d ed. New York: McGraw-Hill, 1978.
- Onorato, I.M.; O'Brien, T.R.; Schable, C.A.; Spruill, C.; and Holmberg, S.D. Sentinel surveillance for HIV-2 infection in high-risk US populations. *Am J Public Health* 83:515-519, 1993.
- Roethlisberger, F.J., and Dickson, W.J. *Management and the Worker*. Cambridge, MA: Harvard Press, 1939.

Wallace, R. A synergism of plagues: "Planned shrinkage," contagious housing destruction and AIDS in the Bronx. *Environ Res* 47:1-33, 1988.

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# The Context of Risk: Ethnographic Contributions to the Study of Drug Use and HIV

*Stephen K. Koester*

## INTRODUCTION

Ethnographic research has made significant contributions to the understanding of how and why injection drug use can facilitate human immunodeficiency virus (HIV) transmission. Ethnographic studies have described drug users and their behavior and informed the design of interventions that are culturally relevant and capable of reaching these individuals (Wiebel 1988). In this chapter, the author briefly summarizes ethnographic methods and illustrates how this research approach is especially useful for providing research depth. In particular, the chapter focuses on the contribution of ethnographic research to detailing the meanings people attribute to their behavior and to identifying and describing the contexts in which behavior is embedded.

Understanding how other people organize and make sense of their world is the primary objective of ethnographic research. To accomplish this objective, an ethnographer studies a group by experiencing its members' lives firsthand—interacting with them on their terms and in their environment. This in-depth research method is called participant observation and is at the heart of anthropological fieldwork. The assumption behind participant observation is that much can be learned by listening and observing a group's members in their natural setting. Conducting participant observation with a group over time enables researchers to gain an insider perspective, enabling them to comprehend both the cognitive and material reality of others (Agar 1980).

Ethnographers augment their ongoing observations with a variety of interviewing techniques. These techniques are designed to solicit information about ways of life and patterns of behavior that may appear fundamentally different than their own. Interviewing techniques extend from completely unstructured discussions to survey instruments. However, since ethnography is most useful for exploring new areas of inquiry and for providing depth rather than breadth, most ethnographic

interviews are designed to promote discussion. The subjects are encouraged to “tell their story,” to describe their world and explain their behavior. As a result, ethnographic interviews employ open, contrasted to closed, questions. Combining participant observation with ethnographic interviews and conducting both over an extended period of time enable the ethnographer to identify and describe patterns of behavior as well as the factors influencing behavior.

Two recent examples of in-depth ethnographic research pertinent to this discussion are Eli Anderson’s book “Streetwise” (1990) and Philippe Bourgois’ forthcoming study of a neighborhood crack scene in Spanish Harlem (Bourgois, unpublished observations). Anderson details changing economic and social relations in a Philadelphia community, and Bourgois describes how local residents resist the limited economic options open to them in the formal economy by participating in the underground crack trade, a process of resistance that culminates in a culture of terror. Both of these researchers lived with the people they studied and participated in their daily lives.

In many cases, current ethnographic research on HIV and drug use does not achieve the degree of researcher involvement illustrated by these two studies. Much drug and acquired immunodeficiency syndrome (AIDS)-related research is “applied,” meaning that it is oriented toward solving or contributing to the solution of a particular problem rather than providing a comprehensive study of a particular group or culture. Nonetheless, applied researchers share the same perspective and methods. Applying the ethnographic perspective and its accompanying research methods to the study of high-risk activity among drug users has resulted in a much more intimate and holistic understanding of drug users and their behavior. It has uncovered the meanings drug users attach to their behavior and has led to a greater understanding of the complex set of factors that influence their lives.

## **THE MEANING OF RISK**

Even when social groups are part of a larger social and cultural system, their specific experiences and circumstances may result in differences in meaning or perspective. It is essential to identify and comprehend such differences to understand drug users and the risks they take. For example, needle cleaning is a term public health researchers would assume refers to a hygienic procedure for disinfecting a needle. This

same meaning may be extended to drug injectors who typically perform needle cleaning immediately after injection. Researchers then might assume that injecting drug users (IDUs) already are conscious about needle cleanliness and that encouraging them to take the additional step of using bleach is a relatively straightforward and effortless behavioral change. However, for many drug injectors this postinjection rinse is *not* conducted to disinfect the syringe; rather, its purpose is to unclog the blood and drug residue from the needle so that it can be reused. Although this may seem like a minor point, it indicates how even behavior that appears obvious may in fact have very different meanings for those engaged in it. Ethnographic research is particularly well-suited for identifying and describing these kinds of cognitive differences.

In another illustration, the author found interpretations of what constitutes sexual behavior may be, in part, dependent upon one's sexual orientation, the purpose for which a sexual act is performed, and the individual with whom the act occurs. An interviewer on Denver's National Institute on Drug Abuse (NIDA)-funded cooperative agreement reported inconsistencies among some subjects regarding their answers to a risk assessment instrument's questions on sexual behavior. He noticed that gay women who exchange sex for money often revealed that they regard sex as a pleasurable, intimate act they do with their female lover, while the oral sex and heterosexual intercourse they engage in with male customers is perceived as work (Anderson, personal communication, January 1993). In fact, ethnographers in several cities have reported that among both gay and heterosexual male and female subjects, oral sex and anal sex are frequently viewed as something other than "real" sex (Herdt 1992). Obviously, these differences in interpretation have important implications for research aimed at measuring these high-risk behaviors and intervention projects aimed at reducing them.

Perhaps the most notable example of the disparity in meanings among drug injectors and public health researchers is over the term "syringe sharing." Throughout the 1980s HIV transmission among drug injectors was directly linked to syringe sharing. From a biomedical perspective, the term "sharing" succinctly captured the act that facilitates the transmission of HIV among IDUs. Efforts to stop injectors from using one another's syringes were summarized in messages emphasizing "don't share your syringe." As ethnographers began studying high-risk injection, they began reporting that injectors do not necessarily use this all-encompassing term to describe episodes in which a single syringe is used. Many injectors do not consider that they are sharing if they use the

syringe first, if they share with their sexual partners, if they jointly purchase a syringe, if they anonymously use a previously used needle, or if they clean a jointly used syringe with bleach.

Some behavioral scientists described syringe sharing as a ritualized social practice, implying that the exchange of a syringe between injectors was a conscious act of reciprocity. In this interpretation, syringe sharing was thought to function as a means for injectors to bond and develop trust (Des Jarlais et al. 1986; Howard and Borges 1972). Observations of injecting situations and detailed interviews with injectors led several ethnographers to suggest additional explanations for this behavior. They found that, in many cases, syringe sharing is motivated by the need to get high, and has little to do with ritual or cementing social relationships (Carlson et al. in press; Clatts et al. in press; Fernando 1991; Kane and Mason 1992; Koester 1992, 1994; Murphy 1987; Page et al. 1990). Ethnographers have suggested the terms “needle transfer” and “needle circulation” as more accurately describing the multiple ways injectors pass syringes among themselves (Carlson 1991; Carlson et al. in press). Usually, the IDU who gives a syringe to another injector does not want it back. Needle pooling describes how injectors use common stocks of used syringes available at shooting galleries as well as what happens when an injector “stashes” a syringe in a location where other IDUs can find it (Page et al. 1990).

Studies by Carlson and colleagues (in press) and by Koester (1994) explained multiple reasons, besides HIV, that injectors have for *not* sharing their syringes. Used syringes are more difficult and painful to use because the point quickly becomes dull, an important consideration for injectors who experience difficulty locating a vein or who want to prolong the use of their remaining uncollapsed veins. Also, the most common syringes now used by injectors are disposable insulin syringes that become inoperable from repeated use; needles clog and the rubber plunger begins to lose its pliancy and thus its suction after more than a few injections.

These illustrations suggest the importance of understanding the meaning of behavior from the point of view of those who engage in it and confirm the necessity of identifying and understanding the “complex and broader constraints” influencing these behaviors (Kane and Mason 1992, p. 201). Identifying when sex becomes work or when syringe sharing becomes an anonymous act requires an understanding of the context in which these behaviors take place.

## **THE CONTEXT OF RISK**

Context is an abstract concept used to describe the environment in which human behavior occurs. It refers to those conditions and circumstances that affect action and thought. As such, context is manifested in different dimensions and on many levels of human experience. These conditions may be personal, social, or part of the physical environment; they may operate on a local or microlevel; or they may be macrolevel structural forces. Contextual factors are not static. Factors influencing people's lives always are changing; people are constantly adjusting and adapting as well as resisting the conditions and circumstances affecting them.

By grounding drug users' beliefs and behavior within their everyday reality—the conditions and circumstances in which they live—researchers can resist the tendency to explain their views and behaviors as evidence of some unique cultural system that can only be comprehended through its own internal logic. Instead, researchers can demystify and in a sense “detransferalize” drug users, rather than see them as some exotic but deviant other. They can begin to view much of users' behavior and beliefs as pragmatic responses to their life circumstances.

### **CONTEXT AT THE MICROLEVEL**

A variety of contextual factors has been identified by ethnographers as influencing high-risk drug injecting. These include social and situational factors at the immediate microlevel as well as macrolevel social, economic, and political forces. Immediate, microlevel contextual factors include the stage users are at in their drug use, the emotional or physiological state of the injector at the time of injection, the nature of the relationships between users, the physical and social setting in which drugs are used, the kinds of drugs being injected, injectors' economic status, and the hustles or occupations they employ. For example, an injector's physiological state may affect significantly an injection episode. It is unlikely that an injector who is in withdrawal, desperate to get high, or intoxicated will take the precautions necessary to reduce the possibility of HIV contamination.

The social network or group within which drugs are used and obtained may influence members' injection behavior. The relationship between the members of a network may determine whether they use common injecting equipment. Injectors who are sexual partners or close friends

may regard a refusal to share a syringe as a sign of mistrust. On the other hand, familiarity might enable drug injectors to be assertive about proper needle hygiene. An individual's position relative to the other people with whom they are engaging in sex or drug use may also determine whether they engage in risky activity. For example, a woman who is dependent upon a male injector for access to drugs may be limited in her ability to negotiate for safer drug use or the use of condoms (Guydish et al. 1991).

Non-drug-using members of a drug user's personal network also may influence drug-using behavior. For example, in San Juan, Puerto Rico, IDUs who live with their families often frequent shooting galleries, where high-risk drug use is common, in order to keep their drug use hidden (Ann Finlinson, personal communication, May 2, 1994). This pattern is common among injectors in Denver as well. However, among some Denver injectors, an opposite trend is apparent. Some IDUs are able to use drugs in their own homes because their families support them and tolerate their drug use.

The specific setting in which drugs are used has been shown to play an important role in influencing drug-using behavior. Researchers in several cities have described the relationship between type of injecting location and the drug-using behavioral complex that occurs there (Carlson et al. in press; Clatts et al. in press; Des Jarlais and Friedman 1990; Oulette et al. 1991; Watters 1989). The shooting galleries and "get offs" (locally known places injectors go to use drugs) that they describe vary in size, organization, and function, and include establishments that service over 100 injectors a day as well as apartments or hotel rooms that are used only by members of a closed drug-injecting network. Some shooting galleries have tightly enforced rules governing injecting behavior; others have no rules at all. Some of these establishments' customers include both crack smokers and injectors, some allow sexual barter to occur, and some facilitate completely anonymous syringe sharing.

In Denver, drug injection occurs in a variety of settings, from relatively small organized galleries to abandoned buildings, private homes, and the backseats of automobiles. Each of these locations presents the injector with certain conditions that may affect drug injection hygiene. For example, the number of participants and their familiarity will vary with the setting. Necessary ingredients like clean water may or may not be present. Privacy for injection may be of particularly brief duration. IDUs who inject in public areas, behind buildings, or in automobiles must do so quickly if they are to avoid detection. As a result, the procedure is often

hurried, and adequate needle cleaning is unlikely. Such immediate, microlevel contextual elements often have a causal association with more encompassing macrolevel social, economic, and political forces that shape drug injectors' lives.

## **CONTEXT AT THE MACROLEVEL**

Several researchers have linked drug abuse, escalating violence, and the overwhelmingly uneven distribution of HIV among inner-city minority populations to fundamental changes in the American economy. They contend that there is a causal link between the economic restructuring of the American economy as characterized by corporate downsizing and deindustrialization—the shift from manufacturing to information processing and service—and the social pathology that seems endemic to America's inner cities. They argue that these structural changes have been particularly detrimental to urban poor people and have resulted in job loss, changing job requirements, increasing social isolation, and the withdrawal of municipal services from inner-city neighborhoods (Jencks 1988; Massey 1990; Newman 1992; Phillips 1990; Wallace 1993; Wilson 1987). These conditions have become persistent and dominant forces in the lives of urban poor people, and are manifested in myriad ways that have direct public health implications.

The importance of considering these macrolevel, structural conditions in epidemiological studies of HIV transmission is readily apparent when considering the individuals who are most vulnerable. Increasingly, they are impoverished people of color. As Page and colleagues suggest in the introduction to an article about Miami drug injectors, “All of the described hustles, theft and dating activities operate in a cultural environment where hopelessness and poverty have been endemic for decades” (Page et al. 1990, p. 63). For drug users, these conditions not only contribute to their drug use; they also exacerbate the dangers involved in using drugs.

Bourgois (1989a) anchored his study of Spanish Harlem and its expanding underground, crack-based economy within the changing economy of New York City and described how the shift from a manufacturing-based economy to a service-based economy has affected the lives of people who formerly found employment as workers in the city's factories. As he explains, “The underground economy beckons seductively as the ultimate ‘equal opportunity employer.’ The rate of

unemployment for Harlem youth is at least twice the citywide rate of 8.1 percent, and the economic incentive to participate in the burgeoning crack economy is overwhelming” (1989*b*, p. 63). He describes how those pursuing careers in the crack economy are no longer exploitable by the “white man.” They speak with anger of their former legal jobs and the exploitation they endured, and “... make fun of friends and acquaintances—many of whom come to buy drugs from them—who are still employed in factories or in service jobs... All of them have, at one time or another, held the jobs—delivery boys, supermarket baggers, hospital orderlies—that are objectively recognized as among the least desirable jobs in American society. They see the illegal, underground economy as not only offering superior wages, but also a more dignified work place” (1989*b*, p.63).

Similarly, Clatts and colleagues (in press), in their ethnographic studies of New York’s Lower Eastside, describe how poverty and loss of low-income housing units to conversion, urban renewal, and reductions in federally subsidized housing contribute to homelessness and how homelessness leads to poor health. For drug injectors, homelessness undermines the degree of risk reduction that can be accomplished and sustained. These injectors are without reliable places to use drugs or keep drug-using paraphernalia.

In an ethnographic study of crack-using women in New York City, Maher and Curtis (1992) contend that “...the position of women crack smokers can only be understood by locating their lives, their illicit drug use and their income generating activities within the context of a specific set of localized socio-economic and cultural developments” (p. 221). Specifically, they contend that these women’s crack use, criminality, and experiences with violence only can be understood within the context of gender relations and their opportunities in both the formal and informal economies. Similar findings were noted by several of the ethnographers in the NIDA-funded eight-city ethnographic study examining the phenomenon of sex-for-crack exchanges (Ratner 1993). Several of these studies linked the powerlessness that characterized these women’s lives, as well as the lives of their addicted male counterparts, to comparable socioeconomic and cultural factors. A male crack user in Denver, commenting on why he often asked crack-addicted women to engage in

degrading sexual acts, poignantly made the connection between this behavior and his position within the larger society:

Power. I think it's this feeling that you can dominate somebody. You know, cause here you know they beg for it. It just turns some guys on. Like, gimme that and I'll do this for you. Most guys if they've got cocaine they think they have power cause cocaine bring them money. It make you think you have power. I don't know, that you can dominate. Yeah I don't know, I like power. I'm just dying sort of like. But then every once in awhile I like to feel like I'm important and all that, like I got something you know (Koester and Schwartz 1993, p. 197).

Ethnographers also have studied the role the criminal justice system and law enforcement play in the lives of drug users. Mason described the drug subculture she studied in Baltimore as “being constituted and reconstituted in opposition to law enforcement and criminal justice representatives...” (1989, p. 8). Several studies have demonstrated how drug users’ responses to legal constraints on syringe access and the strategies they use to avoid interactions with the police may lead to high-risk injection episodes (Clatts et al. in press; Carlson et al. in press; Feldman and Biernacki 1988; Fernando 1991; Koester 1989, 1994; Mason 1989; Oulette et al. 1991; Page et al. 1990; Singer 1991; Watters 1989).

In Chicago, ethnographers led by Oulette demonstrated how differences in the frequency of needle sharing among clients of shooting galleries were due, in part, to the socioeconomic status and political power of the neighborhood where they were located. These researchers found a relationship between a community’s economic and political power and the level of police attention it received. In poor neighborhoods, police largely ignored shooting gallery operations. As a result, galleries operated as businesses, with relatively little danger of being raided. They were well-managed with strict house rules, including rules governing needle hygiene. They also were accessible to HIV intervention efforts.

In contrast, syringe sharing was common in the more hidden, low-volume galleries that typified neighborhoods undergoing gentrification. Greater police presence in these neighborhoods discouraged larger, more established galleries. Instead, private “taste” galleries were the norm. These were users’ apartments, where a small group of injectors could exchange a portion of their drugs for a place to inject. These small,

closed galleries were not as accessible to intervention efforts because the operators were more fearful of being arrested. Their structure was less authoritarian, house rules were not rigidly enforced, and needle hygiene was regarded as an injector's own business (Oulette et al. 1991).

Another example of how the legal system can affect high-risk behavior concerns the role paraphernalia laws play in restricting IDUs' access to new syringes, a condition injectors frequently overcome by transferring used syringes. Laws regulating the purchase or possession of drug paraphernalia, including syringes, are currently in effect in 44 states and numerous municipalities (Des Jarlais et al. 1992; Fernando 1991; Koester 1989, 1994; Pascal 1988).

In Denver, needle access is restricted by both a State law and a municipal ordinance. Possession of a syringe with intent to inject an illicit substance is a misdemeanor, and is usually punishable by a fine of between \$50 and \$100. For an injector this is a serious matter. Committing this offense identifies the offender as a drug user to the police. It results in a court appearance and fine, and it occasionally leads to incarceration. Jail time results because drug users often fail to appear for their court date. In addition, a paraphernalia violation goes on the injector's record, making it more difficult to plead not guilty to future drug-related charges. As IDUs explained it, having violations for paraphernalia on their record would make it difficult to convince a judge of their innocence regarding more serious drug-related offenses. As Feldman and Biemacki (1988) contend:

The illegality of possessing hypodermic syringes...accounts for the scarcity or unpredictable supply of hypodermic syringes, the chronic fear of arrest, and the necessity of constructing social arrangements that involve needle sharing (p. 35).

Denver injectors appear to agree with this assessment, For many, arrest and incarceration are more immediate fears than HIV. Being jailed for even a few days is not only unpleasant for an addicted IDU but often physically and psychologically painful as well. As one injector explained:

That is how they busted me that one time for drugs-because they busted me with a fit (syringe). They took me down there and strip searched me and found heroin and coke on me. They have done it other times... they did it one time and took me downtown and strip

searched me and I had stashed the coke in my mouth and they didn't find it. They use that (the paraphernalia law) as an excuse. They know you'll forget the court date half the time. They know that even if you make the court dates you might not be able to pay the fine; then the next time they see you they know they are going to run an ID check on you—you will have a warrant out and they—I take you in for that. It's just one big hassle (Koester, unpublished data).

Other contextual aspects of drug injectors' lives combine with these legal constraints to increase the likelihood that they will not have a syringe when they are ready to inject. Laws criminalizing syringe possession are particularly troublesome for street-based injectors who, because of their impoverished lifestyle, often are visible and thus vulnerable to arrest. Street-based injectors may have only temporary living arrangements and no access to transportation. In many instances, they may not have a place of their own to go and consume drugs. In addition, they must often expose themselves to view because the specific hustles they perform demand it.

Poor injectors frequently pool their limited cash to purchase drugs. Even a quarter gram of cocaine at \$20, the smallest quantity sold, may be beyond their individual means, and some heroin dealers will not sell any less than a \$60 "piece." To overcome this condition of the market, injectors form temporary "business" arrangements with other injectors; to do so, they go to known copping sites to meet. It is at known copping sites where police presence is most constant; as a result, injectors seldom carry a syringe when going to buy drugs. Injectors who support their drug use by copping drugs for others, linking buyers with dealers, also are forced to be somewhat visible, and they too refrain from carrying syringes (Koester 1994).

Paraphernalia laws are not the only impediment to syringe access. Although syringes are legal to purchase without a prescription in Colorado, this does not necessarily ensure that they can easily be obtained by IDUs. Drug stores' policies, the attitudes of individual pharmacists, the price a pharmacy charges for syringes, and the proximity of a store to areas where injectors buy and use drugs are important determinants of accessibility. The author found that some pharmacists refused to sell syringes to individuals they thought were drug injectors, while others required the potential buyer to show proof that he or she was a diabetic. Pharmacies that readily sell to injectors often are located several blocks away from drug copping scenes, or they charge exorbitant prices for

syringes. One pharmacy located close to a high-profile drug copping scene kept syringes at the front counter but charged \$1.50 a piece or \$5 for a 10-pack of U-100 insulin syringes. In contrast, pharmacies attached to national food chain stores sold lo-packs of insulin syringes for as little as \$1.70. However, not all of these chain stores would sell to injectors.

## **CONCLUSION**

Attempting to understand the multiple reasons why risk reduction is not necessarily easy to achieve or maintain requires that researchers identify and analyze impediments to behavior change, and thus examine the larger contextual dimensions of drug users' lives. What microlevel and macrolevel conditions and circumstances affect people's ability to make potentially life-preserving changes? By emphasizing context in their studies, researchers can temper the tendency to explain high-risk behavior and the attitudes that support it as owing to personal inadequacy or maladaptive subcultural traits.

By identifying significant contextual factors and describing how they exacerbate or inhibit risk behavior, researchers can augment current interventions aimed at individual behavior change. Intervention programs can be developed to support individuals' attempts at risk reduction by addressing the local conditions that encourage risk behavior while at the same time promoting conditions that encourage risk reduction. For example, in other forums, the author has advocated a reassessment of current paraphernalia laws that make syringes difficult to obtain or illegal to possess. Because of the HIV epidemic, these laws may no longer serve the public interest. Likewise, pharmacists in states where syringes are sold legally could be encouraged not to discriminate against IDUs. Clearly, such proactive approaches must be localized. They will only be effective if they are based on locally significant behavioral influences and if information provided by active drug users is considered in these approaches.

Ethnographic research has made substantial contributions to the fields of epidemiology, public health, and HIV prevention. By giving drug users a voice, ethnographic research has provided a means for those at risk to inform the research and interventions. By describing how the environment in which people live influences their behavior, ethnographers have presented the field of public health with new

## REFERENCES

- Agar, M. *The Professional Stranger: An Informal Introduction to Ethnography*. New York: Academic Press, 1980.
- Anderson, E. *Streetwise*. Chicago: University of Chicago, 1990.
- Bourgois, P. In search of Horatio Alger: Culture and ideology in the crack economy. *Contemp Drug Probl* 16(4):619-651, 1989a.
- Bourgois, P. "Just Another Night on Crack Street." *New York Times Magazine*, 12 November 1989b. p. 61.
- Carlson, R.G. "HIV Needle Risk Behavior among IDUs in West Central Ohio: An Ethnographic Overview." Paper presented at the Conference on AIDS and Anthropology in the United States. Atlanta, GA, October 16, 1991.
- Carlson, R.G.; Siegal, H.A.; and Falck, R.S. Ethnography, epidemiology and public policy: Needle use practices and risk reduction among IV drug users in the midwest. In: Feldman, D.A., ed. *Anthropology and Global AIDS Policy*. Westport, CT: Greenwood Press, in press.
- Clatts, M.; Davis, W.R.; Deren, S.; Goldsmith, D.S.; and Tortu, S. AIDS risk behavior among drug injectors in New York City: Critical gaps in prevention policy. In: Feldman, D., ed. *Anthropology and Global AIDS Policy*. Westport, CT: Greenwood Press, in press.
- Des Jarlais, D.C. and Friedman, S.R. Shooting galleries and AIDS: Infection probabilities and 'tough' policies. *Am J Public Health* 80: 142-144, 1990.
- Des Jarlais, D.C. and Friedman, S.R. AIDS and legal access to sterile drug injection equipment. *Ann Am Acad Political Soc Sci* 521: 42-65, 1992.
- Des Jarlais, D.C.; Friedman, S.; and Strug, D. AIDS and needle sharing within the IV drug use subculture. In: Feldman, D., and Johnson, T., eds. *The Social Dimension of AIDS: Method and Theory*. New York: Praeger, 1986.
- Feldman, H.W., and Biemacki, P. The ethnography of needle sharing among intravenous drug users and implications for public policies and intervention strategies. In: Battjes, R.J., and Pickens, R.W., eds. *Needle Sharing Among Intravenous Drug Abusers: National and International Perspectives*. National Institute on Drug Abuse Research Monograph No. 80. DHHS Pub. No. (ADM)88-1567. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1988.
- Fernando, D. Fundamental limitations of needle-exchange programs as a strategy for HIV prevention among IVDUs in the US. *AIDS Public Pol J* 6:116-120, 1991.

- Guydish, J.R.; Golden, E.; and Hembry, K. Needle sharing, needle cleaning and risk behavior change among injection drug users. In: Sorenson, J.L.; Wermuth, L.A.; and Gibson, D.R., eds. *Preventing AIDS in Drug Users and Their Sexual Partners*. New York: Guilford Press, 1991.
- Herd, G. Introduction. In: Herdt, G., and Lindenbaum, S., eds. *The Time of AIDS*. Newbury Park, CA: Sage, 1992.
- Howard, J., and Borges, P. Needle sharing in the Haight: Some social and psychological functions. In: Smith, D., and Gay, G., eds. *It's So Good, Don't Even Try It Once*. Englewood Cliffs, NJ: Prentice Hall, 1972.
- Jencks, C. "Deadly neighborhoods." *The New Republic* 198:23-32, 1988.
- Kane, S. and Mason, T. The limits of epidemiological categories and the ethnography of risk. In: Herdt, G., and Lindenbaum, S., eds. *The Time of AIDS*. Newbury Park, CA: Sage, 1992.
- Koester, S.K. "When Push Comes to Shove: Poverty, Law Enforcement and High Risk Behavior." Paper presented at the annual meeting of the Society for Applied Anthropology, Santa Fe, NM, April 9, 1989.
- Koester, S.K. "Ethnography and High Risk Drug Use." Paper presented at the annual meeting of the College on the Problems of Drug Dependence, Keystone, CO, June 17, 1992.
- Koester, S. and Schwartz, J. Crack, gangs, sex and powerlessness: A view from Denver. In: Ratner, M., ed. *Crack Pipe as Pimp*. New York: Lexington Books, 1993.
- Koester, S.K. Copping, running and paraphernalia laws: Contextual variables and needle risk behavior among injection drug users in Denver. *Hum Organiz* 53(3), forthcoming.
- Maher, L., and Curtis, R. Women on the edge of crime: Crack cocaine and the changing contexts of street-level sex work in New York City. *Crime Law Soc Chang* 18:221-258, 1992.
- Mason, T. A preliminary look at social and economic dynamics influencing drug markets, drug use patterns, and HIV risk behaviors among injecting drug users in two Baltimore networks. In: *Proceedings of the Community Epidemiology Work Group*. Washington, DC: National Institute on Drug Abuse, 1989.
- Massey, D. American apartheid: Segregation and the making of the underclass. *AJS* 96:329-357, 1990.
- Murphy, S. Intravenous drug use and AIDS: Notes on the social economy of needle sharing. *Contemp Drug Probl* 14:373-395, 1987.
- Newman, K.S. Culture and structure in the truly disadvantaged. *City Soci* 6(1):3-25, 1992.

- Ouellet, L. J.; Jimenez, A.D.; Johnson, W.A.; and Wiebel, W.W. Shooting galleries and HIV disease: Variations in places for injecting illicit drugs. *Crime Delinq* 37:64-85, 1991.
- Page, J.; Chitwood, D.; Smith, P.; Kane, N.; and McBride, D. Intravenous drug use and HIV infection in Miami. *Med Anthropol Q* 1:56-71, 1990.
- Pascal, C.B. Intravenous drug abuse and AIDS transmission: Federal and state laws regulating needle availability. In: Battjes, R.J., and Pickens, R.W., eds. *Needle Sharing Among Intravenous Drug Abusers: National and International Perspectives*. National Institute on Drug Abuse Research Monograph No. 80. DHHS Pub. No. (ADM)88-1567. Washington, DC. Supt of Docs.: U.S. Govt. Print. Off., 1988.
- Phillips, K. *The Politics of Rich and Poor: Wealth and the American Electorate in the Reagan Aftermath*. New York: Random House, 1990.
- Ratner, M. *Crack Pipe As Pimp*. New York: Lexington Books, 1993.
- Singer, M.; Irizarry, R.; and Schensul, J.J. Needle access as an AIDS prevention strategy for IV drug users: A research perspective. *Hum Organiz* 50:142-153, 1991.
- Wallace, R. Social disintegration and spread of AIDS - II. *Soc Sci Med* 37(7):887-896, 1993.
- Watters, J. Observations on the importance of social context in HIV transmission among intravenous drug users. *J Drug Issues* 19:9-26, 1989.
- Wiebel, W. Combining ethnographic and epidemiologic methods in targeted AIDS interventions: The Chicago model. In: Battjes, R.J., and Pickens, R.W., eds. *Needle Sharing Among Intravenous Drug Abusers: National and International Perspectives*. National Institute on Drug Abuse Research Monograph No. 80. DHHS Pub. No. (ADM)88-1567. Washington, DC: Supt of Docs., U.S. Govt. Print. Off., 1988.
- Wilson, W.J. *The Truly Disadvantaged*. Chicago: University of Chicago Press, 1987.

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# Assessing the Reliability and Validity of Self-Reported Risk Behavior

*David R. Gibson and Martin Young*

## INTRODUCTION

This chapter presents preliminary data from the AIDS Risk Measurement Study (ARMS), a survey of intravenous drug users (IVDUs) interviewed in the San Francisco Bay area from 1991 to 1992. While a principal objective of the study was to examine correlates of human immunodeficiency virus (HIV) risk behavior, it included several methodological experiments both to assess and to improve the reliability and validity of drug users' self-reports. The experiments were inspired by survey research literature (Bradburn and Sudman 1979) that examined the truthfulness of survey respondents' answers to questions about such threatening or sensitive behaviors as drunken driving and bankruptcy. This small literature documents the extent to which respondents tend to underreport such behaviors and suggests procedures for minimizing underreporting. Since HIV risk behavior includes many illicit and socially stigmatized practices, it seemed worthwhile to undertake a similar investigation.

This chapter addresses three questions. First, how truthful or accurate is information that IVDUs provide to researchers concerning practices that put them at potential risk of infection of HIV? Second, to what extent are behavioral self-reports contaminated by self-presentation bias—the tendency of drug users to present a socially desirable image of themselves? And third, what steps can researchers take to reduce response bias when asking sensitive or threatening questions?

The sample from which the data for this report were taken was 508 IVDUs who were interviewed at entry to heroin detoxification treatment at four sites in the San Francisco Bay area between September 1991 and December 1992. Since the treatment is of brief duration (maximum of 21 days), many clients soon return to active drug use. One hundred fifty-one subjects were recruited from the street with coupons that made them eligible for immediate free treatment at the clinics. While a

condition of receiving the coupons was that subjects not have been in treatment during the previous year, clients recruited in this way did not differ demographically or in terms of reported risk behavior from clients who referred themselves to the clinics. Thus the results reported here may be roughly reflective of those that would be obtained with an out-of-treatment population. This is of some importance, since out-of-treatment opiate addicts account for as many as six in seven opiate addicts in the United States (Watters and Biernacki 1989).

A sociodemographic profile of the sample appears in table 1. The ethnically diverse sample consisted mainly of males between 30 and 40 years old. About 60 percent of the sample had never been in methadone maintenance treatment, and nearly half had made fewer than five attempts to detoxify from heroin.

## **ACCURACY OF SELF-REPORTS**

There is a critical need for accurate estimates of the prevalence of behaviors that put people at risk of HIV infection. Reliable estimates are needed to identify subpopulations to be targeted for intervention, to discover correlates or antecedents of high-risk practices, and to properly evaluate prevention programs to reduce transmission of HIV.

Behavioral research on transmission of HIV has been hampered by dependence on people's self-reports about their behavior and by the researchers' inability to verify those reports. The validity of self-reports is suspect, since many risk behaviors include illicit or otherwise stigmatized practices that respondents may be reluctant to acknowledge. Methodological studies reveal that substantial underreporting of behavior occurs when respondents find questions embarrassing or threatening. For example, 50 percent of drunken drivers surveyed by Bradbum and Sudman (1979) denied having been arrested, while 30 percent of those who had gone through bankruptcy failed to acknowledge this in interviews.

Studies that have attempted to document opiate addicts' self-reports of criminal or drug behavior (e.g., Amsel et al. 1976; Bale et al. 1976; Maddux and Desmond 1975; Maisto et al. 1982) nevertheless have found them to be remarkably accurate. Most of these studies, however, gathered a relatively limited range of information in settings such as prisons and drug treatment clinics where admitting drug habits or

**TABLE 1.** *Sociodemographic profile of sample (N = 508)*

	<u>Percent</u>
Age (M = 39)	
19-29	10.1
30-39	43.7
40-49	38.5
50 and over	7.7
Gender	
Male	63.0
Female	37.0
Living situation	
Married/living with partner	59.1
Single	40.9
Housing	
House or apartment	90.7
Other	9.3
Sexual orientation	
Heterosexual	84.8
Homosexual	1.6
Bisexual	13.6
Years of methadone maintenance treatment (M = 2.0)	
Zero	58.2
1-4	24.4
5 or more	17.4
Number of previous detoxes	
Zero	1.4
1-4	47.4
5 or more	51.2
Age at first heroin use (M = 21)	
20 and under	60.9
21-30	31.8
30 and over	7.3

criminal history was unlikely to be threatening. Gibson and colleagues (1987) found heroin addicts' answers to questions about their psychological or social functioning to be moderately to highly correlated with a short form of the Marlowe-Crowne social desirability scale. In particular, the answers were highly skewed by the tendency to deny negative information about themselves and their families.

### **Test-Retest Reliability**

In the present study, two attempts were made to assess the reliability of IVDUs' self-reports. First, part of the sample was reinterviewed to determine whether their answers would be consistent across two interviews; second, IVDU heterosexual couples (48 women and 48 men) were interviewed separately to determine how closely their reports about sexual practices agreed.

Test-retest correlations and correlations of partners' self-reports have been examined in a number of studies (for a review, see Catania et al. 1990) and frequently have been interpreted as validity indicators. Reliability, however, while necessary to validity, is not sufficient to establish the accuracy of self-reports. Reporting biases are as likely to be reflected in a retest as in an initial interview, and partners' reports may be spuriously consistent due to shared biases. Unfortunately, there is not a gold standard against which to evaluate the validity of self-reports, at least at the individual level.

The retest interviews were conducted an average of 10 days following the initial interview. Both interviews were conducted by trained interviewers during clients' daily visits to the drug treatment clinics. On both occasions, respondents were asked to report their sexual and injection practices during the 30 days prior to their admission to the detoxification program (for several behaviors, a 6-month reporting period was also used, and clients were asked whether the behaviors had ever been practiced). Respondents were not told of the principal reason for the second interview, only that some additional information not obtained in the first interview was needed (additional items were added to the second interview to disguise the intent). The interval of 10 days was selected to be long enough so respondents would not remember what they had said at the first interview but short enough so they would be able to accurately report about their behavior during the month prior to their entry to treatment.

Table 2 shows percentage agreement in answers across the two interviews. The figures indicate a reasonable degree of reliability, ranging from 77 percent to 90 percent. The behavior least reliably reported was borrowing of injection equipment (30-day indicator), with 77 percent agreement. The most accurate measures were for the rarest behaviors such as anal intercourse, with only 12 and 2 respondents, respectively, reporting this behavior at either interview.

### **Reliability of Sexual Behavior Reported by Heterosexual Couples**

Table 3 shows sexual data from 29 couples who reported mutually monogamous sexual behavior for the 30 days prior to entering drug treatment. The couples were identified discreetly by clinic intake workers and were not aware that a purpose of the study was to assess the reliability of self-reported sexual practices. Interpartner agreement about sexual practices was very close to agreement between the test and retest. The behavior least reliably reported was oral sex (79 percent), while there was complete agreement about whether the couple had been sexually abstinent.

### **Respondents as Informants**

The lack of a gold standard for validating self-reports makes assessment of their accuracy difficult at best. Two attempts were made to validate self-reports of needle sharing that shed some light on the probable accuracy of the information given.

The first was suggested by experiments conducted by Bradburn and Sudman (1979) in which college students were interviewed about their own and their friends' use of alcohol and marijuana. The assumption was made that the level of alcohol and marijuana actually used would be similar for respondents and friends. Analysis of the data, however, indicated overall that the students reported their friends used alcohol and marijuana more often than they did themselves, suggesting that they may have underreported their own use. A further suggestion that self-reported use was less accurate was that the variances of measures of their own use were larger than for measures of their friends'.

In the present study, in addition to asking respondents about their own borrowing of needles and syringes, they were asked whether they had observed others doing so during that time (past 30 days). While only

**TABLE 2.** *Percent agreement in answers to questions about selected HIV risk behaviors, T1 and T2 (N = 94)*

Behaviors	Ever	Past 6 months	Past 30 days
<i>Injection behaviors</i>			
Borrowed dirty syringe	87.9*	82.7*	77.6*
Shared cotton or cooker			82.8*
<i>Sexual behaviors</i>			
2 or more sexual partners			88.9
Used condoms some			87.7*
Used condoms 100 percent			92.3*
Anal intercourse	84.9*	91.9*	97.0*

\*Agreement significant at  $p \leq 0.001$ .

**TABLE 3.** *Concordance of self-reports of monogamous couples about selected sexual behaviors (N = 29)*

Sexual Behaviors	Percent agreement
Sexually abstinent, past 30 days	100.0*
Used condoms some, past 30 days	87.0*
Used condoms 100 percent, past 30 days	91.3*
Oral sex, past 30 days	79.3*
Anal intercourse, past 6 months	93.1*

\*Agreement significant at  $p \leq 0.001$ .

36 percent of respondents reported that they had borrowed a syringe themselves, 63 percent said that they had observed others borrowing ( $p < 0.001$ ); “borrowing” refers to using a needle that someone else had used without first cleaning it with bleach. While it is difficult to attribute this difference entirely to underreporting of their own risk behavior, it is probable that respondents had far fewer opportunities to observe others’ behavior than their own.

## **FORENSIC TECHNIQUES TO DOCUMENT SELF-REPORTS OF NEEDLE SHARING**

The authors attempted to verify self-reported needle sharing by performing forensic tests on syringes provided by drug users to determine whether the tests corroborated what drug users reported they had done with the syringes (Gibson et al. 1991).

A convenience sample was recruited in a San Francisco street setting and asked to provide syringes for an anonymous study of injection equipment. Fifty-nine drug users presented an average of 1.7 syringes for inspection, with 31 presenting at least one syringe containing visible blood. With each drug user, a staff member selected a single syringe as the basis for a brief interview concerning its use by the donor and others. After completing the 10-item interview, drug users provided a reference fingerstick blood specimen and were paid \$10 for their time. They were not told of the specific purpose of the study.

Blood residue in the syringes was analyzed for genetic traits using tests for the isoenzyme phosphoglucosyltransferase (PGM), Gamma marker (Gm) and Kappa marker (Km) immunoglobulin, and HLA-DQ alpha-type. Of the 31 syringes, 27 contained sufficient blood to conduct one or more of the tests. Genetic markers were obtained in 10 PGM tests, 23 Gm tests, 25 Km tests, and 23 DQ-alpha tests. The reference blood samples provided by the donors of the 27 syringes were analyzed to determine the genetic traits of the donors.

In only four syringes were there genetic traits of two drug users. The analysis indicated, however, that 15 of the 27 syringes had been used by someone other than the donor. Table 4 shows a cross-tabulation of the laboratory results with self-report of sharing a dirty needle (i.e., a needle that had been used by someone else). The table indicates a reasonable degree of agreement between the laboratory results and self-reports, with there being a correspondence in 20 of 27 cases (74 percent). However, more than a third (6 out of 17) of drug users who denied sharing were contradicted by the laboratory tests. Moreover, in six of the seven cases where there was a discrepancy between the lab test and self-report, the drug user denied that he or she had borrowed. Self-reports of needle sharing thus appear to understate "true" levels of sharing.

**TABLE 4.** *Cross-tabulation of laboratory results with self-reported borrowing of a dirty needle (N = 27)*

Self-report	Laboratory test		Total
	Did not borrow	Did borrow	
Did not borrow	11	6	17
Did borrow	1	9	10
Total	12	15	27

$X^2 = 8.33, p < 0.005; \phi = 0.56.$

## **SELF-PRESENTATION BIAS IN SELF-REPORTS**

Self-presentation bias is a problem ubiquitous in social research that derives from the natural tendency of people to present themselves in a socially desirable light. Past research on social desirability indicates this tendency is more likely to manifest itself in situations that people find particularly threatening or embarrassing (for a review, see DeMaio 1984). Because the questions asked concerned sexual practices and illicit drug use and usually are considered sensitive, the authors hypothesized that self-presentation bias would be reflected to some degree in underreporting of risk behavior.

### **Social Desirability**

To determine whether this was true, the authors examined zero-order relationships between self-reported risk behavior and a 20-item short form of the Marlowe-Crowne social desirability scale (Strahan and Gerbasi 1972). The short form demonstrated adequate reliability when used with a college sample and correlated highly with the original 33-item scale.

Respondents endorsed a mean of half the items in a socially desirable direction, which is comparable to results obtained with the college sample.

To better examine the relationship between the scale and the self-reported risk behaviors, the scores were collapsed into quartiles and

cross-tabulated with dichotomous measures of risk behavior, for example, borrowing of syringes (none versus some).

The data in table 5 indicate that self-reported injection behavior may be significantly underreported to staff in drug treatment settings due to self-presentation bias, while, with one exception (anal intercourse), reported sexual practices appeared to be unrelated with social desirability. The 26-point spread between the first and fourth quartiles in the percentage of respondents reporting that they borrowed needles (past 30 days) suggests that at least some respondents found this question threatening. The scores for the lowest quartile of social desirability may approach those that would be obtained if social desirability did not color self-reports.

### **Question Threat**

The social desirability measure assumes a generalized disposition to project a socially desirable image. In a related analysis, the authors examined whether self-reports might be a function less of persons than the perceived social sensitivity of specific sets of questions. Following questions about injection behaviors, respondents were told: “We now want to ask you about the questions we’ve been asking-about sharing of outfits and the like.” Respondents were then asked four questions such as, “How (sensitive, uncomfortable, nervous, uneasy) do you think these questions would make most drug users?” A similar set of items followed the questions about sexual practices: “How (sensitive, uncomfortable, nervous, uneasy) do you think most people would find these questions?” (about condoms and number of sex partners and so forth). The questions were intended to be unobtrusive measures of respondents’ own feelings toward the items. The response choices ranged from “not at all,” to “somewhat,” to “quite a bit.”

Descriptive statistics indicated that the average respondent found both sets of questions to be “somewhat” intimidating, with there being a fair degree of variability in the perceived threat of the questions (standard deviation of about half a point on a 3-point scale). The measures were collapsed into thirds by level of threat (“not at all,” “somewhat,” “quite a bit”) before cross-tabulating with self-reported behaviors. The analysis (see table 6) showed that question threat was related to only one behavior, oral sex, with there being a 20-point plus difference between the lowest and highest third in the percentage of respondents reporting oral sex.

**TABLE 5.** Relationship of social desirability to self-reported risk-related behaviors (N = 508)

Percent who reported	Social desirability				p
	Low	Moderate	High	Very high	
<i>Injection behaviors</i>					
Borrowed dirty needle, past 6 months	61.7	45.5	48.1	36.8	0.08
Borrowed dirty needle, past 30 days	52.6	35.0	33.3	27.1	0.000
Shared cooker or cotton, past 30 days	82.1	68.0	74.1	61.5	0.003
<i>Sexual behaviors</i>					
Ever used condoms	12.7	16.5	12.3	15.5	NS
Some condom use, past 30 days	34.7	39.1	36.9	39.3	NS
100 percent condom use, past 30 days	16.8	15.9	22.3	19.1	NS
Oral sex, past 30 days	58.1	61.8	62.3	53.5	NS
Anal intercourse, ever	67.9	66.0	61.5	50.9	0.03
Anal intercourse, past 6 months	15.3	13.6	15.4	11.2	NS
NS = nonsignificant					

**TABLE 6.** *Relationship of question threat to self-reported risk-related behaviors (N = 508)*

Percent who reported	Question threat			p
	Low	Moderate	High	
<i>Injection behaviors</i>				
Borrowed dirty needle, past 6 months	50.5	47.8	49.0	NS
Borrowed dirty needle, past 30 days	39.8	37.7	32.7	NS
Shared cooker or cotton, past 30 days	74.6	72.6	59.6	NS
<i>Sexual behaviors</i>				
Ever used condoms	85.3	87.1	82.1	NS
Some condom use, past 30 days	38.1	37.3	36.8	NS
100 percent condom use, past 30 days	19.1	19.2	19.1	NS
Oral sex, past 30 days	46.8	57.8	69.1	0.03
Anal intercourse, ever	58.1	63	59.5	NS
Anal intercourse, past 6 months	8.1	14.8	13.1	NS

NS = nonsignificant

### **Sexual Self-Disclosure**

A final analysis examined covariance of self-reported sexual practices with a measure of respondents' comfort with disclosing information about sexual practices. In a previous study, a variant of this measure predicted refusal to answer questions in a human sexuality study (Catania et al. 1986). The authors hypothesized that high-disclosing respondents would acknowledge a greater degree of risk behavior. As with social desirability, the measure was collapsed into quartiles to examine its relationship with self-reported risk behavior. There was one relationship, a trend, in which the lowest quartile reported less oral sex (see table 7).

### **Improving the Validity of Self-Reports**

The findings reported in the previous section, particularly those showing self-reports to be downwardly biased by social desirability, point to the need for measures that minimize self-presentation bias. In *Response Effects in Surveys* (1974), Sudman and Bradburn reviewed evidence that response effects were generally greater for threatening than for nonthreatening questions and suggested that threatening questions may

TABLE 7. *Relationship of sexual self-disclosure to self-reported risk-related sexual behaviors (N = 508)*

Percent who reported	Sexual self-disclosure				p
	Low	Moderate	High	Very high	
Ever used condoms	81.7	87.1	86.2	89.0	NS
Some condom use, past 30 days	37.7	36.2	31.5	40.5	NS
100 percent condom use, past 30 days	16.9	19.2	14.1	24.7	NS
Oral sex, past 30 days	47.0	60.3	61.4	61.2	0.07
Anal intercourse, ever	58.3	62.1	60.5	65.6	NS
Anal intercourse, past 6 months	9.6	13.8	13.4	15.1	NS

NS = nonsignificant

aggravate self-presentation bias. This evidence, which was culled from a large number of studies, also suggested that task variables (e.g., the structure and length of questions and how the interview was administered) were important factors influencing response, with memory variables and the characteristics of interviewers and respondents being much less important.

In a later study, Bradburn and Sudman (1979) attempted to determine whether more anonymous forms of data collection (self-administered questionnaire or telephone survey) might reduce response bias relative to that which occurs when interviews are conducted face-to-face. The questions included highly undesirable behaviors such as drunken driving and bankruptcy. While the more anonymous interview did not consistently increase levels of behavior reported, variations in question structure and length and structure did. Subjects were randomized to closed-ended versus open-ended questions, long versus short questions, and questions with standard versus familiar wording. Familiarly worded questions are questions that employ language that respondents themselves would use. The results indicated that long, open-ended, familiarly worded questions yielded higher levels of reporting than short, closed-ended questions with standard wording. The pattern was evident even when differences in formats were examined on an item-by-item basis. Very few interactions of formats were noted.

### **Impact of Questionnaire Format**

In the present study, the authors examined the impact of question length and question order on the extent of underreporting and zero-reporting of high-risk practices. Without a gold standard against which to validate self-reports, the authors made the assumption that higher levels of reported risk behaviors would on average be more accurate since self-reports are downwardly biased when respondents find questions to be threatening or to invite socially desirable responses (Catania et al. 1990).

The authors hypothesized that long questions and questions asked late rather than early in the interview would result in higher levels of reporting. The long questions (15 words or more) were preceded by preambles that essentially encouraged respondents to acknowledge socially undesirable (risk) behavior. For example, the question about needle sharing was prefaced with the statement, "Now we have some questions about needles and syringes. There are reasons people share used outfits, such as being dope sick, not having your own works, and not

having bleach available.” Similar statements preceded questions about condom use and anal intercourse.

The hypothesis concerning questions asked late versus early in the interview was predicated on the belief that rapport develops between an interviewer and a respondent in the course of an interview, increasing the comfort level of the respondent and thereby making it more likely that the respondent will reveal unfavorable information. While the literature on order effects reveals a mixed pattern of findings (Sudman and Bradburn 1974; Bradburn and Sudman 1979), the authors’ experience working with IVDUs suggested this would be the case.

Table 8 shows the results of the experiment with interview formats. The long questions elicited significantly higher levels of reported borrowing of syringes and a higher reporting level of lifetime practice of anal intercourse. They appeared to have little impact, however, on self-reported condom use. Order (early versus late) effects were observed for only one variable, condom use for the previous 30 days; respondents asked this question late in the interview were more likely to disclose condom use. This finding is difficult to interpret, but it may have been related to an association of condoms with loose sexual morals, making it less likely that respondents would admit to using them early in the interview. There were no significant interactions between the long versus short and early versus late manipulations.

## **Matching Gender of Interviewers and Respondents**

In a separate experiment, the authors randomized male and female respondents to male and female interviewers to determine whether responses to questions about sexual behavior might be influenced by the gender of interviewer, respondent, or both. Although Sudman and Bradburn’s (1974) review of the literature suggested the characteristics of interviewers and respondents have little effect on responses to questions about behavior, an apparent exception is situations in which interviewer/respondent characteristics are related to the subject matter.

Table 9 shows the results of the randomized experiment. There were no statistically significant main effects of interviewer gender. In two trends, women respondents were less likely to acknowledge to a female interviewer that they had vaginal intercourse but more likely to report using condoms consistently. Other patterns were evident but not

**TABLE 8.** *Percent of subjects reporting behaviors in response to long versus short questions and to questions asked early versus late in the interview (N = 508)*

<b>Long versus short questions</b>	Percent of subjects reporting behavior	
	Long question	Short question
Borrowed dirty syringe, past 6 months	47.8	46.9
Borrowed dirty syringe, past 30 days	43.3*	32.8*
Used condoms, ever	86.6	85.6
Used condoms some, past 30 days	38.4	36.5
Used condoms 100 percent, past 30 days	21.5	16.9
Anal intercourse, ever	66.4*	57.8*
Anal intercourse, past 6 months	13.6	14.0

<b>Early versus late questions</b>	Percent of subjects reporting behavior	
	Early question	Late question
Borrowed dirty syringe, past 6 months	48.2	46.5
Borrowed dirty syringe, past 30 days	39.0	37.0
Used condoms, ever	84.3	87.8
Used condoms some, past 30 days	31.5*	43.1*
Used condoms 100 percent, past 30 days	16.9	21.3
Anal intercourse, ever	60.2	63.8
Anal intercourse, past 6 months	11.2	16.3

\*Differences significant at  $p < 0.05$ .

statistically significant. Female respondents were less likely to report condom use to male interviewers, perhaps reflecting an association of condoms with easy virtue; male respondents were more likely to report vaginal, oral, and anal sex to male interviewers, suggesting what a colleague has called a braggadocio effect, men exaggerating their sexual prowess to other males. It is possible that research with larger samples might find these relationships to be statistically significant.

**TABLE 9.** *Percent of male and female subjects reporting sexual behaviors to male and female interviewers (N = 93)*

Sexual Behavior	Male interviewer	Female interviewer
<i>Male respondents</i>		
Vaginal intercourse, past 30 days	82.1	75.9
Used condoms some, past 30 days	26.1	40.9
Used condoms 100 percent, past 30 days	21.7	27.3
Oral sex, past 30 days	55.6	55.2
Anal intercourse, past 6 months	17.9	10.3
<i>Female respondents</i>		
Vaginal intercourse, past 30 days	89.5	64.7 <sup>†</sup>
Used condoms some, past 30 days	35.3	54.6
Used condoms 100 percent, past 30 days	5.9	27.3 <sup>†</sup>
Oral sex, past 30 days	44.4	64.7
Anal intercourse, past 6 months	15.8	5.9

<sup>†</sup>Differences between male and female interviewers significant at  $p < 0.10$ .

## DISCUSSION

The present study yielded some indirect but nevertheless interesting information concerning the probable validity of self-reported risk behavior. The pattern of findings across the experiments suggested that the most threatening questions for respondents were the items pertaining to sharing of injection equipment. Answers to questions about borrowing of syringes appeared to be less reliable than questions about sexual practices and much more strongly correlated with social desirability. Also, there appeared to be a large discrepancy between respondents' reports of their own injection behavior and the behavior of fellow drug users whom they had the opportunity to observe.

Among the sexual variables, questions about oral and anal sex proved to be the most sensitive, while respondents' answers to questions about condoms appeared to be both reasonably reliable and uncontaminated by self-presentation bias. This finding is encouraging, since oral sex may be less risky than other sexual practices, such as unprotected vaginal

intercourse, and since anal intercourse appears to be a relatively rare practice in this population.

The experiments with questionnaire format suggest the problem of response bias can to some extent be alleviated by use of long, permission-giving introductions to questions and perhaps also by asking sensitive questions late versus early in the questionnaire. While response bias probably cannot be eliminated, it can be corrected in multivariate analyses by inclusion of a measure of social desirability or other measure of presentation bias. In experimental studies, such bias is ordinarily corrected by randomization, although it adds to random measurement error.

A limitation of several of the findings reported here is that they are based on small sample sizes. These findings in particular need to be replicated with larger samples. With larger samples, patterns not evident in the present data may also be discovered.

## REFERENCES

- Amsel, Z.; Mandell, W.; Matthias, W.; Mason, C.; and Hocherman, I. Reliability and validity of self-reported illegal activities and drug use collected from narcotic addicts. *Int J Addict* 11:325-336, 1976.
- Bale, R.; Van Stone, W.; Engelsing, T.; Zarcone, V.; and Kuldav, J. The validity of self-reported heroin use. *Int J Addict* 11:325-336, 1976.
- Bradburn, N.M., and Sudman, S. *Improving Interview Method and Questionnaire Design*. San Francisco: Jossey Bass, 1979.
- Catania, J.; Gibson, D.R.; Chitwood, D.D.; and Coates, T.J. Methodological problems in AIDS behavioral research: Influences on measurement error and participation bias in studies of sexual behavior. *Psychol Bull* 108:339-362, 1990.
- Catania, J.; McDermott, L.; and Pollack, L. Questionnaire response bias and face-to-face interview samples bias in sexuality research. *J Sex Res* 22:52-72, 1986.
- DeMaio, J. Social desirability and survey measurement: A review. In: Turner, CF. and Martin, E., eds., *Surveying Subjective Phenomena*, Vol. 2. New York: Russell Sage Foundation, 1984.
- Gibson, D.R.; Guydish, J.; Wraxall, B.G.D.; Blake, E.T.; Clark, G.; and Case, P. Using forensic techniques to verify self-reports of needle-sharing (letter). *AIDS* 5:1149-50, 1991.

- Gibson, D.R.; Wermuth, L.; Sorenson, J.L.; Menicucci, L.; and Bernal, G. Approval motive in self-reports of addicts and family members. *Int J Addict* 22:895-903, 1987.
- Maddux, J., and Desmond, D. Reliability and validity of information from chronic heroin users. *J Psychiatr Res* 12:87-95, 1975.
- Maisto, S.; Sobell, L.; and Sobel, M. Corroboration of drug users' self-reports through the use of multiple sources. *Am J Alcohol Drug Abuse* 9:301-308, 1982.
- Strahan, R., and Gerbasi, K.C. Short, homogenous form of the Marlowe-Crowne social desirability scale. *J Clin Psychol* 28:191-193, 1972.
- Sudman, S., and Bradburn, N.M. *Response Effects in Surveys*. Chicago: Aldine, 1974.
- Watters, J., and Biemacki, P. Targeted sampling: Options for the study of hidden populations. *Soc Probl* 36:416-430, 1989.

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# Future Directions for Studies on the Context of HIV Risk

*William C. Grace, Robert J. Battjes, and Zili Sloboda*

The purpose of research on the context of human immunodeficiency virus (HIV) risk behaviors is to understand the myriad factors that influence and determine whether one will engage in risk behaviors. In particular, understanding contextual issues in injecting and noninjecting drug users (IDUs), sex partners of drug users, and special populations such as women, minorities, and gay or bisexual men remains an important challenge to the acquired immunodeficiency syndrome (AIDS) research community as means of preventing HIV transmission are sought and developed. The chapters in this monograph demonstrate that while important progress in understanding contextual issues has occurred, much remains to be understood. Yet, gaps in knowledge were not unanticipated, and comments from the panel reactors, Agar, Des Jarlais, and Robles were specifically solicited to identify and address understudied issues.

This chapter summarizes ideas from a combination of sources. These sources include the reactors' comments after each of the five panels in the meeting (Heterosexual Males, Women, Men Who Have Sex with Men, Adolescents, and Methodology), discussion sessions throughout the technical review meeting, and ideas developed by this chapter's authors upon reflection on the monograph. Because the meeting did not attempt to develop agreement on issues, this chapter should not be viewed as reflecting a consensus of opinion. Themes in the discussions generally transcended specific population issues. Therefore, this chapter is not organized by populations as was the technical review itself, but presents general research issues and opportunities.

## **MUCH REMAINS TO BE UNDERSTOOD ABOUT THE CONTEXT OF HIV RISK BEHAVIORS**

Participants agreed that research on the context of HIV risk behaviors remains relatively underdeveloped. Agar summed up much of the difficulty with conducting contextual research when he noted, "It is difficult to see new things when you are busy counting." Early research

in the United States was directed toward urgent issues of identifying and enumerating “risk groups,” transmission routes, risk behaviors, and HIV outcomes. Public health urgency, researchers’ familiarity and comfort with quantitative methodology, and a lack of basic information on the disease combined to create an atmosphere in which contextual issues received relatively little attention.

While enumeration of risk behaviors is important for understanding the extent of the epidemic, assessing the potential for spread, and targeting prevention efforts, such efforts do not adequately clarify processes underlying initiation and continuation of risk, recovery from risk, and relapse to risk. Alternately, a focus on enumeration does not elucidate the temporal and situational variability in risk behaviors. In sum, simply counting risk behaviors does not adequately inform development of prevention activities.

## **A CONTEXTUAL PERSPECTIVE MUST CONSIDER MULTIPLE FACTORS THAT IMPINGE ON RISK**

HIV risk behaviors are complex and cannot be adequately described by focusing on enumeration of behaviors and groups at risk. A shift in perspective is needed. This shift would move research from a primary focus on individual factors toward a contextual perspective that fully considers social and other environmental factors that impinge on risk decisions. Risk behaviors are integrally tied to basic physiological, social, and emotional functions of humans and are multiply determined. A contextual perspective demands consideration of familial structure and function, peer groups’ structures and processes, relationships with sex partners, relationships with drug-using partners, and the effects of drug use.

Beyond these individual and small group levels, contextual perspectives require consideration of broader community factors such as economic conditions, access to employment, needle availability, and similar factors that impinge on and interact with interpersonal ones.

It is clear that to understand the context of HIV risk behaviors related to the abuse of drugs, one must understand the epidemiology and natural history of drug abuse itself. HIV risk is imposed upon and incorporated into a larger context, and answers to questions about the temporal variance of drug abuse, the natural history of drug abuse, norms among

abusers, and other variables are needed to aid in developing specific hypotheses for study.

Understanding of the many factors involved will require sophisticated skills in management and analysis of data collected from multiple sources. Univariate analyses that cannot account for interactions and shared variance among variables are not likely to provide significant advances in information. Understanding of family interactions and structures, of dyadic and sexual interactions, and of drug-using and nonusing social networks must be combined with an understanding of individual factors to clarify how risk behaviors are developed and maintained. Further, broad social factors beyond an individual's control, such as economic conditions and needle or drug availability in the community, must be evaluated for their interactive effects with other determinants of risk. Such multifaceted studies will require sophisticated quantitative and qualitative methods.

## **RESEARCH ON CONTEXT OF HIV RISK MUST BE GUIDED BY RELEVANT THEORETICAL UNDERSTANDINGS OF BEHAVIOR AND DISEASE**

Review participants noted that research on risk context has not been adequately guided by theory. This is especially unfortunate because epidemiological patterns tend to recur in drug abuse, and it is possible to use past experience and general theories to guide research. For example, patterns of drug use seen in the crack epidemic are being repeated as the use of methamphetamine rises. Similarly, patterns of sexual behavior associated with crack use may be seen in methamphetamine users.

Theoretical perspectives (e.g., social learning theory) have been used to plan intervention and prevention programs, but these perspectives have been less utilized to develop understanding of risk. Theory-based research on risk behaviors is difficult to develop and conduct because of the needs to operationalize relevant constructs and to specify relationships of constructs to behaviors. In many cases, theory must be developed in conjunction with the collection of data on risk behaviors, so theory development, theory validation, and understanding of context will occur in a dynamic, reciprocal relationship. Certainly studies that can validate theoretical predictions have merit, but in many cases specific predictions must await data to help develop the theoretical framework. In cases when theory validation is not possible, to be guided by theory means that

variables should be selected and studies designed in a manner that allows results to be used systematically to inform and develop a theoretical framework.

## **CONTEXTUAL ISSUES SHOULD BE UNDERSTOOD AND EXAMINED WITH BOTH QUALITATIVE AND QUANTITATIVE METHODOLOGIES**

One of the benefits of a technical review is that researchers with various backgrounds and perspectives exchange ideas, and this process highlights the complementarity of approaches. Quantitative and qualitative research methods are often presented as opposite ends of a continuum, but such a presentation ignores the fact that they are both methods of systematic inquiry and learning whose shared opposite is ignorance. From that perspective, it becomes incumbent on researchers to use multiple research approaches to address a problem.

Important concepts in this regard are those of “experience near” and “experience distant,” terms used by anthropologists to indicate proximity to the language and concepts of the observed subject. Experience-near language, such as backloading, is close to the world view and phenomenology of the subject, whereas experience-distant language reflects the observer’s terminology and conceptual organization. Qualitative researchers use these ideas to evaluate how well their observations reflect the subject’s experiences and interpretations and not only the researcher’s views. Ethnographers present at the technical review stressed the importance of experience-near language and thinking in order to clarify contextual issues and to raise hypotheses. They also noted that data provide insights into different levels of contextual determinants. For example, the researcher arrives at different conclusions if a self-report is taken as objective fact rather than as the subjects’ world view. People neither recall nor report accurately and reliably their experiences and motivations, tending to err in reports and to respond to environmental contingencies, some of which they are not aware. They often deny the influence of stimulus control and psychological motivations that can be objectively related to their behavior (Critchfield 1993; Nisbett and Wilson 1977). Therefore, qualitative and quantitative data both must be carefully examined to determine the realms of behavior and context to which they refer.

Behavior patterns can be clarified by both quantitative and qualitative approaches. Qualitative approaches can develop an understanding of the meaning and purpose of patterns of behavior and, in combination with quantitative epidemiology and other quantitative approaches, provide an understanding of the behavioral context. Qualitative methods can help define relevant variables, while quantitative methods determine the distribution of the variables. In quantitative methods, patterns are noted and verified by descriptive and inferential statistics; in qualitative methods, data are examined for concurrence of themes and consistency with general propositions or theories.

Through developing an appreciation for the broad spectrum of research approaches, it is possible to design studies that effectively lead to an understanding of contextual issues. However, studies should be designed to use complementary approaches from the beginning, rather than trying to add a component when the study is underway. An example of this would be to test an intervention using quantitative analyses of outcomes while ethnographers examine individual and social responses, particularly looking for unanticipated contextual determinants of risk maintenance.

Qualitative and quantitative methods should not simply be applied in parallel and independent fashion within a study: they should inform each other. Qualitative data may be analyzed through quantitative methods. A frequent error of quantitative epidemiology, according to the discussion, is to become so far removed from the data collection process that meaning gets distorted in the analyses (e.g., through failure to appreciate the affect in respondents as they selected response options). Further, some data do not lend themselves to quantitative methods for either collection or analysis.

### **THE UNITS OF STUDY AND ANALYSIS MUST BE CAREFULLY SELECTED AND DEFINED CONSISTENT WITH THE RESEARCH HYPOTHESES**

During the HIV epidemic, there has been a general reluctance to shift from the concept of risk groups to understanding behavioral variation and occurrence at the levels of the individual, dyad, and small group. Studies of patterns of how a disease is spread throughout a population do not sufficiently address the determinants of that spread, such as motivations for engaging in risk behavior, determinants of relapse, and predictors of self-protective behaviors. For example, women are defined and studied

as a population, and discussions of women's risk often center around their roles in the family, the community, and peer groups. These roles raise questions about the appropriate unit of study and analysis for research on women.

Similar issues about unit of analysis also apply to other populations. Should studies be designed and analyzed on the level of the individual, the community, the family, or the sexually active couple? Such questions have profound implications for the design, statistical analysis, and cost of investigations, and the answers must derive from the hypotheses of the study. It makes little sense, for example, to study empowerment in women without examining other people in the woman's life, as empowerment implies an interpersonal dynamic as well as an intrapersonal change.

A helpful way to think about units of analysis is to think in terms of systems elements that must be understood and affected in a risk-reduction program. For example, Dr. Robles noted that Puerto Rican IDUs were unlike the typical IDU in the continental United States in that they tend to live with families. The families do not generally allow injection in the home, so a number of elements must be linked for the IDU to use drugs. The family, the shooting gallery, and sometimes houses of prostitution constitute linked elements where greater understanding is needed and interventions might occur. In other settings, families may not be as important; elements such as peer networks and separate sexual networks may need to be addressed instead. Disparate settings provide an opportunity for examining microstructural issues, such as how a crack house serves as an economic institution, in relationship to broader macrostructures (e.g., community economic distress).

Analyzing data at a community or population level is often necessary, but it is fraught with complexities. Populations overlap and do not neatly fit usual research definitions. For example, the overlap of men who have sex with men and IDUs may serve as a bridge to HIV transmission if an infected IDU has sex with a uninfected man. But are the men who are in both groups and who constitute the points of overlap best understood as drug users, as gay men, as non-gay-identified men who engage in homosexual activity, or as a unique group? Is the unit of analysis the man within the group? If one designs a community intervention for this group, would it look more like an intervention for IDUs or for men who have sex with men, or would it be notably unique?

As Des Jarlais noted, designs and analyses must account for the instability within populations. IDUs start and cease injection every day within a given city, so the overall rate of injection can be constant within a city while numerous significant changes in injection behavior are occurring at other levels of analysis. The increase in use of heroin by sniffing or insufflation, for example, represents a significant shift in risk behavior that would not be captured by statistics on heroin use unless heroin use were disaggregated by route of administration. Drug abuse itself is a chronic disorder with a varying course over time, and variations in the disease course may be associated with risk behaviors and related cognitions, motivations, and appraisals. Factors that account for changes within a population must be studied to truly understand behavior.

## **CULTURAL DIFFERENCES ARE NOT SUFFICIENT EXPLANATIONS OF THE CONTEXT OF RISK BEHAVIOR**

Culture is a concept that must be treated with respect because it refers to exceedingly complex issues that have significant impacts on behavior. Cultural variables may include observable phenomena such as family composition and types of buildings as well as elements not directly observable such as national identification, religious beliefs, and affective style. As an example of the complexity of culture, when one considers the diverse countries of origin, the range of socioeconomic resources, the linguistic differences, and the geographic dispersion represented in groups that all legitimately may be called Hispanic, the term “Hispanic culture” has no clear and unitary meaning. Even if its meaning were clear, how would one tease apart the contributions of Hispanic culture and U.S. culture?

In drug-using populations there are norms that may constitute a drug culture that overlies and interacts with other cultural variables. This drug culture is not homogeneous across groups. Drug norms themselves shift, as the growing acceptance by drug sellers of marketing to young adolescents demonstrates. It is clear that norms and values of different subpopulations affect each other, and conceptualization of research issues must take this into account. One example cited in the review of one norm influencing another was how adolescents’ ideas about sexual identity are influenced by larger societal attitudes towards sexual functioning.

Research designs that compare one cultural group with another often lead to conceptual dichotomization of continuous traits, so that it becomes

misleading to talk of one group as, say, family oriented while another is not. Such characteristics not only exist on a continuum, but their group distributions overlap. General statements about cultural differences between groups provide a useful framework for research and some interventions but can only suggest what may be occurring at an individual level. Rather than simply attempting to compare groups or cultures, research on HIV risk context would benefit from the suggestion of Betancourt and Lopez (1993) on cultural research in general: Investigators specify what it is about the group that hypothetically influences behavior and directly examine and measure that phenomenon in a theoretical framework. Group identity in itself should be considered inadequate for *explaining* group differences in behavioral and psychological research (Zuckerman 1990).

Explicit hypothesis testing would also help obviate another pitfall of cultural research identified in the discussion, that of confounding culture-based explanations with the investigator's own values in areas such as rational choice, free will, morality, and biological influence. An example of specific hypothesis testing would be in studies of adolescent risk, where comparing adolescents with adults is not nearly as useful as identifying and evaluating the impact of unique aspects of adolescent peer group structures on how they evaluate and appraise potential outcomes. As group compositions change and develop, effects on HIV risk appraisal should be evidenced.

## **RESEARCH SHOULD LOOK FOR CONTEXT OF PROTECTIVE BEHAVIOR, NOT FOCUS SOLELY ON NEGATIVE BEHAVIOR**

Determinants of risk behavior are not necessarily converse determinants of protective behavior. Research that specifically examines protective contextual factors and determinants in individuals or groups that either initially avoided risk behavior or reduced risk behavior is needed to guide prevention planning.

Specific protective effects are likely to operate only at specific developmental stages, and advantage must be taken of the opportunity to study these. Studies of children in high-risk families before they reach adolescence, or even school age, could be quite useful in determining child-rearing contextual variables related to risk behaviors. In studies when both negative and positive influences are sought, qualitative methods can be especially useful in helping detect protective factors and

strengths within a setting or individual, as these are often not specified a priori in designing studies.

Individuals and communities have made changes in risk behavior patterns. Better understanding of how these changes have developed is needed, and an understanding of discrepant norms is needed. An example given is that one norm promoted by HIV prevention programs is “a man is not supposed to bring a disease home,” yet these programs also promote that “a woman is not supposed to trust a man to protect her.” What are the positive and negative ramifications for the individuals and the relationships from such discrepant messages?

**ALTHOUGH FURTHER UNDERSTANDING OF CONTEXTUAL ISSUES IS NEEDED, IT IS ALREADY CLEAR THAT FUNDAMENTAL CHANGES IN PEOPLE’S LIVES WILL BE REQUIRED TO ADDRESS HIV RISK**

High rates of homelessness, unemployment, and general economic disadvantage have been found in studies of drug users and their sexual partners at risk for HIV infection (Brown and Beschner 1993), although the severity of these social and environmental problems differs with geographic region. Dr. Gibson (this volume) and others (Malow et al. 1992) noted an association of depression and anxiety with HIV risk. It is likely that social and intrapersonal factors not only affect risk behaviors, but that they interact to determine risk.

Because of this interaction, and without denying the enormous impact of social problems, changes in social environments alone are not likely to reduce all risk. For example, poverty is associated with HIV risk. However, Dr. Robles noted that in Puerto Rico, women may have resources such as an apartment and income, yet repeatedly become involved with one IDU boyfriend after another. Clearly, lack of economic empowerment, which the women have at levels necessary for self-sustainment, does not explain the self-defeating pattern. Companionship, prestige, and other psychological factors need to be examined, and fundamental changes in people’s cognitions, attitudes, and feelings about themselves may be required for long-term risk reduction. Research must take into account the interaction of social and other environmental factors and psychological factors in the development of risk behaviors, and fundamental changes in both spheres will be needed to sustain health protective behaviors.

## REFERENCES

- Betancourt, H., and Lopez, S.R. The study of culture, ethnicity, and race in American psychology. *Am Psychol* 48:629-637, 1993.
- Brown, B.S., and Beschner, G.M., eds. *Handbook on Risk of AIDS: Injection Drug Users and Sexual Partners*. Westport, Connecticut: Greenwood, 1993.
- Critchfield, T.S. Signal-detection properties of verbal self-reports. *J Exp Anal Behav* 60:495-514, 1993.
- Malow, R. M.; Corrigan, S.A.; Pena, J.M.; Calkins, A.M.; and Bannister, T.M. Mood and HIV risk behavior among drug dependent veterans. *Psychol Addict Behav* 6:131-134, 1992.
- Nisbett, R.E., and Wilson, T.D. Telling more than we can know: Verbal reports on mental processes. *Psychol Rev* 84:231-259, 1977.
- Zuckerman, M. Some dubious premises in research and theory on racial differences: Scientific, social, and ethical issues. *Am Psychol* 45: 1297-1303, 1990.

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