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The Role of Drugs in the Sexual Lives of Men Who Have Sex with Men: Continuing Barriers to Researching This Question

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Barriers to researching links between drug use among men who have sex with men (MSM) and HIV risk fall into three categories: (1) institutional barriers, (2) lack of appropriate theoretical models, and (3) stigmatization of sexual minorities. This paper reviews the status of the progress on the first two issues and presents a historical account of research on the role of drugs in the sexual lives of MSM during the AIDS epidemic. The paper first reviews the history of research on drug use and sexual behavior using Rofes' four-stage model of the gay community's responses to the AIDS epidemic (crisis stage, organizing stage, 'degaying' stage, and 'post-AIDS' stage) as an organizing strategy. Discussions follow which address the institutional and theoretical barriers that remain and progress that has been made in overcoming these barriers. Finally, there is a review of the published literature on HIV prevention interventions for homosexually active drug users with a focus on their relevance for drug-using (DU) MSM and recommendations for future research. While the published literature on interventions for DU-MSM is in its infancy, it indicates that a variety of intervention models can produce significant changes in drug-related sexual behavior and HIV-risk taking. The future of this field holds promise in both the development of effective interventions for DU-MSM and increased understanding of the causal mechanisms which link drug use to risky sexual behaviors.

KEY WORDS: Gay men; MSM; sex-drugs; review; intervention studies.

INTRODUCTION

In 1986 the idea that drugs themselves, apart from needle sharing, played a role in the transmission of HIV was not an accepted notion. Drug users and gay men were, in fact, viewed predominantly as separate populations (Ostrow, 1987). Today, researchers, clinicians, and policy makers are still struggling with various aspects of the issues presented by the overlap between sexuality and drug use (Centers for Disease Control [CDC], 1998a). At least one third of new seroconversions are still occurring among men who have sex with men (MSM) and MSM whom are also intravenous drug users (IDU-MSM) (CDC, 1998b). While there are an increasing number of research efforts that include both sexuality and drug use as HIV prevention targets, there is still the tendency to think of human sexuality and substance abuse as separate issues. This review will address the barriers that exist today, how these barriers and the research challenges they represent might be overcome, and how behavioral and public health researchers might cross the barriers that separate their research from the issues of substance use and abuse and incorporate

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this important topic in both their new and ongoing research studies.

Barriers to Investigating Interventions for DU-MSM and HIV Risk

The barriers to researching the links between drug use among gay men and HIV risk were identified in a 1986 address and in the resulting paper (Ostrow, 1987) as falling into three categories: (1) institutional barriers, (2) the lack of appropriate theoretical models, and (3) the stigmatization of sexual minorities. Much progress has been made on the issue of stigmatization, in large part because of the new images of gay and lesbian activists resulting from the AIDS crisis and a community united to fight AIDS (Paul *et al.,* 1995). Sexual minority stigmatization is not a major focus of this review, and the interested reader is referred to the Paul *et al.* (1995) review and the series on ''Psychological Perspectives on Lesbian and Gay Issues,'' edited by Beverly Greene and Gregory M. Herek and published by Sage Publications, Thousand Oaks, CA. Barriers in the institutional and theoretical categories remain formidable and are the major foci of this review. I first review the history of research on drug use and sexual behavior using Rofes' (1998) four-stage model of the gay and lesbian community's responses to the AIDS epidemic as an organizing strategy. Then I address the institutional and theoretical barriers which remain, as well as progress that has been made in overcoming these barriers, including a description of the author's AIM (Awareness Intervention for Men) intervention model (Ostrow and McKirnan, 1997). Finally, I review the published research literature on HIV prevention intervention studies for substance users and make recommendations for the future, with a focus on their relevance for drug-using (DU) MSM research.

HISTORICAL REVIEW

According to Rofes (1998), there have been four major stages to the gay community's responses to the AIDS epidemic that, to some degree, parallel the responses of behavioral scientists to the sex–drug connections in HIV transmission:

1. The initial years from 1981 to 1985/86 were the early crisis response period for gay communities as well as for the first wave of HIV/AIDS prevention researchers, many of whom came from the community itself. Without confirmation of a specific causative agent until the end of this period, prevention advice was largely based on the community's earlier experience with hepatitis B (Schreeder *et al.,* 1980) and the initial CDC case–control studies of the first gay AIDS cases (Jaffe *et al.,* 1983). This advice consisted primarily in checking one's sexual partners for lesions, reducing the number of sexual partners, ''avoiding'' drugs, and not exchanging ''bodily fluids.'' Early hopes for an anti-AIDS vaccine provided optimism for some, but created a barrier to sexual behavior change much the same way the hepatitis B vaccine development increased denial in gay communities over the seriousness of STD outbreaks of the earlier decade (Holmes, 1980).

Even after the discovery of HIV, controversy over whether AIDS was caused by the virus or by polydrug abuse continued (Lauritsen, 1993). This controversy may have had the unintended consequence of increasing the separation of drug-related and sex-related HIV transmission in the minds of both researchers and persons at risk. Gay men engaging in unprotected sex and the exchange of ''bodily fluids'' could use the writings of Duesberg (1990) to deny that they were infected with or infecting others with a deadly virus. And IDUs could take comfort in knowing that AIDS was originally called ''Gay-Related Immunodeficiency Disease'' or the ''Gay Plague'' (Shilts, 1987). Additionally, the early failure to prove any role for volatile nitrites in the development of Kaposi's sarcoma (Haverkos *et al.,* 1985) or of drugs in general in AIDS-related disease outcomes (Kaslow *et al.,* 1989) further separated drug and sex researchers in terms of natural history research efforts. These controversies over the cause of AIDS and the role of drugs in causing or facilitating transmission of the syndrome would merge in the next epic with battles over the role of HIV-antibody testing of gay/bisexual men, pitting community-based researchers and physicians against government and public health system researchers and policy makers.

2. The late 1980s to early 1990s were a time of rapidly increasing knowledge about the pathophysiology and natural history of HIV infection and the beginning of effective treatments, exemplified by zidovudine (ZDV or AZT) monotherapy. The related community focus was on providing support services for persons living with HIV/AIDS (PWAs or PLWHIVs) and the heyday of AIDS treatment activism within the community, exemplified by ACT-Up (Rofes, 1998). Much of the controversy in the gay

community shifted from the cause of AIDS to whether or not to get tested (Coates *et al.,* 1988; Ostrow, 1990) and, if one were found to be HIV-positive, whether or not to start on AZT with its limited benefits and significant side effects. As AIDS began to be seen as a less than uniformly fatal disease and HIV-antibody testing gained in popularity, instances of discrimination against HIV+ persons and fear of discrimination against gay men as potential carriers of HIV proliferated (Ostrow *et al.,* 1989). The use of drugs by men in the Chicago Multicenter AIDS Cohort Study (MACS) reached its nadir in 1989/1990, as did the rate of new seroconversions in this and other gay male cohorts (Ostrow *et al.,* 1993, 1995; Stall and Purcell, 2000).

Two major themes seem to have driven these parallel reductions in sexual risk and drug use among gay and bisexual men. First, the community-wide impact of widespread sickness and death, along with extensive ''safer sex'' education focusing on the use of condoms, persuaded the majority of gay men to change their sexual behavior both in terms of quantity and riskiness (Ostrow, 1989). Also important were the rapid declines in illicit drug use in general by all segments of the U.S. population during this period, and generalized changes in peer norms regarding all manner of risk-taking, whether cigarette smoking, popper use, or unprotected intercourse of any type (Gfroerer and Brodsky, 1992). Despite the publication of papers from the MACS (Kaslow *et al.,* 1989; Roland *et al.,* 1987) denying any role of drug use in disease progression, common wisdom within the community was that the use of stimulants, such as cocaine, crack, or amphetamines, could harm the immune system in such a way as to both facilitate infection and increase disease progression among HIV-negative individuals and PLHIVs, respectively (Lauritsen, 1993). Looking back on the enormous revolution in both sexual and drug use behaviors that had occurred, many behavioral researchers and AIDS Service Organizations (ASOs) declared the ''war on AIDS'' won, at least among White, gay men, even as warning signs foreshadowed the coming behavioral backlash in terms of both unsafe sex and sex-drug use among gay men (Adib *et al.,* 1991; Stall *et al.,* 1990; Ostrow *et al.,* 1993).

3. In the mid-1990s, ASOs were consolidating and expanding services for the broad range of PLWHIVs, not just White gay and bisexual men. The term ''MSM,'' coined by the CDC's and World Health Organization's AIDS programs in order to be inclusive of all men who had same-sex sexual partners, not just those men who lived in and/or identified with the gay community, began to appear in the research literature in place of the terms ''gay/bisexual men'' or ''homosexuals'' (Doll *et al.,* 1992; Gillies and Carballo, 1990). Concern was growing about services and prevention for HIV-negative persons who felt ''left out'' of the services and sense of community support that ASOs had created for their clients (Odets, 1995). On the research front, the concept of behavioral ''relapse'' was borrowed from the addictions literature and applied to reports of new HIV seroconversions observed among the longstanding cohorts (Adib *et al.,* 1991; Stall *et al.,* 1990) as well as increasing numbers of anal gonorrhea cases being seen among male clients at major public STD clinics (Doll and Ostrow, 1999). These reports were almost immediately followed by denunciations against applying a clinical concept of sexual behavior relapse to gay men's sexual expression and calling for a reassessment of the entire field of safer sex research and education (Gold, 1995; Odets, 1993; Sadownick, 1996).

Research on the role of drugs in facilitating HIV infection began to focus on common underlying vulnerabilities, such as sensation-seeking personality (DiFranceisco *et al.,* 1997; Dolezal *et al.,* 1997; Kalichman *et al.,* 1994; Ostrow *et al.,* 1997) and childhood sexual abuse (Carballo-Dieguez and Dolezal, 1995; Jinich *et al.,* 1998). Armed with these new understandings of possible causal relationships between drug use and risky sex, the testing of specific behavioral interventions for sex-drug users began in earnest (Ostrow and McKirnan, 1997; Stall *et al.,* 1999). At the same time, rapid progress was being made in the development of new antiretroviral therapies, including new classes of drugs that could be used in combination with AZT or DDI, ushering in the age of combination therapy. This period of increasing optimism about an eventual cure for HIV infection culminated with the announcements made at the 11th World AIDS Conference in Vancouver that combination therapy guided by viral load measurements could potentially prevent HIV disease progression indefinitely, if not cure the infection outright (Rofes, 1998). Many behavioral researchers failed to recognize that these enormous therapeutic breakthroughs could have a negative impact on the sex and drug-use norms and behaviors of PLWHIVs and HIV-negative at-risk persons, as exemplified by the increasing popularity of unprotected anal sex, or ''bareback'' sex as discussed below. Moreover, the crack cocaine epidemic, which had so negatively affected

minority inner-city populations in the early 1990s, was insidiously spreading into White gay communities, in exactly the reverse direction that the HIV epidemic traveled a decade earlier.

4. Now we are in what Eric Rofes and others have called the ''post-AIDS era'': AIDS has not been eliminated, cured, or otherwise taken off the gay community agenda. But affected communities, behavioral researchers, and healthcare providers are all turning their attention toward more holistic approaches to individual and community wellness, perspectives which may incorporate HIV prevention and HIV/AIDS treatment as important elements, rather than the raison d'être, of larger holistic health enterprises (Rofes, 1996). At the same time, individuals are rapidly adopting new and oftentimes idiosyncratic approaches to ''safer sex'' (Rofes, 1998), including the emergence of ''barebacking'' (consensual unprotected sex) as both a behavior and a lifestyle movement in reaction to the seemingly obsolete and inflexible ''use a condom every time'' mantra of safe sex education campaigns (Gendin, 1999; Scarce, 1999). In order to survive this revolutionary change in priorities, ASOs are becoming community wellness centers or joining managed care consortiums and broadening their agendas to include lesbian and heterosexual health concerns.

From a behavioral research perspective, the simultaneous broadening of the preventive health agenda and the populations included in the MSM umbrella poses opportunities as well as contradictions and important methodological challenges. Diversity of research populations seems, on the surface, always to be preferred over narrowly defined and segmented study populations that do not relate back to the ''general population.'' But what about the newly gained information, from the causal and ethnographic research of the last five years, that indicates the importance of targeted interventions that take into account the specific sex-drug use patterns, individual and community meanings of sex-drug use, and environmental aspects of each subgroup's risk behaviors? The necessity to have adequate subgroup sizes for analyses of between-group differences means that researchers must increasingly make a choice between diversity and depth, or become part of multisite collaborative studies which apply comparable measures across each study site cohort. Alternatively, newer analytical techniques which do not make direct between subgroup comparisons, but rather treat education, socioeconomic status, ethnicity, geography, gender, drug use, and sexual behavior typology as conditional variables are gaining acceptance (Ostrow and Kalichman, 2000).

This is, understandably, a fractious area of scientific and public health discourse, as it pits targeted and community-''owned'' intervention resources against more generally applied and thus more diffuse and less individually significant prevention strategies and resources. A network of institutions has been developed—the Community Prevention Planning Boards (CPPBs; see CDC, 1994)—to deal with competing needs for limited HIV prevention resources and to ensure that HIV prevention program priorities and funding decisions are based on the available epidemiologic and scientific research information. To the extent that these CPPBs have become embroiled in local political battles between older, more established and often Gay White male-dominated ASOs and newer, more grass roots-oriented, but less experienced ASOs, we have seen debates over strategies and targeted intervention replicated at the local community level.

Specific Institutional Barriers

The broadened health agenda within an MSM population base has also meant increased focus on psychiatric comorbidity and more serious drug abuse problems. This, in turn, has highlighted the inherent contradictions in our increasingly disorganized healthcare ''systems.'' A major institutional barrier cited in the original review (Ostrow, 1987), and still present in the 21st century, is the unwelcome burden of funding the treatment of substance abuse problems, which is falling increasingly on managed care systems (for the insured) and public health systems (for the growing numbers of uninsured). These systems are themselves converging in their joint emphasis on outpatient treatment, drug-free detoxification, and reliance on community-based 12-step programs for ongoing relapse maintenance (Brisson and Frank, 1998). This may seem to be progress, until one actually experiences the fragmentation of services and the difficulties clients within managed care systems often have in accessing the services needed for combined substance abuse and HIV treatment. If they happen to have major psychiatric or behavioral problems on top of their SA/HIV comorbidity (''trimorbidity''), their treatment options in most cases are severely limited (Mueser *et al.,* 1997).

The growing proportions of PLWAs and newly

infected PLWHIVs from minority groups within already marginalized MSM subcultures with limited access to healthcare resources was also noted in the original review (Ostrow, 1987). This trend has continued and even accelerated in recent years (Doll and Ostrow, 1999). In combination with the problems of trimorbidity and increasing amphetamine, crack, and heroin abuse among MSM, access to sophisticated HIV/SA/psychiatric treatment can be exceedingly difficult to obtain for persons living with HIV or at high risk of HIV within our inner cities. However, a limited number of research programs now focus on the HIV prevention needs of trimorbid MSM, and there is hope that this will improve further with recent RFAs from both NIMH (1999) and SAMHSA (1999). To varying degrees, these programs include substance use, psychiatric, and HIV interventions tailored to African-American, Latino, Asian/Pacific Islanders, and other minority or disenfranchised MSM populations (US Conference of Mayors, 1993).

The reluctance of healthcare givers to take detailed sex and drug use histories is another barrier (Ostrow, 1987) on which there has been minimal progress, as noted periodically by the AMA (see, for example, Gabel *et al.,* 1994) and other professional organizations. We did, in terms of Rofes' chronology, enter a period in the middle to late 1980s when the mention of a patient possibly being homosexual often led to debate about performing an HIV-antibody test, either to institute protections against workplace exposure for staff or to begin antiretroviral treatment of the patient. Now, the tendency is to avoid mention of sexual proclivity in order not to suggest homophobia. Whatever the origins of this persistent institutional problem, which has been continuously documented over the last 10–15 years,[3] it still involves a persistence in denying the health implications of the homosexual lifestyle (Shilts, 1987). Such denial deflects our attention from unhealthy aspects of our patients' and research subjects' lives and continues to be a major barrier to our understanding the real-life connections between drug use, sexual behavior, and HIV/STD infection. It also contributes to reluctance by behavioral scientists to research the homosexual transmission of hepatitis C virus (Mass, 1999).

Commercial sex establishments (e.g., bathhouses, backroom bars, and sex clubs) which promote anonymous sexual encounters and unprotected intercourse have certainly evolved over the course of the AIDS epidemic, but remain an area of concern. On one hand, we have seen the emergence of safer sex environments in clubs and bathhouses which monitor clients' activities, prominently display safer sex posters and condoms, and enforce prohibitions on alcohol and drug use on their premises. On the other hand, there appears to be a growing underground of private sex clubs and commercial establishments which foster a ''no-holes-barred'' (sic) atmosphere of unprotected sex, thus catering to the bareback subculture of the post-AIDS era. Such establishments seem to crop up whenever and wherever anti-public-sex statutes are most strenuously enforced, argumentatively proving that such attempts to outlaw unsafe sex and sex clubs only drive such behaviors and settings underground (Gross, 1992). Since environmental (structural) and individual attitudinal and behavioral changes go hand in hand, behavioral researchers and public policy advocates must challenge both the denial and the misrepresentation of lifestyle factors whenever they see or hear them. It may render them politically incorrect, but will certainly clarify the issues for research and public policy debate.

Theoretical Barriers

Many experts have addressed the lack of appropriate theoretical models for the relationship between HIV transmission and behavioral or environmental cofactors, beginning with Becker and Joseph's (1988) seminal review. These authors made the important point that both descriptive and intervention studies need a clearly defined theoretical basis, which can then be adequately applied and assessed, in order for the findings to be interpretable and to properly attribute any observed behavioral changes to social, temporal, or intervention elements. Two articles which began the study of the role(s) of drugs in sexual risk among gay men were a paper based on the San Francisco Mens Health Study (SFMHS) cohort (Stall *et al.,* 1986) and a paper based on the MACS cohorts (Ostrow *et al.,* 1990). Both papers identified four general categories of possible causal mechanisms linking

[3]The author was the editor of the behavioral/psychosocial/neuropsychiatric section of *AIDS Targeted Information Newsletter* (ATIN) from 1986 to 1999, and reviewed the published literature each month on healthcare providers' knowledge, attitudes, and behaviors related to HIV. One of the most consistent aspects of the healthcare provider behavioral literature during that entire period was of the difficulty involved in training health care providers and students in taking sexual and drug use histories from patients, or correctly identifying those patients at risk of HIV infection. An ATIN ProCite bibliography on this subject is available from the author on request.

drug use, risky sexual behavior, and HIV infection: the disinhibiting effects of some drugs, most notably alcohol and stimulants; enhancement of sexual pleasure or a direct "aphrodisiac" effect; the shared social context or setting in which both drug use and risky sexual encounters take place; and "common underlying vulnerabilities" or personality characteristics that lead indirectly to both behaviors being present in the vulnerable person. Since one or more of these mechanisms may be involved depending on the particular drug(s) being used and the meaning(s) for their use in the particular sexual encounter (Bell *et al.,* n.d.; Lewis and Ross, 1995), we recently advanced an integrative model of risky sexual and drug use behavior which puts these and other causal factors into a framework suitable for the development and testing of interventions for DU-MSM. This AIM model (McKirnan *et al.,* 1996; Ostrow and McKirnan, 1997) is currently being tested in an NIDA-funded intervention trial in Chicago.

Briefly, the AIM framework (see Fig. 1) assumes that the vast majority of MSM who currently engage in unsafe sex or drug use are informed and competent in the use of condoms for anal intercourse, but that the strategic use of drugs actually facilitates their involvement in unsafe behaviors by decreasing both anxiety and self-observation, which might otherwise inhibit pleasurable sexual experiences. Thus, drug use in sexual contexts is a lubricating and desensitizing maneuver that facilitates acts which are more satisfying and intimate than their prescribed safer sexual and drug abstinence norms. Unsafe sexual behavior among DU-MSM can thus be seen as a form of "scripted" release from internal, social, and peer group norms, resulting in automatic behaviors which are more rewarding because awareness of their consequences is diminished.

No single explanation would suffice in understanding the complicated web of factors linking substance use and HIV transmission. A multifactorial model, such as the AIM intervention model, can stimulate more comprehensive and pragmatic approaches to research. For example, we do not assume that specific activators, triggers, or their modifiers are the problem areas for men in the AIM intervention study, but rather train men to recognize these elements and then develop useful coping skills and behavioral modifications as needed. Because the current study recruits men with specific problems related to substance use expectancies and impulse control, it is not surprising that the relevant aspects of the AIM intervention framework are self-identified by the participants. Future interventions, depending on the types of participants being recruited and their targeted unsafe behaviors, will undoubtedly emphasize different aspects of the model. For example, in our work with street

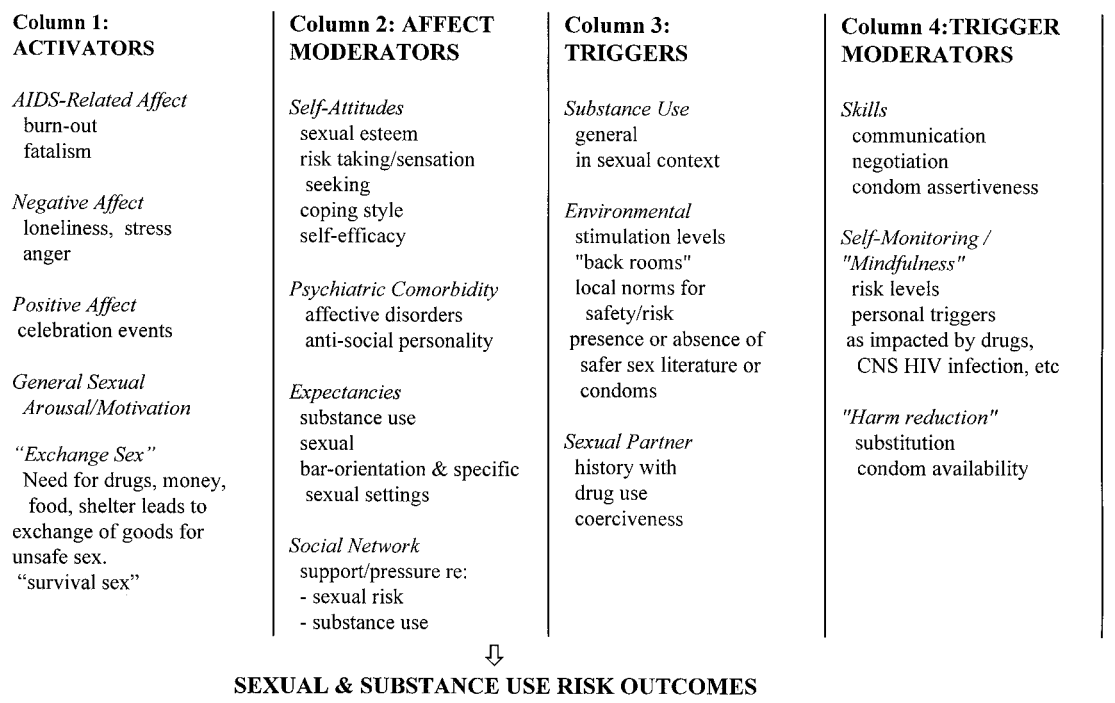

Fig. 1. The Awareness Intervention for Men model. Adapted from Ostrow and McKirnan (1997).

hustlers, we have identified and added to the AIM framework the Activator category of ''Exchange Sex,'' while our clinical work with comorbid patients has led us to add psychiatric comorbidities to the Activator Moderator column of the model. In this way, the AIM intervention framework is a dynamic rather than static tool, which makes it easily adaptable to the changing dynamics of HIV transmission.

While the AIM model includes all four of the general proposed mechanisms linking drug use to unsafe sex, the indirect causal mechanism (i.e., a common underlying vulnerability to both types of risky or antisocial behavior) has recently been supported by findings from at least three independent studies (Dolezal *et al.,* 1997; Kalichman *et al.,* 1994; and Kalichman and Ostrow, 1997; Ostrow *et al.,* 1997). If confirmed as a consistent mechanism linking drug abuse, risky sex, and STD infection across diverse populations and locales, this would raise a number of interesting research questions: Is there a causal relationship between another frequently cited antecedent to drug abuse and sexual risk-taking, namely childhood sexual abuse (Carballo-Dieguez and Dolezal, 1995; Dolezal *et al.,* 1995; Stall *et al.,* 1998) and sensation seeking, and do the two combine to produce any particular patterns of adult drug use and risky sexual behavior? Are sensation seekers in general and the sexually compulsive more specifically the ''trend setters'' in popularizing particular substances as sex-drugs, and thus their overrepresentation among the core group involved in the start and propagation of sexually transmitted disease epidemics? If so, what will be the specific sex-drug(s) and sexually transmitted pathogen which, by intersecting within a sexually active group with high partner exchange rates, will spark the next STD epidemic? There are several attractive candidates, such as amphetamines and hepatitis C virus (HCV), which by virtue of the former's growing popularity among high-risk sexual subcultures in the Pacific Northwest (Sullivan *et al.,* 1998) and Southern California (Frosch *et al.,* 1996) and the latter's extreme latency and frequently undetected primary infection, have the potential for fueling the next major STD epidemic among DU-MSM (Mass, 1999).

Safer Sex BurnOut:

The 1986 presentation ended with the following warning:

> We know that much of the motivation to make behavioral changes in response to the AIDS epidemic is fear of disease or contamination, but we also know that it is very difficult to change behavior [for the long term] that is gratifying, compulsive, and often learned. Although we know that fear is an effective motivator of short-term behavioral change, it cannot be the only motivation or even the primary one for long-term change. Furthermore, fear as a motivator has a great potential for producing negative behavioral and social changes. (Ostrow, 1986)

The growing body of literature on behavioral relapse and ''safer sex burnout'' (Odets, 1993; Rofes, 1998) bears out that prediction. Our own research has shown that, among members of the Chicago MACS/CCS cohort, sexual and drug use behavioral changes peaked between 1989 and 1991, and that since then there has been a steady increase in the rate of unprotected anal intercourse among men who largely describe themselves as being ''burned out'' on safer sex or resigned to the fact that they will either become infected or infect their primary partners (DiFranceisco *et al.,* 1999; Ostrow *et al.,* n.d.). More recently, we are observing increasing denial of the seriousness of HIV transmission, particularly in the context of combination antiretroviral therapies and the potential for postexposure prophylaxis (Ostrow, 1999). Most current behavioral studies of young gay men or MSM arrive at a figure of one in four to one in three of the men having engaged in unprotected anal intercourse within the past 3–6 months (Doll and Ostrow, 1999; Stall and Purcell, 2000), and the heavy use of alcohol and other drugs is almost uniformly a strong predictor of engaging in the most unsafe behaviors.

The gay community continues to be wary of openly discussing these problems, perhaps for fear of antigay backlash or funding reductions for HIV prevention and AIDS support programs. How many times have we heard in the last several years that persons who get HIV-infected in the 1990s are not as ''innocent'' as those infected in the early 1980s? Such attitudes further dichotomize gay/bisexual communities into those who use drugs or engage in higher risk sex and those who do not. These attitudes, and the related regulation of venues where drug use and sexual behaviors might take place, have resulted in exactly the kinds of underground, uncontrolled sex venues that community leaders warned about when many of the bathhouses and backroom bars were closed in the early days of the AIDS epidemic (for example, see Shilts, 1987).

Driving the gay drug and sex scene underground has not only eliminated opportunities for monitoring and education, but is now occasioning the emergence of a new type of sexual ''outlaw''—the ''raw'' or

"bareback" (or "BB") sexual athletes, who see themselves as leaders of a new sexual freedom movement within the gay/bisexual community (Gendin, 1999; Scarce, 1999). Given the widespread publicity (promoted by drug companies, magazines, and community newspapers) about the "post-AIDS era," is it any wonder that men seem to be reviving the "no-holes-barred" sexual behaviors of the 1970s with increasing insistence? The names of the drugs associated with clubs promoting bareback sex and the sexual activities themselves may have changed from Quaaludes to ketamine and from cocaine to crack and methamphetamine, but the degree of sexual risk-taking associated with these drugs has not, despite efforts to inform gay men and MSM about these dangers. Two strong elements of denial among some HIV-positive "barebacking" MSM are the assertions that (1) if they are the receptive partner in unprotected anal intercourse, they are not placing their partners at risk, and (2) that there is no conclusive evidence of the clinical impact of infection with multi-drug-resistant strains (MDRS) of HIV. Both of these statements are patently false, yet they have gained the stature of urban myths increasingly among some MSM communities. The extent to which this trend is being motivated by belief in the effective cure of HIV infection by new therapies or is the inevitable result of fear-based intervention messages cannot yet be determined, but is the subject of a recent book (Ostrow and Kalichman, 1999) and our own periodic community-wide surveys in Chicago (Vanable *et al.,* 2000; Ostrow *et al.,* n.d.). Some communities have begun to confront this potentially serious problem by aiming campaigns directly at DU-MSM through posters and flyers in sex clubs and condom pacs distributed to persons entering bars and bathhouses. The educational message is best stated in a positive way—that concern for one's own health and the health of lovers/partners motivates one to BE SAFE EVERY TIME (Ostrow, 1999). But these efforts are still too limited and do not confront the intense denial about infection with multidrug resistant strains, and are thus unlikely to impact the most dedicated bareback sex advocates (Gendin, 1999; Scarce, 1999).

HIV INTERVENTIONS FOR SUBSTANCE-USING MEN

Table I lists all of the published English-language intervention studies specifically targeted toward sexually active drug users and in which DU-MSM comprised a significant proportion of the study population. What is most striking is the almost complete lack of intervention studies targeting DU-MSM. The studies listed in Table I comprise an emerging field of research rather than a well-defined body of investigation. They vary greatly not just in subjects (gay/bisexual men, MSM, MSM within psychiatric populations, MSM within drug treatment populations, etc.), but also in treatments, designs, and outcome measures. The number of study participants varied from 31 to 1,415. Subjects from all but one of the studies were considered to be either drug or alcohol addicted. Three studies focused on the mentally ill or dually diagnosed clients, rather than DU-MSM specifically. They are included here both because they attempted to change drug-associated sexual behavior risks in men and because of the paucity of studies which focus specifically on MSM. All but one of the studies examined principally heterosexual clients and one (Avins *et al.,* 1997) even excluded openly gay men and lesbians from their sample (with no reason given). However, we feel that at this formative stage of the research, any parallels or guidelines for effective interventions for DU-MSM need to be examined.

The HIV prevention interventions described in these studies are quite variable. In Avins *et al.* (1997), the treatment is described simply as "risk reduction counseling." In Kalichman *et al.* (1995), treatment is more elaborated as "four 90-minute sessions emphasizing risk reduction, sexual assertiveness, condom use, risk-related behavioral self-management and problem solving skills." On the whole, treatments appear to be either insertions into or modifications of therapies designed for drug users or mentally ill clients, perhaps reflecting the professional backgrounds of the investigators as much as the science of behavioral interventions. All seem to include information concerning HIV transmission and condom use. The Shoptaw *et al.* (1998) study intervention was unusual among this group in that it was street-based.

Some of the authors indicated that the treatments were "pilot studies." Others (Boatler *et al.,* 1994; Shoptaw *et al.,* 1997) were sufficiently advanced to even have developed an acronym (DATAR and MATRIX, respectively) for their program. Few of the studies were well controlled, and some (Avins *et al.,* 1997; Shoptaw *et al.,* 1997, 1998) employed designs that can be characterized as "preexperimental" (Campbell and Stanley, 1963; Cook and Campbell, 1979). In this observation/treatment/observation design, the most outstanding threats to internal validity are (1) history (i.e., the possibility of some external

Table I. Review of Published Studies of HIV Interventions for Drug-Using MSM or Related Subgroups

Authors	Subjects	Treatment	Study design	Outcome measure(s)	Results
Avins *et al.* (1997)	700 heterosexual alcoholics (in 5 treatment centers)	HIV risk reduction counseling, HIV testing	No control group	Questionaire follow-up and HIV testing 1 year subsequent to treatment	24% reported alcohol abstinence, 30% reported drug abstinence, 27% decreased high-risk behaviors, 50% increased protective behaviors
Beardsley *et al.* (1996)	708 drug users	Two sessions on HIV risk reduction, or "enhanced" treatment (needs assessment, referral of agencies, +6 health education group sessions)	Standard vs. enhanced treatment	Risk behavior assessment (RBA), urine test, optional HIV testing, 6-month follow-up RBA	Statistically significant reported frequency of unprotected heterosexual sex
Shoptaw *et al.* (1997)	325 cocaine abusers (9% gay/bisexual or lesbian, 66% crack or freebase users)	26-week, 4 sessions/week "MATRIX" CBSD outpatient counseling; add-on to natural history and DMI randomization study	Outpatient cocaine abuse counseling *without* specific HIV counseling	Self-reported HIV risk, adherence to MATRIX program attendance, and NIDA "WAVE" questionnaire, reduced to dichotomous "safe" vs. "unsafe" outcome	68% who completed 6-month follow-up showed decreased number of sexual partners, but no differences in proportion of partners with whom condoms were used
Boatles *et al.* (1994)	110 methadone-treatment IDU clients	DATAR—drug abuse treatment for AIDS risk reduction (psychoeducational materials presented in four group and two individual counseling sessions)	Wait-list control group	AIDS/HIV knowledge survey (23 true/false and 3 multiple-choice items)	Increased knowledge about AIDS, decreased risky behaviors, more positive attitudes toward achieving and maintaining drug use abstinence
M. Hansen *et al.* (personal communication, 1994)	31 mentally disordered drug abusers	Nine 1-hr problem-solving and skill development pilot included videotapes, modeling rehearsals, and feedback	Wait-list control group	40-item true/false AIDS behavior knowledge test, 25-item alcohol dependence, 10-item true/false abuse severity index, 6-item true/false test of condom use, 7-item scale measuring risky behaviors, 20-item Crowne–Marlowe Scale of Social Desirability	AIDS knowledge, +.44 effect size; condom use, +1.7 effect size; decrease in risky behavior significant at .01 level
Kalichman *et al.* (1995)	52 mentally ill from two centers	Four 90-min sessions emphasizing risk education, sexual assertiveness, condom use, risk-related behavioral self-management, and problem-solving skills	Wait-list control group	Self-reported questionnaires; 23-item true/false test on condom use and AIDS-related information measured immediately after intervention and at 1 and 2 month intervals subsequent to study	+.9 effect size gain on knowledge of condom use, +1.0 effect size gain on AIDS-related knowledge, +.4 effect size gain on intention to increase protective behavior; follow-up results were similar
Shoptaw *et al.* (1998)	1415 street-based drug users	Street-based harm-reduction model	No control	Questionnaire	Reduction of sexual partners, increase in safer sex
Stall *et al.* (in press)	144 gay male drug abusers	2-h twice-weekly sessions until 1 month abstinence, then 16 weeks of two 3-hr sessions per week	"Enhanced" vs. "standard" treatment control	Five waves of self-reported questionnaires on substance use, sexual behaviors, and HIV psychosocial factors	Decreased unprotected anal intercourse with nonmonogamous partners in previous 90 days

event being the cause of the change), (2) maturation (i.e., the possibility that the change is due to the subjects getting older and wiser), and (3) test/retest sensitization (the possibility that repeated testing sensitized the subjects to the questions and the socially desirable responses). As discussed by Stall and Purcell (2000), the first two factors are relevant to the widespread reductions in unsafe sex and drug use seen between the first and third phases of the gay community's responses to AIDS. Such threats to validity weaken any pronouncements about causality from preexperimental studies in general, and the ones cited in Table I are no exceptions, as none controlled for external events or test/retest sensitization.

Similar cautions need to be applied when attempting to compare the outcome measures used across these studies. For example, M. Hansen and colleagues (personal communication, 1994), employed six clearly defined measures of outcomes, and included estimates of internal consistency. The Shoptaw *et al.* (1998) study mentions a questionnaire, but gives no specifics about its content. When measures vary so greatly, it is unclear if the interventions are affecting the same behaviors. The time at which measures were taken also varied greatly. Most studies looked only at measures immediately subsequent to intervention. Yet we know from longer term observational studies that relapse rates following any behavioral intervention are significant, and contribute greatly to the overall HIV transmission behavior rates among gay men (Adib *et al.,* 1991; Doll and Ostrow, 1999; Elovich, 1996; Ostrow, 1989). Two exceptions to this limitation were the Beardsley *et al.* (1996) study, which included a 6-month follow-up assessment, and the Stall *et al.* (1999) study, which reported on five waves of data collection over a period of 1 year.

Despite the variability of these eight studies, each reported a moderate to substantial gain for their treatment when measured by their outcome instruments. However it is difficult, if not impossible, to compare the effects of the various treatments beyond the fact of a positive result. In reviewing the Hansen *et al.* study (personal communication, 1994) we converted two of the measures to effect sizes (Table I). Effect sizes can be used in meta-analyses to provide a common measure of change toward a goal. Similar to *Z*-scores, the effect size is the standardized mean difference between the experimental and control groups. Thus, an effect size of 1 means that the average participant in the experimental intervention group would score at the 84th percentile of the control group distribution, a very substantial advantage for the experimental treatment group. In the Hansen *et al.* (1994) intervention, AIDS knowledge and condom use showed moderate (.44) and a very substantial (1.7) effect sizes, respectively. Similar effect sizes (1.0 and 0.9) were achieved for AIDS knowledge and condom use in the Kalichman *et al.* (1995) study.

Although these studies used conventional techniques, they all suffer from the validity and reliability concerns that plague the field of sex-drug research in general (Ostrow and Kalichman, 2000). For example, any replies to detailed interviewer-administered questionnaires on intimate sexual practices and their correlates are potentially suspect because the respondents may be reticent to focus on such issues, and may give what they perceive to be the socially acceptable responses (Catania *et al.,* 1993). None of the studies used a computer-assisted interviewing methodology, which has been found to increase reporting of stigmatized behaviors (Turner *et al.,* 1998) Still, the fact none of the studies reviewed here produced negative results and the uniformity of positive findings across the better-controlled studies suggests that response biases did not contribute significantly to the findings. Despite varying or unexplained treatments, designs, and outcome measures, all researchers indicated that HIV risk and drug use reduction interventions can be beneficial, sometimes markedly so and especially in the short term, when applied to sexually active drug-using populations. What seems to be emerging in this expanding research literature is that treatments, no matter how dissimilar, can produce moderate to substantial short-term advantages for the participants. We await the results of longer term studies of larger populations of MSM including substantial subpopulations of DU-MSM (such as the recently completed ''Men at Work'' study of Kalichman and Kelly in Milwaukee; Kelly *et al.,* 1996), and studies focused on the specific intervention needs of DU-MSM (such as the AIM Study) in order to make more generalizable conclusions about this important area of HIV prevention. Thus, much more research is needed, and would be worthwhile, bearing the following recommendations in mind:

1. Because HIV has affected the gay community disproportionately (and will continue to do so as long as the community is more widely defined as MSM), more information is needed about the impact of various HIV/STD prevention treatments on gay men and MSM specifically. Further, despite near-universal

awareness among gay/bisexual men about HIV and how it is transmitted, there is a dearth of information on why seroconversions still occur and why they seem to occur disproportionately among younger and minority men. Obviously, our interventions are failing or not reaching these men.

2. There are increasing indications that factors are operative in HIV seroconversion among MSM other than AIDS information levels and attitudes toward condom use. Psychoeducational aspects of the models described in the published articles all point to such additional factors. The last secondary analysis study from the Chicago MACS/C&CS data sets demonstrated the independent contributions of both drug use and sexual sensation-seeking to HIV seroconversion rates in that cohort (DiFranceisco *et al.,* 1997). What remains to be demonstrated is whether or not sexual risk reduction follows from alterations in the sex-drug-using/seeking behaviors or vice versa, and whether sensation seeking and other contributing psychological traits can be changed at all. Further, do drugs that are used during sex, aside from their direct and indirect effects on the use of condoms, play any role(s) in producing the relatively large odds ratios favoring HIV seroconversion (DiFranceisco *et al.,* 1997; Ostrow *et al.,* 1997)?
3. All intervention research studies should use theory-based interventions, and those interventions and their theoretical underpinnings should be thoroughly described. Too often, published studies do not adequately explain the intervention, or they refer to unpublished documents and offer only generalities about the underlying theory or its application to the intervention design. This robs not only the scientific community of the information needed to interpret the study findings, adequately, but also the target communities of the information needed to refine and disseminate the active intervention components in a cost-effective manner (Wingwood and DiClemente, 1999). Given the cost of conducting randomized controlled trials, the extra costs of making sure the interventions are feasible and ultimately useful to the target population would seem to be well worthwhile. As the CDC HIV Prevention Database (see recommendation 5 below) goes on-line, it should contain as much information as possible on each study's design and the recruitment, intervention, and assessment methods used.
4. We need to use national meetings and other venues to develop more realistic measures of outcome. Especially in this ''post-AIDS'' and (for at least the ''bareback'' sex subculture members) ''postcondom'' era (Gendin, 1999; Scarce, 1999), there is something simplistic and irrational about insisting on total adherence to condom use every time with every partner as the expected outcome. What researchers need to focus on is how knowledge and attitude changes convert into reduced HIV-transmitting behaviors and eventually into reduced rates of HIV seroconversion over time. The use of surrogate biological outcome measures, such as rates of seroconversion for hepatitis C or other more easily transmitted sexual diseases, may be both a practical approach for behavioral researchers, especially in communicating with their more biologically oriented colleagues, and a convenient bridge from AIDS prevention to the newer health concerns of the ''post-AIDS'' era.
5. Establish both regional and central repositories of intervention manuals, sampling and design protocols, and actual study data sets, so that secondary and tertiary studies can be conducted, so that we won't still be at the same place in another 10 years complaining about our inability to perform more informative meta-analyses. The Behavioral Intervention Research Branch of the CDC's HIV/STD Prevention Center is well on its way in the development of a central HIV prevention study data and instrument repository with computerized public access. Linking such a repository to behavioral researchers and methodologists and assisting them in its use will be a major challenge.
6. It is very difficult to uncover potentially trailblazing research efforts that may be conducted in a smaller scale. We need to reconsider why there has been so little research in the area of preventing HIV risk among DU-MSM in the context of the barriers identified earlier in this article. When we do, we may find ourselves back at square one in terms of developing research capacity, collaborative

networks, stable funding streams, a reliable surveillance network, and political pressure from the affected communities. For one, the target population of DU-MSM is neither an identifiable homogeneous ''target'' nor a group of men who self-identify as having a problem in need of research and intervention. This is most clear from Ryan *et al.'s* (1997) unsuccessful attempts to engage DU-MSM in their intervention as well as our own slow pace of recruitment into the AIM intervention study. This may be an issue of community education regarding the continuing problem of HIV seroconversion related to sex-drug use, as has been attempted by the Substance Use Counseling and Education (SUCE) program at Gay Men's Health Crisis (GMHC) of New York City (Elovich, 1996). However, when actual field outreach has been attempted with DU-MSM attending gay ''circuit parties'' or other sex-drug venues, we note limited interest by those men most involved in the festivities. We have yet to develop an effective recruitment strategy for those individuals whom we feel are the most at-risk DU-MSM, just as the field of substance abuse treatment in general is at a loss for the treatment of persons still in ''denial'' about their SA problems.

7. The impact that tapping into a particular drug use or social network can have on an intervention study is potentially enormous, but not always beneficial. We are still figuring out, for example, how to deal with the high proportion of crack addicts who volunteered for the AIM intervention study, despite our putting out the word that crack-addicted men will have to go through drug treatment before being allowed into the study. This is the result of our early focus groups which specifically looked at crack use among DU-MSM, and concluded that the intervention needs of these men were very different than those of most of the DU-MSM we were encountering. But word soon spread through the ''community'' of crack-addicted men in Chicago that they could get paid for talking about their addictive behaviors, and we are now trying to develop a cognitive-behavioral-psychological (CBP) intervention for such men. If this sampling bias can occur based on coincidences, how do we know when we are tapping into specific sexual or drug-using networks in other studies, and whether these network coincidences are determining the characteristics and responses of our subjects rather than the intended sampling schemes and interventions per se? This last point is as good an argument as any for the inclusion of an ethnographic research phase and some sort of network assessment in any intervention research study which attempts to sample from hidden populations.

CONCLUSIONS

In conclusion, these recommendations should help to begin overcoming the longstanding institutional and theoretical research barriers to effective research on the role of drugs in the sex lives of men who have sex with men. These recommendations cover a variety of areas, including (1) the urgent need to focus research on heavy drug and alcohol users who engage in unsafe sex and the emerging population of ''barebacking'' men, (2) continued research on the mechanisms that link sex-drug use with sexual risk and HIV seroconversion, including potential biological interactions, (3) the use of appropriate theoretical models and the translation of research findings into materials that can be used by community-based HIV prevention/education programs, (4) the development of accurate surrogate markers for HIV transmission and more realistic behavioral outcome measures, (5) the development of intervention models that can better reach core drug-using subpopulations, not just the more motivated men, and (6) the adaptation of network assessment and ethnographic research methods to better understand the composition of research study samples and their relationships to larger target communities and populations.

Will it take a sudden upswing in the reported numbers of new HIV infections or the spread of the virus to a previously unaffected population to reverse the serious trends reported here and elsewhere in HIV seroconversions among DU-MSM? Will it take the discovery of a totally new type of pathogen that is spread by unprotected sexual behaviors to reinvigorate our research and community education efforts? The papers that comprise this Special Section are just the beginning, and if we can accomplish these recommendations with more support of basic and applied behavioral research and on a long-term, steady basis, this will consolidate and further the ad-

vances reviewed here and further break down the barriers in recognizing and understanding the roles that drugs play in the sexual lives of men who have sex with men.

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