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Bisexuality and HIV Risk: Experiences in Canada and the United States

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The human immunodeficiency virus (HIV) epidemic has presented unparalleled challenges to sex researchers. Investigators have sought to understand a range of sexual behaviors and have scrutinized their roles in disease transmission. Opportunities have also emerged for developing and evaluating large-scale behavioral interventions to facilitate sexual risk reduction. In this article, we examine a topic of interest to sex researchers and HIV prevention programs, namely the relationship between bisexual behavior and HIV risk. We have gathered the theoretical and empirical literatures from two countries, Canada and the United States, permitting us to describe diverse experiences in countries in which variations in demographics and social norms as well as prevention programs may have consequences for the prevalence and contexts of bisexual behavior and for HIV risk.

We begin our article with a review of the theories of bisexual behavior and a critique of methods used to study these populations. These sections provide a foundation for interpreting the empirical literature and for understanding the limitations of research related to HIV risk. We then provide for each country and for each gender a brief overview of data on the prevalence of bisexual behavior, HIV prevalence and AIDS cases, and the prevalence and determinants of HIV risk behaviors. We also review the emerging findings on prevention approaches for each population. Our review ends with a synthesis of the data across countries and genders and a proposed research agenda to increase our understanding of bisexual behavior and HIV risk among men and women who engage in sexual behavior with both genders.

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Bisexual Identity and Community

Western society has traditionally taken a dichotomous view of sexual identity, recognizing heterosexual and homosexual as the two accepted sexualities (MacDonald, 1982; Morrow, 1989; Nichols, 1988). However, more recent research has contradicted that view, and researchers have proposed a much more fluid view of sexuality (Blumstein & Schwartz, 1977; Herdt, 1984; Kinsey, Pomeroy, & Martin, 1948; Nichols, 1988). Kinsey and his colleagues (1948) first postulated sexuality as a continuum with exclusive heterosexuality and exclusive homosexuality on opposite poles. Since that time, multidimensional views of sexual orientation have taken into account numerous factors, such as sexual behavior, physical and emotional relationship preferences, erotic fantasies, self-identification, lifestyle, and temporal identity changes (Coleman, 1987; Klein, Sepekoff, & Wolf, 1985; Storms, 1980).

Coupled with this more complex view of sexuality has been an interest in the acquisition of sexual identity. There are several theories of lesbian and gay identity acquisition (Cass, 1979; Coleman, 1982; Troiden, 1979). Typically, these theories presume that the experience or the expression of homosexual attraction leads linearly to the formation of identity (Paul, 1996). However, little has been written about the acquisition of bisexual identity. Rust (1993a) found that many bisexual women move from a heterosexual to a homosexual identity and back several times before adopting a bisexual identity. Thus, linear identity formation theories may not adequately describe bisexual identity acquisition for some persons (Fox, 1995; Paul, 1996; Rust, 1992, 1993a). Further, even those arriving at a bisexual identity may not constitute a homogeneous group. In their convenience sample of 156 adults who had sexual experience with men and women, Blumstein and Schwartz (1977) found diversity among persons claiming a bisexual identity. Thus, the study of bisexual identities and behaviors has helped push thinking beyond the previously accepted theories of linear identity acquisition and sexual identity group homogeneity. Recently, it has been suggested that sexual identity can influence and be influenced by erotic preferences, rather than just describe them (Paul, 1996). Therefore, sexual identity development can be seen as ongoing and dynamic (Rust, 1993a).

Self-identified bisexuals may face ostracism by both heterosexuals and homosexuals. The sociologic concept of marginalization is important in understanding the position of bisexuals in relation to heterosexual and

homosexual communities (Paul, 1984, 1996; Stonequist, 1937). Bisexuals, because they are outside conventional homosexual and heterosexual categories, usually do not have clear group membership. Thus, because they are not fully integrated into either group, they may be considered deviant in both (Paul, 1984).

Biphobia, or negative attitudes toward bisexuals, is found among members of both gay and straight communities. Within the heterosexual community, bisexuals may be subjected to some of the same negative attitudes as homosexuals (Morrow, 1989). Istvan (1983) used bogus profiles of stimulus persons to examine the effects of sexual orientation and behavior on research participants' judgments of people. All stimulus persons with any homosexual experience were viewed more negatively than those with exclusively heterosexual experience. Stimulus persons who had participated in all heterosexual activities and only one of four homosexual activities were judged more favorably than those who had participated in all heterosexual activities and two or more homosexual activities. Thus, tolerance for bisexuals may be greater when the homosexual activity is low. It is important to note that not all heterosexuals have negative reactions to bisexuals. Blumstein and Schwartz (1974) reported that in more liberal heterosexual groups, bisexuality may be acceptable, and even encouraged. More recently, however, the HIV epidemic has added to heterosexuals' concerns about bisexual behavior (Ochs, 1996). Through their female partners, bisexual men are seen as a conduit for HIV into the heterosexual community (Ochs, 1996).

Negative attitudes toward bisexuals are also seen among members of homosexual communities. Homosexuals commonly consider bisexuality as an acceptable transitional identity for people who are coming out (Rust, 1993b). However, the long-term use of the identity may be viewed as a refusal to accept true homosexual identity (Morrow, 1989; Ochs, 1996). Additionally, homosexuals may view involvement with a bisexual partner as emotionally dangerous because it may be assumed that bisexuals place more value on heterosexual relationships (Morrow, 1989; Ochs, 1996). Bisexual women may also be seen by lesbians as dangerous sex partners because of HIV risk (Ochs, 1996; Stevens, 1994).

In addition to the biphobia among members of the heterosexual and homosexual communities, internalized biphobia has recently begun to be discussed (Hutchins, 1996; Ochs, 1996). Although internalized biphobia is mentioned in theoretical writings and in accounts by clinicians, we were unable to find data on the topic. Internalized biphobia may occur because

there are few bisexual role models, and persons who identify as bisexual may feel isolated (Nichols, 1988). Bisexuals may choose to publicly label themselves to fit into a community, whether homosexual or heterosexual, and only privately label themselves bisexual (Hutchins, 1996; Ochs, 1996). Consequently, there may be conflict when their partner's sex does not match the community in which the person spends most of his or her time. Additionally, theorists in the United States have suggested that bisexuals may feel shame when they behave in ways that perpetuate negative stereotypes about bisexuals as a group, for example, that they are not monogamous (Ochs, 1996).

Perhaps partly as a response to biphobia, and to establish a political agenda separate from that of homosexual communities, bisexuals have begun to organize in the United States, and there is some evidence of such a movement in Canada (Barr, 1985; Hutchins, 1996; Myers & Allman, 1996; Rubenstein & Slater, 1985). An early example of this in the United States is the San Francisco Bisexual Center, which was established in 1976 to "offer a base of support and sense of community for people who were either defining themselves as bisexual, or exploring bisexuality as an option" (Rubenstein & Slater, 1985. p. 227). Since then, social and political bisexual organizations have proliferated, including some women's groups such as the Boston Bisexual Women's Collective and the Chicago Bisexual Women's Network (Hutchins, 1996; Nichols, 1988; Rust, 1993b). One hurdle to bisexual organizing has been distinguishing the bisexual movement from the gay and lesbian movement (Hutchins, 1996). Indeed, the relationship between gay and lesbian communities and bisexual communities, where both exist, has been complicated. With the growing strength of bisexual communities, members of the gay and lesbian communities may become increasingly concerned about a threat to their social and political territory (Hutchins, 1996; Rust, 1993a). Social and political groups that include homosexuals and bisexuals have emerged recently in both countries. These groups, which advocate for an expanded and more inclusive sense of sexuality, often describe themselves as queer (Hutchins, 1996). In another move, many gay and lesbian organizations in the two countries have added bisexual to the name of their organization in an attempt to be more inclusive.

Bisexual Behavior and HIV

In addition to this research on issues of identity and community, there has been increased empirical and theoretical interest in subgroups of persons who engage in bisexual behavior. Researchers have proposed various patterns of bisexual behavior, most of them focused on male bisexual behavior (Ross, 1991; Zinik, 1985). Ross (1991) proposed a multicultural taxonomy of male bisexual behavior that includes eight patterns. *Defense bisexuality* occurs in societies where homosexuality is stigmatized and is used to hide homosexual activities or as a stage in coming out that is seen as more socially acceptable. A putative societal reaction to homosexuality may be one explanation of defense bisexuality (Ross, 1991). Homosexual activity that occurs because there are few sexual outlets (same-sex institutions, such as prisons), for financial reasons (sex work), or as an anonymous sexual outlet has been termed *secondary homosexuality*. In this pattern of bisexuality, there is often no homosexual or bisexual identification. A third pattern of bisexuality occurs when there is *equal interest in male and female partners*. Here, the partner gender is less important than situational or personal factors. Because partner gender is not relevant to sexual experiences, sexual identity may be termed merely "sexual" rather than heterosexual, homosexual, or bisexual (Paul, 1996). *Experimental bisexuality* may occur only once or twice in an individual's lifetime and is not associated with a homosexual or bisexual identity. In addition, the sexual activity may take place under disinhibiting conditions, such as alcohol or drug use. *Technical bisexuality* occurs in sex with men who present themselves as women or who have had gender reassignment. In Latin bisexuality, the homosexual role is seen as taking the receptive (or feminine) role in sex; the insertive partner is not stigmatized as long as he also has heterosexual sex. *Ritual bisexuality* is found in societies where homosexual behavior is used as an initiation rite for young men. In societies where there is no alternative to marriage, homosexual activity takes place anonymously, away from the family living area; Ross called this pattern *married bisexuality*. No similar taxonomy exists for female bisexual behavior. The very limited information on the patterns of bisexual behavior in women comes from studies of subgroups of bisexual women, such as those in marriages, or from clinicians (Dixon, 1985; Nichols, 1988).

Many patterns of bisexual behavior have implications for HIV transmission. In many of the following situations, the same sex behavior is for economic support, engaged in secretly, or as part of sexual

experimentation. These conditions make delivery of HIV prevention messages particularly challenging. Again, most of the thinking has focused on male bisexual behavior and HIV transmission. Some persons engage in bisexual behavior in the context of survival sex or sex work (Doll & Beeker, 1996; Ross, 1991). Much of the data on bisexuality and survival sex have focused on male sex workers (Doll & Beeker, 1996). Researchers have consistently shown that a substantial portion of male sex workers who have same-gender partners do not identify themselves as gay and continue to have female sex partners (Boles & Elifson, 1994; Morse, Simon, Osofsky, Balson, & Gaumier, 1991; Pleak & Meyer-Bahlburg, 1990). Therefore, these men may engage in same-sex HIV risk behaviors in the context of sex work while also having female sexual partners. Additionally, prevention messages targeting gay men may not reach male sex workers because many do not identify as gay.

Several researchers have found that male bisexual behavior is more prevalent among African-American and Latino men than among White men in the United States (Carrier, 1985; Chu, Peterman, Doll, Buehler, & Curran, 1992; Wright, 1993). Researchers have proposed that the increased prevalence of male bisexual behavior in communities of color may be attributed to community norms that define gender roles and pressure men to have female partners (Binson et al. 1995; Doll & Beeker, 1996). In communities of color, men who have sex with men (MSM) may engage in their homosexual activity secretly and also have wives and children (Peterson, 1992; Wright, 1993). In Latino and African American cultures, male same-sex contact may be more acceptable for the man who is the insertive partner during anal sex (Carrier, 1985; Ross, 1991) and for men who also have female partners (Wright, 1993). Additionally, the high rates of bisexual behavior for men of color may reflect their differential participation in situations associated with same-sex contact, such as prolonged isolation from women because of incarceration (Doll & Beeker, 1996). Many of the situations where same-sex behavior is secretive may make HIV prevention messages harder to deliver, thus contributing to rates of HIV infection in bisexual men of color and their female sex partners.

It is not known whether the higher prevalence of bisexual behavior among men in communities of color is also found among women in communities of color in the United States. It is also unclear whether such patterns hold true for Canadian communities of color. In one Canadian study on the determinants of ethnoculturally specific behaviors related to HIV, the pressure to conform in ethnic communities to cultural norms was high, and MSM were described in a variety of ways that were inconsistent with westernized labels of gay men

(Manson-Singer, Adrien, Brabazon, & Maticka-Tyndale, 1996). For example, self-labeling as heterosexual or bisexual rather than homosexual was related to the stigma associated with being a gay man. The authors suggested that this may represent both a denial of the existence of homosexuality in these communities as well as the belief that for some men same-gender sexual contact may be opportunistic behavior, and not an act expressing one's sexual orientation.

Bisexuality in other contexts also has implications for HIV risk. Sexual-identity exploration often occurs in late childhood or adolescence (Coleman & Remafedi, 1989) and often includes sexual contact with both male and female partners (Doll & Beeker, 1996; Rosario, Hunter, & Gwadz, 1995). Studies of gay and bisexual male youth suggest that they may seek anonymous sex (Roesler & Deisher, 1992) and have survival sex (Pennbridge, Freese, & MacKenzie, 1992) and thus be at particularly high risk for HIV. During identity exploration female youth may experiment sexually with the young gay and bisexual men in their social circles (Rosario, Hunter, & Gwadz, 1995). Therefore, sexual-identity exploration during adolescence or early adulthood may take place at a time when youth are particularly vulnerable (Remafedi, 1987) and when they are engaging in behaviors that may put them at risk for HIV infection (Doll & Beeker, 1996).

In summary, the relationship between bisexuality and HIV risk is complicated. There is very little societal support for the development of bisexual identity and the expression of bisexual behavior. Additionally, persons who identify themselves as bisexual or who engage in bisexual behavior seem to be a heterogeneous group. At the same time, many patterns of bisexual behavior, and the factors influencing the expression of that behavior, may have implications for HIV transmission. Therefore, the contexts of bisexual behaviors and their intersection with HIV risk behaviors must be explored and have been examined to some extent in male bisexuals. However, female bisexuality and HIV risk has only recently begun to be discussed. Historically, studies of sexual HIV risk in women have almost exclusively focused on heterosexual behavior.

Methodologic Issues in Studying Bisexuality

Understanding the relationship between bisexual behavior and HIV risk is made particularly difficult by the paucity of empirical literature, and by conceptual and methodological issues that continue to affect research on this

topic. Doll (in press), in a recent examination of the peer-reviewed literature on male and female bisexuality published in the United States from 1986 through 1996, showed that most of the 166 articles that mentioned bisexual men aggregated gay and bisexual men into a single category. Of the total, eight articles included information exclusively on bisexual men, and only 21 assessed differences between gay and bisexual men. Forty-eight percent of these 29 articles with specific mention of bisexual men were HIV focused.

In this same 10-year time period, only 61 published articles mentioned bisexual women: 32 aggregated information on lesbian and bisexual women, 3 reported exclusively on bisexual women, and 22 compared lesbians and bisexual women. Of the 25 articles that reported on bisexuality, only three were HIV focused.

The scarcity of research literature on these populations is puzzling but may be related, in part, to three phenomena: (a) the tentativeness of social science to accept sexuality research, generally; (b) the continued ambiguity in the field over what constitutes bisexuality; and (c) the relatively slow theory development related to bisexuality, particularly as it relates to women (Rust, 1993a). Many social scientists have ignored or rejected sexuality research as an important area for investigation, seemingly because of its applied focus and apparent lack of a theory base. Societal norms, phobias, and stigma (biphobia and homophobia) may also work to divert research from this area to other, less marginalized issues.

In our discussion of the various theories and taxonomies of bisexuality, we noted the continuing ambiguity about what constitutes bisexuality. This ambiguity has been complicated by yet another theme that has emerged in the bisexuality literature, namely the tendency for studies to aggregate diverse groups of persons who are behaviorally similar (e.g., they engage in sex with men and women) into a single group, bisexuals. In many studies, the construct of bisexuality is defined by a single, very narrow feature, namely gender of partners, without consideration of the differences in the psychological and social contexts of the lives of these men and women. This tendency may be a consequence of the fact that most of the recent literature on these populations has been HIV focused and dominated by biomedical and epidemiologic models, methods, and selection criteria. Regardless of the genesis, both the definitional ambiguity and the very narrow behavioral definition hamper our ability to gain a fuller understanding of the range of bisexualities, as well as the cultural meanings associated with bisexual sexual behavior and identity. In turn, they also hamper theory and intervention development.

Our understanding of the sexual behaviors of bisexual men and women is also hindered by the methodologic limitations of published research. The lack of a generally agreed-upon definition of bisexuality is evident in the methods used to recruit study participants. The first inventory of major Canadian studies on male bisexuality was reported by Myers and Allman in 1996. In most studies, behavioral definitions were used. In six studies bisexuality was measured on the basis of behavior in the past year, in two it was based on behavior in the preceding 5 years, and in two it was based on lifetime experience. Not surprisingly, the proportion of bisexual men in such studies differs by definition. As an alternative to behavioral measures, self-identification as bisexual was used in five studies. Measures of sexual attraction, sexual fantasy, sexual desire, and sexual satisfaction were not commonly used. Furthermore, even though several researchers have used more than one measure of bisexuality, little attention has been given to the relationship between different measures, including the comparison of behavioral definitions based on different time frames or how behavioral definitions relate to other measures of sexual orientation, such as self-identification, sexual attraction, and sexual satisfaction.

Finally, to complicate the picture, neither the definitions of sexual contact nor sampling methods have been standardized across studies. These concerns are not unique to the study of bisexuality, but they complicate an already confusing area of research. Some researchers have defined sexual contact as intercourse to the point of orgasm; others did not require orgasm, and still others failed to clarify how they define sexual contact. Most have also used convenience samples, making interpretation and generalization of study results difficult at best (Binson et al., 1995).

Male Bisexual Behavior: The Canadian Experience

Distribution and Characteristics of Male Bisexuals

Unlike studies in the United States, the United Kingdom, and other European countries, no major studies of sexuality and sexual behavior have been conducted on the entire Canadian population. Ornstein's (1989) random general-population telephone survey, AIDS in Canada, focused primarily on knowledge and attitudes related to HIV. However, he found that the proportion of men who reported sexual activity in the preceding 5 years with male and female partners was 0.9%. In a national youth survey,

the Canada Youth and AIDS Study, 1% of male college students and 1% of male high school dropouts reported that they were bisexual (King et al., 1991). In a companion study Radford, King, and Warren (1991) found that 4% of male street youth reported a bisexual orientation.

Studies that have been focused specifically on MSM and injecting drug users (IDUs) offer additional information on bisexuality. The results of the Canadian Survey of Gay and Bisexual Men and HIV Infection (National Men's Survey), in which men were recruited through gay bars, bathhouses, and community dances in 35 Canadian cities in 1991 (virtually all cities where there was an identifiable gay community or organization), were that 54% of men reported sexual activity with both a man and a woman in their lifetime (Myers, Godin, Calzavara, Lambert, & Locker, 1993; Myers, Godin, Lambert, Calzavara, & Locker, 1996). According to these researchers, approximately 13% of this study population reported that they were currently bisexual. Additionally, in an early Toronto (Canada's largest city and the city with the greatest number of HIV and AIDS cases) cohort study of MSM with an HIV-infected male partner, 32% reported sexual activity with men and women in their lifetime (Calzavara et al., 1991; Coates et al., 1988).

In two Toronto-based studies of IDUs, approximately 6% of male IDUs reported a bisexual identity. In a Montreal study, as many as 17% of the study sample (men and women combined) reported sexual activity with both a man and a woman in the preceding 6 months (Hankins, Gendron, & Tran, 1994a). Also, in a Quebec study of male inmates in medium-security correctional institutions, 13% reported lifetime bisexual activity, and 2% reported bisexual activity in the 6 months preceding incarceration (Hankins, Gendron, & Tran, 1994b).

Additional data on the distribution and characteristics of bisexual men are available from two relatively recent studies of gay and bisexual men: a 1990 venue-based survey of gay and bisexual men conducted in Toronto (Men's Survey '90) and the 1991 national survey of gay and bisexual men (National Men's Survey) (Myers, Allman, Jackson, & Orr, 1995; Myers, Locker, Orr, & Jackson, 1991). The preliminary results from a recently completed study that was focused specifically on bisexual men (the BISEX Survey) are also available.

Men's Survey '90 provided the first comparative analysis of bisexual and gay men. For this study, a convenience sample of 1,295 men were recruited in 12 gay bars and bathhouses in Toronto (Myers et al., 1995). Of this study population, 13% were currently behaviorally bisexual, compared with 48%

who had been exclusively gay all their lives, and 35% who currently were exclusively gay but who had had previous heterosexual experiences. Significant age differences among these groups were found: The currently bisexual group had the greatest proportion of men who were under 24 years of age. This currently bisexual group socialized more in bathhouses than the other two groups and were more likely to live in suburban areas than in the central city.

In addition to what may be learned from the comparison of behaviorally bisexual men with gay men in the Toronto study, the National Men's Survey showed interesting variations by geographic region. In this sample of gay and bisexual men, reports of lifetime sexual activity with men and women differed considerably across the country, from 35% in the province of Quebec to a high of 59% in smaller communities in British Columbia, the prairie provinces, and the province of Ontario. Lower proportions of men who reported current sexual contact with men and women were found in the larger metropolitan areas of Vancouver and Toronto (approximately 10%) than in smaller communities (13% to 16%) (Myers et al., 1993; Myers et al., 1996). In general, the communities with smaller populations had a greater proportion of bisexual men.

Comparison of Bisexual Populations

To shed further light on bisexual men, an in-depth study, the BISEX Survey, was undertaken in Ontario, a province of approximately 11 million persons representing 37% of the total Canadian population. In this study, conducted in mid-1996, an attempt was made to recruit a different, more hidden, population of men who have sex with men and women than had been studied in Canada. In earlier studies, because of venue-based recruitment strategies, the primary focus had always been men who had had at least peripheral identification with the gay community.

In the BISEX Survey, anonymous interviews of approximately 1 hour were conducted province wide by using a 1-800 toll-free telephone line. The telephone line was in operation for 12 hours, 7 days a week for 16 weeks. This telephone interview technique permitted persons in all areas of the province and not just targeted cities to participate. A variety of recruitment approaches were used including display and personal classified advertisements in major national, community, and alternative newspapers, as well as in the gay press; the placement of posters and information brochures in physicians' offices,

sexually transmitted disease (STD) and HIV testing centers throughout the province; and targeted recruitment in selected communities through commercial venues such as theaters, bars, and parks.

Table 1

Characteristics of Bisexual Men in the BISEX Survey (1997) and the National Survey of Gay and Bisexual Men (1991)

	BISEX Survey		National Men's Survey
	Ontario (N = 1,314)	Ontario (N = 147)	Outside Ontario (N = 372)
Age			
< 20	4.6	12.9	10.5
21-25	10.4	26.4	26.5
26-30	14.7	25.0	24.3
31-35	19.9	13.6	12.7
36-40	16.7	8.6	11.6
41-45	13.6	8.6	7.5
46-50	7.6	3.6	4.4
> 50	12.4	1.4	2.5
Education			
< Secondary	42.3	28.5	31.2
Some or complete college	48.0	58.4	57.6
Some or complete graduate	9.7	13.1	11.1
First Language			
English	95.3	81.3	62.2
French	3.7	9.4	33.4
Other	1.0	9.4	4.4
Income			
< \$20,000	18.9	33.6	40.1
\$20,000-\$39,999	34.3	37.9	38.1
> \$40,000	46.8	28.6	21.8
Marital Status			
	46.0		
Socializing			
Gay bar attendance			
< 1/Week	10.3	52.1	53.0
Never	49.0	6.3	4.7
Bathhouse attendance			
< 1/Week	2.9	4.9	9.1
Never	69.5	56.3	56.6

In the 4 months of data collection, 1,314 interviews were conducted. Preliminary descriptive findings of the study are summarized in Table 1 and are compared with the subgroup of bisexual men recruited in the same province as part of the National Men's Survey, and the subgroup of bisexual men living elsewhere in Canada in the same survey. The comparisons in the table show that a lower proportion of men recruited for the BISEX Survey were aged 20 and under, and a greater proportion were over age 50. The men in the BISEX Survey had less education than in either subgroup of the National Men's Survey, and a higher proportion reported that their first language was English. This is not surprising because the province of Quebec, where French is the primary language, was included in the National Men's Survey. As well, the National Men's Survey was conducted in French and English, Canada's two official languages, whereas English was the only language used to recruit and interview the respondents in the BISEX Survey. The respondents in the BISEX Study also had higher incomes than those in the national gay and bisexual men's study (that, in part, may be related to age).

Generally, respondents of the BISEX Survey socialized in gay bars and bathhouses less often than respondents in the National Men's Survey. Estimates of bisexual behavior are also available from these two surveys because the two studies used comparable behavioral definitions. Of the men in the BISEX sample, 84% reported that they had participated in sex with male and female partners in the preceding year. In the National Men's Survey, 13% were involved in sex with both genders in the past year. These findings suggest that the BISEX Survey method and recruitment strategy effectively captured a different population from those in earlier studies of bisexual men.

HIV Infection and AIDS Rates

In Canada, information on HIV prevalence is not systematically recorded at a national level because of differences in reporting policies in the provinces, which have primary responsibility for health. Thus, there are no national estimates of HIV prevalence for bisexuals.

To understand the impact of HIV on bisexual men, it is necessary to rely on HIV testing data. Again, national data on this are mixed as this information is available only in some provincial jurisdictions. In this section we focus only on data from the province of Ontario. Although this province is the largest in Canada, it may not be representative. Further, these data, for the most part, reflect the number of tests, not the number of individuals, and are biased in

that they represent a self-selected group of men who chose to be tested for HIV.

Table 2

Self-Reported Sexual Behavior and Test-Seeking of Bisexual Men in the BISEX Survey (1997) and the National Survey of Gay and Bisexual Men (1991)

	BISEX Survey		National Men's Survey	
	Ontario (N = 1,314)	Ontario	Outside Ontario (N = 147)	Ontario (N = 372)
Sexual Risk				
Sex with Men				
No anal		35.2		34.2
Protected anal only	22.5[a]	42.7		42.8
Unprotected (at least once)		22.1[b]		23.0[b]
Sex with Men and Women				
Protected or safe both	24.4			
Unsafe women only	53.1			
Unsafe men only	4.1			
Unsafe both	18.4[a]			
Tested for HIV Antibody	55.8	52.8		62.8
HIV Antibody Positive	1.1	9.6		9.8

[a] Past year

[b] Past 3 months

HIV antibody testing was introduced in 1985 in Ontario, and all tests are carried out by the provincial government laboratory. The province has three mechanisms for the reporting of HIV: anonymous, nonnominal, and nominal. For the 18-month period from January 1992 through June 1993, 10% of men who were tested anonymously in the province of Ontario were behaviorally defined as bisexual compared with 1% of men tested nonnominally, and 0.4% of men who tested nominally (Ontario Ministry of Health, 1994). The seroprevalence rate for tests of bisexuals was lower for those tested anonymously (3%) compared with those who had nonnominal or nominal tests (approximately 5% each). The prevalence rate was generally lower than for exclusively homosexual men: rates for the same testing modes for homosexual men being 6%, 8%, and 6%, respectively. These figures seem to suggest that

bisexual men prefer to be tested anonymously, even though they may have lower rates of HIV seropositivity.

To contextualize these testing data, we describe data on testing behavior, based on the self-report of men who participated in the BISEX Survey and the National Men's Survey. A major limitation in interpreting provincial HIV testing data arises from the lack of information on the size of the bisexual population. As shown in Table 2, in the 1991 National Men's Survey, approximately 53% of bisexual men in Ontario and 63% outside Ontario had been tested for HIV, compared with 66% of gay men in Ontario and 65% of gay men recruited elsewhere in Canada. In the BISEX Survey only 56% had been tested. This difference is not surprising, considering that the two populations apparently have distinct sociodemographic characteristics and, as we noted, patterns and venues for socialization. It is possible that the influence of peer and community norms are different for the two samples and may account for some of the variation in the proportion of men who sought HIV testing. Further analyses of determinants of risk and protective behaviors, including HIV testing, are critical to reaching this more hidden population of bisexual men.

With regard to AIDS cases, as of the second quarter of 1996, Health Canada estimated that Canada (population, approximately 30 million), had an adjusted, cumulative total of 20,137 AIDS cases, approximately 89% of which were concentrated in three provinces--Ontario (40%), Quebec (33%), and British Columbia (17%) (Laboratory Centre for Disease Control, 1996). Adult men accounted for 93% of the estimated AIDS cases. For 79% of adult male cases sexual contact with a man was identified, and for another 5% there was both sexual contact with a man and injection drug use. Bisexual men are still not distinguished as a subgroup in AIDS case reporting; they are grouped with homosexual men. Data on the racial or ethnic origins of men with AIDS are not available. These demographic data have been collected only since the late 1980s. Furthermore, their reliability has been questioned because they are based on physician's perceptions (Adrien et al., 1996).

HIV-Related Risk Behaviors

Data on HIV-related risk behaviors have only recently become available for samples of bisexual men in Canada. In Table 2, the sexual risk-taking behavior of BISEX Survey respondents with male and female partners is compared with the behavior of bisexual men of the National Men's Survey.

The time frames for the reporting of sexual behavior differ for the two studies: Data from the BISEX Survey are based on a 12-month period before the interview, and the National Men's Survey is based on a 3-month period. The reported level of risk in the two studies must be considered in the context of the limitations of the comparison. Even though just under one fourth of each of the study populations reported at least one episode of unprotected anal intercourse with men, the actual level of risk for the bisexual men in the BISEX Survey may be lower, considering the longer time frame for the reporting of risk in that study. The bisexual men's risk taking with their female partners is also of interest in the BISEX Survey. The table shows that the level of unprotected intercourse (anal or vaginal) was considerably higher with their female than with their male partners. As information on sexual behavior with women was not collected in the earlier survey, it is not possible to compare bisexual men's risk taking with women in the two surveys.

An assessment of additional data permits us to compare sexual risk taking with male partners across the different sexual orientations. In the Men's Survey '90 conducted in Toronto, the bisexual subgroup reported less unprotected anal intercourse in the preceding 3 months (13%), compared with 17% of the men who had been exclusively gay all their lives, and 23% of gay men who had had heterosexual experiences (Myers et al., 1995).

The province of Ontario's anonymous testing program also provides a unique opportunity to examine risk factor information on a subgroup of bisexual men. Detailed risk information, collected via a data sheet completed by the test counselor, is available on approximately 50% of tests. For the 18 months from January 1995 through July 1996, 601 bisexual men (10% of all tests), 1,100 homosexual men (18% of tests), and 3,594 heterosexual men (60% of tests) were identified. For 12%, sexual orientation was not determined. A difference in the percentage of repeat tests was found between the three groups for which sexual orientation was known. Specifically, 43% of tests of bisexuals were repeats, compared with 56% of the tests of gay or homosexual men and only 24% of tests of heterosexuals. The higher rate of repeat testing of the gay and bisexual men seems to reflect their different perception of risk. The rate of HIV infection for bisexual men (2%) was less than that for homosexual men (4%), but higher than that for heterosexual men (0.4%). Comparison of potential risk factors for HIV transmission associated with the three groups shows that sexual contact was the greatest risk factor in all groups. Although the percentages are small, the bisexual group reported a significantly higher proportion of needle use (5%), compared with 0.5% of

homosexuals and 3% of heterosexuals. Explanations for these differences are difficult to ascertain though, as we note later, similar results have been found in the United States for samples of bisexual men. No data have yet been reported on determinants of risk behaviors of bisexual men in Canada.

Prevention Approaches: Scientific Data and Programs

Educational and prevention messages have been disseminated in Canada through a variety of methods: print media, television, outreach, HIV information hotlines, and HIV testing and counseling programs. We have very little information on the response of bisexual men to information transmitted through these various means and almost no evaluations of the effectiveness of different measures for this population. The absence of a clear understanding of the continuum of sexuality, the dearth of knowledge about the prevalence of bisexual behavior, and the hidden nature of this behavior present a dilemma for HIV prevention for this group. Because of the lack of understanding about bisexuality, AIDS fear, and biphobia, many of the early discussions and plans to address HIV prevention for behaviorally bisexual men were delayed (Myers & Allman, 1996). Indeed, at the beginning of the HIV epidemic, education and prevention messages for bisexual men were assumed to be covered in generic educational initiatives addressed to all MSM.

In addition to an early focus of preventive education on gay men, educational posters in several communities across Canada portrayed various combinations of male and female figures, along with messages such as "Know your partners." Such initiatives have been controversial and have been criticized for providing misleading information about risk assessment and being too oblique in their presentation of the message.

In Ontario, which has the greatest number of AIDS cases in Canada, a more straightforward approach was taken in 1990 by directing public service announcements to bisexuals (Myers & Allman, 1996; Ontario Ministry of Health, 1992). This campaign was developed in response to a suggestion by the ministry's advisory committee on AIDS. The bisexual commercial had as its objectives to (a) make bisexual men aware of the risk of contracting AIDS; (b) encourage responsible sexual behavior toward male and female partners; (c) encourage bisexual men to talk to their partners, especially female partners; and (d) make female partners of bisexual men aware that they themselves were at risk. This was not an easy venture because of the lack of

research on factors that motivate behavior and behavior change in this group. It also was conceptually difficult to know how to typify the bisexual man. From focus groups with bisexual men, it was learned that their concerns were not related to disclosure of same-sex activity to the spouse or to self-protection, but rather to concern for their family. This informed the development of the first paid television advertisement portraying a bisexual man returning home after a sexual encounter with a man and expressing anxiety for not having used a condom and his concern about what this might mean for his spouse and family.

In community-based education initiatives for gay and bisexual men, initial attempts focused primarily on gay organizations and men who had some identification with that community. In the early 1990s, the phrase *gay and bisexual* came to be replaced with *men who have sex with men*. This designation focused some initial attempts to address a broader cross-section of men, including bisexual men, although educational activity beyond the gay community was limited. Gradually, programs designed to provide information to more hidden MSM, for example, outreach through parks and other cruising areas, have been introduced. Programs of this type have been introduced in the three largest metropolitan areas in the country and, to a limited extent, in cities in half of Canada's 10 provinces. Further, to provide a more comprehensive approach to prevention initiatives for these men, coalitions of AIDS services organizations (which assume primary responsibility for educational program development for MSM) have been formed to explore how to more effectively reach marginalized groups of men, including ethnic minorities.

Finally, anonymous HIV information hotlines are a primary support and source of information for bisexual men in Canada. Sophistication is increasing in attempts to attract men to use these services. Because most communities have no clearly definable or organized network of bisexual men, communication with these men as individuals is important. The BISEX Survey demonstrated the effectiveness of personal classified advertisements as a means of contacting a sizable group of MSM who do not identify with the gay community (Allman et al., 1996). This method is being introduced for informing bisexual men about the services available through one provincial hotline, with apparent effectiveness (City of Toronto, Department of Public Health, personal communication, 1996). Finally, HIV testing and counseling are also perceived to be increasingly important in HIV prevention. HIV antibody testing is a nationally funded program and awareness of the importance of nonnominal and anonymous testing protocols

is increasing, particularly for highly stigmatized groups such as bisexuals (Jurgens & Palles, 1997).

The United States Experience

Distribution and Characteristics of Male Bisexuals

Estimates of the prevalence of bisexual contact in the United States are available from a growing body of national surveys. Lifetime estimates of this behavior range from approximately 1% to 7% of men, depending upon the questions on the survey and whether bisexual contact has been measured since puberty, age 18, or the past 5 or 10 years (Billy, Tanfer, Grady, & Klepinger, 1993; Binson et al., 1995; Laumann, Gagnon, Michael, & Michaels, 1994; Rogers & Turner, 1991; Smith, 1991). Greater consensus has been reached on the estimates of bisexual contact in the past year; according to most surveys, fewer than 1% of men have reported such recent behavior (Laumann et al., 1994; Rogers & Turner, 1991). Reinisch, Ziemba-Davis, and Sanders (1990), in their review of studies of bisexual behavior in gay-identified men, projected that 62% to 79% of gay-identified men report any history of heterosexual contact and that 15% to 26% of these men have been married. Few data on demographic characteristics of bisexual men have been published, and findings should be viewed with caution, given the small sample size in most analyses. However, a recent synthesis of results from six national probability surveys showed that, compared with exclusively homosexual men, bisexual men were more likely to be younger, African American, married, and to have less education (Binson et al., 1995).

HIV Infection and AIDS Rates

The prevalence of HIV infection for bisexual men in the United States is unknown. Through December 1996, 76,075 men with a history of bisexual behavior since 1977 had been reported with AIDS to the Centers for Disease Control and Prevention (CDC). This figure represents 21% of the cumulative total of AIDS cases in men who have reported sex with men. AIDS case reports and more in-depth studies of persons with AIDS suggest that bisexual contact is more likely to be reported by African American and Hispanic men than by White men (Diaz et al., 1993). These same data show that bisexual

men with AIDS are twice as likely as exclusively homosexual men with AIDS to report injection drug use.

The role of male bisexual behavior in the transmission of HIV to female partners is uncertain. Overall, among women for whom data on partner's risk are available, 14% of all women with AIDS and 25% of women infected through heterosexual contact reported a male bisexual partner. The percentage of women with AIDS who were infected through heterosexual contact and who reported sexual contact with a bisexual man increased substantially from 1987 to 1995 (White women, 5% to 11%; African American women, 3% to 15%; and Hispanic women, 6% to 16%).

Additional research suggests potential heightened risk for female partners. Higher rates of anal sex with female partners have been reported by bisexual men than by exclusively heterosexual men (Beeker, Schnell, Higgins, Sheridan, & O'Reilly, 1993; Kalichman, Roffman, Picciano, & Bolan, 1997; Padian et al., 1987). Bisexual men with female primary partners are also more likely to report unprotected anal intercourse with female partners than are bisexual men without female primary partners (Kalichman et al., 1997). As many as 50% to 75% of bisexual men may not inform female partners of their male sexual contacts (Freeman et al., 1992; Kalichman et al., 1997; Roffman et al., 1990; Stokes, McKirnan, Burzette, Vanable, & Doll, 1996; Wolitski, Reitmeijer, & Goldbaum, 1996). However, despite these data, AIDS case reports through 1996 show that only 2,574 women with AIDS, or fewer than 8% of women infected through heterosexual contact, were probably actually infected through sexual contact with a bisexual man since 1977 (Centers for Disease Control and Prevention, 1996). Hence, at this point in the epidemic in the United States, widespread transmission of HIV from bisexual men to heterosexual women has probably not occurred or has not been detected.

HIV-Related Risk Behaviors

Few quantitative studies of male bisexual behavior have been published in the United States and, of these, risk behaviors have been examined in only a few. Research using national probability samples, as well as longitudinal surveys addressing the extent of behavior change by bisexual men, is also lacking. Similarly, determinants of risk behaviors in this population have been inadequately examined.

In a diverse group of cross-sectional studies sexual risk behaviors with male partners of bisexual men have been examined. Overall, two trends

emerge from this research. First, many bisexual men engage in relatively high rates of unprotected anal sex with male partners (e.g., approximately one third of bisexual men recruited in recent studies using community samples (McKirnan, Stokes, Doll, & Burzette, 1994), bar samples (Heckman et al., 1995), and samples recruited through media campaigns (Kalichman et al., 1997). Later in the section we note four contexts of bisexual behavior in which we believe these rates of sexual risk behaviors with male partners may be particularly high. Second, bisexual men probably engage in relatively fewer episodes of sexual behavior with male partners than do exclusively homosexual men; thus, the risk of sexual transmission from a male partner may be lower for bisexual men (CDC, 1993; Doll et al., 1992; Lever, Kanouse, Rogers, Carson, & Hertz, 1992; Roffman et al., 1990; Stokes, Taywaditep, Vanable, & McKirnan, 1996). HIV seroprevalence data from Seattle provide partial support for this hypothesis. Of 5,480 men recruited for a prevention study, seroprevalence was highest for self-identified gay men (27%), followed by bisexually identified (12%) and heterosexually identified (8%) MSM (Wood, Krueger, Pearlman, & Goldbaum, 1993). Although these figures may largely reflect the high infection rates in the communities in which these men find sex partners, they may also suggest higher rates of risk behaviors for gay-identified men.

In a second group of studies, lower levels of sexual risk behaviors with male than with female partners was described (Ekstrand et al., 1994; Kalichman et al., 1997; McKirnan et al., 1994; Stokes, McKirnan, & Burzette, 1993; Wolitski, 1993). In a cohort of more than 500 African American and White bisexual men (McKirnan et al., 1994), 31% reported unprotected anal sex with a man, and 42% reported unprotected vaginal sex with a woman in the past 6 months. No racial differences were found in the rates of unprotected anal sex with male partners, though more African American men reported unprotected vaginal sex and unprotected penetrative sex with both a man and a woman. Of men recruited from public cruising areas in southern Los Angeles County, 56% of nongay-identified men (most of whom were bisexual) reported condom use every time during anal sex with main male partners and 71% of the time with casual male partners. In contrast, only 33% reported consistent condom use during vaginal sex with main partners, and 25% with casual partners (Wolitski, 1993). In a recent report, Kalichman et al. (1997) examined differences in risk behaviors in the past month by bisexual men with and bisexual men without primary female partners. Although unpartnered men reported more sexual involvement with other men, partnered men were

equally involved with male and female partners. Partnered men were less likely to report engaging in unprotected anal sex with men, but more likely to report unprotected vaginal, anal, and oral intercourse with female partners.

In addition to these studies assessing the prevalence of risk behaviors, Doll and Beeker (1996) identified four contexts in which male bisexual behavior is more likely to occur and more likely to be associated with greater HIV risk: (a) male sex work (Elifson, Boles, & Sweat, 1993; Morse, Simon, Balson, & Osofsky, 1992; Morse et al., 1991; Simon, Morse, Balgon, Osofsky, & Gaumier, 1993); (b) injection drug use (CDC, 1995a; Lewis & Watters, 1994); (c) sexual identity exploration (Hays, Kegeles, & Coates, 1990; Lemp et al., 1994; Reinisch et al., 1990); and (d) culturally specific gender roles and norms that may characterize some African American and Hispanic communities in the United States (Peterson, 1992; Stokes, Vanable, & McKirnan, 1996a; Stokes, Vanable, & McKirnan, 1996b; Wright, 1993). The data reviewed by Doll and Beeker (1996) suggest that men who sell sex to men engage in high rates of sexual risk behaviors with male and female, paying and nonpaying partners, often in conjunction with injection drug use. HIV seroprevalence rates have also been found to be disturbingly high for younger gay men. Many of these younger men may engage in sex both with men and with women. During this period of sexual identity exploration, little emotional support and few role models are available to help youth negotiate complex choices about sexual behaviors and risk. Finally, an accumulating body of evidence suggests that African American and Hispanic men may engage in higher rates of bisexual contact than do White men. Several cultural explanations have been proposed for these higher rates of bisexuality and HIV risk, including homophobia, strong ties to family and ethnic identity, gender role expectations, and attitudes about masculinity. However, further research is needed to clarify the role of each of these and other potential explanations for the observed infection rates.

Determinants of Risk Behaviors

A limited number of studies have been addressed to the correlates of HIV risk behaviors of bisexual men. As has been true in studies of exclusively homosexual men, in these studies researchers have largely emphasized social psychological factors. We know little about the relationship between HIV risk and social structural factors, such as survival needs, gender imbalances, and social network composition, that may be particularly relevant

for bisexual men. Given the very limited number of studies examining determinants, these findings should be considered tentative until further research is conducted with this population of men.

Several researchers have examined factors that have been correlated with HIV risk in samples of gay men. For example, Kalichman et al. (1997) examined self-efficacy for safer sex, social skills, and perceived social norms in samples of gay and bisexual men. Self-efficacy and perceived norms were significantly related to unsafe sexual behaviors; however, the groups differed only in perceived norms. Bisexual men were less likely to view safer sex as normative than were gay men (Kalichman et al., 1997; Stokes et al., 1996a). Consistent with others who have studied gay men, McKirnan, Vanable, & Stokes (1995) reported that sexual risk is higher for bisexual men with primary male partners and when alcohol and drugs are used in the context of sex.

Several researchers have suggested that, contrary to expectation, bisexual men with stronger ties to gay communities may engage in higher rates of unsafe sexual behaviors (Kalichman et al., 1977; McKirnan et al., 1995). Affiliation with gay communities has been variously defined in these studies as involvement in gay organizations, number of gay friends, participation in gay marches, and reading gay literature. Although the strength of the relationship between specific community involvement variables and HIV risk differs by study, researchers have generally supported the hypothesis that greater gay involvement is not necessarily protective for bisexual men. Explanations for the lack of protective effect are unclear but may be related to increased opportunities for male sexual contacts among men with stronger ties to the gay community.

A less clear relationship has been identified between HIV risk and sexual identity. McKirnan and colleagues (1995) found that behaviorally bisexual men who were more strongly gay-identified (as measured on a Kinsey-type scale) were more likely to engage in unsafe sexual practices. In contrast, men who were lower on the scale of gay identity reported fewer male partners and more female partners and were more likely to report that they found male partners in anonymous settings. The authors proposed that men with discordant behavior and identity may be more tentative about their male sexual contacts and therefore may be safer overall. In contrast, Doll et al. (1992) found that of HIV-seropositive bisexual men who engaged in any unprotected anal sex, those who were heterosexually identified were the least likely to use condoms with male partners. Differences in samples may largely

account for these results; however, such discrepancies reinforce the tentativeness of findings from the few studies of bisexual men.

Finally, McKirnan et al. (1995) and Stokes, Venable, and McKirnan (1996b) have examined differences between African American and White bisexual men on several dimensions. Black and White bisexual men did not differ in internalized homophobia. However, consistent with hypotheses that homophobia may be greater in African American communities, Black men were less likely to perceive their friends (though not their families) as accepting of their homosexual contacts. Interestingly, however, Black men also perceived that more Black men engaged in bisexual behavior.

Prevention Approaches: Scientific Data and Programs

No data are available from efficacy trials of interventions specifically for bisexual men. In this section, we provide details on an intervention trial targeting nongay-identified MSM and a second intervention for which separate analyses have been conducted for gay and bisexual men. We also describe programs that may be relevant for bisexually active men in general or for bisexual men in the four high-risk contexts that Doll and Beeker (1996) described. There are no data on the effectiveness of these programs or the extent of exposure of bisexual men to them.

The AIDS Community Demonstration Project is an example of research testing a community-level intervention for nongay-identified MSM. Target populations for this study conducted in Seattle and in Long Beach, California were closeted men, men who experimented with a variety of sexual behaviors, men of color, and heterosexually identified bisexuals. An intervention and a control community of non-gay-identified MSM were used to study the impact of peer outreach and small-media publications, such as pamphlets or newsletters, on condom use with casual male partners. Extensive formative research was conducted to identify population subgroups, settings in which to conduct outreach efforts, and relevant information to include in the small-media messages (Goldbaum, Perdue, & Higgins, 1996). Media consisted of theory-based role model stories that described behavior change efforts by peers of the target population in the community. In the intervention community, consistent condom use (100% use of condoms in the past 30 days) increased significantly, from 52% to 65% for casual male partners and from 10% to 15% for vaginal intercourse with primary female partners (W. Johnson, personal communication, August, 1995). Consistent condom use

declined with both partner types in the control community. Analyses have not been reported for separate groups of nongay-identified MSM.

A second intervention, a 17-week, small-group counseling intervention, targeted men who reported having difficulty engaging in safer sex behaviors. Treatment was focused on coping with situations in which high-risk behaviors were likely to occur. Participants were randomly assigned to a treatment or a waiting-list control condition. Relative to the control condition, the intervention facilitated abstinence ($p = .01$) from unprotected anal and oral sex during the past 3 months among exclusively gay men. Results from bisexual men were in the same direction though not statistically significant, given the small sample size ($N = 32$) (Roffman, Picciano, Wickizer, Bolan, & Ryan, in press).

In addition to reports of these intervention trials, Doll and Beeker (1996) reviewed information on programs that have been, or may be, useful for targeting bisexual men. They suggested that in some locations in the United States, education and support for risk reduction in populations in which homosexual behavior is covert have been provided by health and social service providers or by community outreach to locations where men live, work, socialize, and have sex (Beckstein, 1990; Beeker, 1993). Mobile vans, person-to-person outreach on street corners, and storefront drop-in centers have all been used with some apparent success. In one program, called *Wake Up My Brother*, heterosexually identified men conducted outreach in parks and bars where nongay-identified MSM meet one another (U.S. Conference of Mayors, 1994).

To sustain risk reduction behaviors in bisexual men, organizational support may be particularly useful. For example, bisexuality-oriented organizations or groups may provide opportunities for men to meet, to learn to talk about sex, and to define sexual options (Rubenstein & Slater, 1985). The emergence and growth of bisexual organizations that we noted earlier may facilitate the development of these programs, although bisexual organizations have historically been short-lived.

Gay organizations have also been encouraged to diversify their programs for a range of MSM, including married men, sex workers, youth, and gay men of color. However, perceived negative attitudes toward bisexual behavior may limit the effectiveness of such programs. In a recently published paper, Roffman and his colleagues emphasized that programs targeting bisexual men need to be aware of the unique status of bisexual men within the larger population of MSM (Roffman, Picciano, Ryan, et al., in press). These authors

found bisexual men less likely to enroll in, and more likely to drop out of, telephone and face-to-face counseling interventions. They hypothesized that bisexual men may fear reduced social support from exclusively gay counselors or gay group participants or may fear that issues raised during interventions may not be sensitive to the challenges bisexual men face (Roffman, Picciano, Bolan, & Kalichman, 1997; Roffman, Picciano, Ryan, et al., 1997). Thus, focus on both the contexts and the determinants of HIV risk for bisexual men is probably critical to successfully reaching and retaining bisexual men in HIV prevention efforts. However, as we have noted, little is known about risk behavior determinants for subgroups of bisexual men and how they may differ from those of exclusively gay men.

A limited number of intervention models have been developed for each of the four high-risk subgroups described by Doll and Beeker (1996). Interventions for male sex workers have typically used peer educators to distribute condoms and materials, provide social support, and refer men to services (Miller, 1993). Other intervention components that may be critical for this population are vocational training, drug and alcohol treatment, and training in negotiation skills to increase the man's control over his commercial sex transactions (Simon et al., 1993).

Needle exchange, methadone maintenance, and drug and alcohol treatment facilities are important access points for bisexual men who inject drugs. Interventions at these sites must effectively address both drug and sexual risk with male and female partners. Other important venues for community outreach and the distribution of condoms may include liquor stores and bars, barber shops, video arcades, and commercial or public cruising areas.

Expanded services, including counseling, outreach, and shelter programs, are needed for youth and other men exploring their sexual identity in order to promote self-acceptance and to encourage individuals to access relevant social networks. Youth support groups offering a sense of shared community; positive, gay-identified role models; and emotional support for the coming-out process (Herdt & Boxer, 1993; Martin & Hetrick, 1988) may be provided through gay-identified community organizations. For youth who are bisexually identified or from cultures in which homosexual behavior is particularly stigmatized, the emphasis on gay-identified groups may be inappropriate (Martin & Hetrick, 1988). Anonymous venues may be critical for reaching such youth. Additional programs are also needed for homeless

and runaway youth, many of whom engage in "survival sex" with male partners (Elie, 1993).

Finally, intervention strategies for bisexual men of color must be developed by men in their communities to insure that such programs are compatible with community language, values, and norms. Intolerance of homosexuality may need to be addressed by promoting legal and policy reform. Also needed are training programs for health and social service providers and staff of religious and other community-based organizations to facilitate greater comfort and skill in working with persons with diverse sexual preferences. Because male bisexual behavior is often linked to poverty, substance use, and commercial sex work, especially in communities of color, any effort to change sexual behavior must take into account the social and economic context in which such behavior is embedded (Schilling et al., 1989).

Female Bisexual Behavior: The Canadian Experience

Distribution and Characteristics of Female Bisexuals

Although we have been able to locate some limited descriptions of male bisexuals from research conducted in Canada, the scarcity of information is compounded for data on female bisexuals. No national research has been focused on the study of the sexual behavior of women who have sex with women (WSW), and there are no national sexual behavior or sexuality studies from which to obtain an overview of the characteristics of bisexual women. Female bisexuality was mentioned in Ornstein's 1989 study, *AIDS in Canada*. He indicated that 0.1% of adult women reported sex with male and female partners in the preceding 5 years. This percentage is somewhat lower than the 0.9% of men who reported both types of partners, as described earlier. In the *Canada Youth and AIDS Study* (King et al., 1991), 0.4% of female college students, 3% of high school students, and 5% of a street youth sample reported that they were bisexual. Compared with the rates for the male group, the rates were lower for the college group and similar for street youth. Apart from these data, there is almost no information at a national level. We know little about the individual characteristics of women who have sex with men and women or about their affiliations with lesbian or gay communities or with the "alternative or feminist culture" (Stone, 1996). Further, little is known about the sociodemographic characteristics of bisexual women, including their

income and education, the way they are organized, or how they use health services.

HIV Infection and AIDS Cases

Whereas the need for some understanding of bisexual men has been recognized, this has not been true for lesbians or bisexual women. National epidemiologic data from Canada show that there is not a major HIV epidemic among women, including those who may have had sexual contact with other women. The proportion of AIDS cases in adult women has increased from 4.4% in 1986 to 8.8% in 1996, and 64% of reported AIDS cases in adult women have been attributed to heterosexual sexual risk (Laboratory Centre for Disease Control, 1997). Information on homosexual contact, from which bisexual behavior could be extracted if cross-tabulated with heterosexual risk, is not recorded for women with AIDS in Canada. In view of societal attitudes toward bisexuality, even if such information existed, the reliability of self-reported information on the sexual orientation of women would be questionable. Further, it is doubtful that practitioners submitting information would have explored this aspect in detail.

HIV-Related Risk Behaviors

Many of the deficits in knowledge about WSW are highlighted in a rare study that Brabazon conducted in 1994 in Vancouver with the goal of answering basic questions about the risk situation of these women (Brabazon, 1994). The survey was distributed through women's centers, bars, clubs, bookstores, and restaurants in the lesbian and gay community. A sample of 158 completed surveys was obtained. Of the women, 75% identified themselves as lesbian, and 17% as bisexual. However, of the 88% of women who had been sexually active in the past year, 40% reported that they had had sex with a man and thus could be classified as bisexual.

In Brabazon's study population, 91% reported that they had performed oral sex on a woman in the past 5 years, 23% reported oral sex with both a man and a woman, and 8% reported that they had had oral sex with men only. Although some women reported that they used protection while performing oral sex with women, none reported that they use protection with men. Of the women, 40% had engaged in vaginal intercourse with men in the past 5 years; of those, 56% identified themselves as lesbian, and 44% as bisexual. Only

30% of these women reported always using condoms with male partners, and 23% reported that their male partners never used condoms. Of the 20% of the women who reported anal penetration by a man, 35% reported that they always used a condom and 35% that they never used a condom (Brabazon, 1994).

Even though Brabazon described in some detail the types and range of these women's behaviors with men and with women, much remains unknown about the extent of such relationships. We still do not understand the dynamics of the interpersonal and sexual aspects of these women's relationships with each gender, how these relationships relate to the women's sexual identity, sexual fantasy, and sexual attraction, and the ways in which women's expression of bisexuality differs from that of their male counterparts. Furthermore, we have been unable to identify subgroups of women on the basis of HIV risk as has been done by Doll and Beeker (1996) for bisexual men in the United States.

Additional, detailed information on the characteristics of bisexual women is available from Ontario's anonymous testing database for the period January 1995 through July 1996. During this period, of a total of 4,621 tests of women, 218 (4%) could be classified as bisexual, 1% as lesbian, and 84% as heterosexual. A significant proportion of bisexual women (33%) were under the age of 22. This proportion was lower than for lesbians (7%) and comparable to that for heterosexuals (29%). The higher proportion in the bisexual and heterosexual group followed a pattern similar to that for men, as described earlier. However, greater proportions of women under the age of 22, compared with men, sought HIV testing. The proportion of women who reported possible risk through heterosexual contact was similar across all three sexual orientations (89% of bisexual women, 88% of lesbians, and 90% of heterosexuals reported sex as a possible risk factor). Needle use as a potential risk factor was substantially higher for the bisexual group (7%), compared with 3% for lesbians and 1% for heterosexual women. Without knowing more about the sociodemographic characteristics of these bisexual women and their lifestyle, it is difficult to interpret differences in drug use.

Prevention Approaches: Scientific Data and Programs

Bisexual women have not been the target of any major HIV prevention campaign in Canada. Brabazon (1994) reported that women in her study received information on HIV transmission and prevention most frequently

from gay and lesbian and mainstream publications. Many also learned through friends or through someone they knew to be HIV-seropositive. For this group of women, the preferred sources of information were those that did not require direct contact with another person.

Brabazon commented that WSW in Canada have received conflicting messages about the risk of transmission and have been reassured by public health educators, physicians, and AIDS service organizations that they are not a risk group. However, the assumption that oral sex with women is the principal transmission route for WSW may be misleading. Because of this emphasis, other possible sources of risk, such as the use of unclean needles, the use of infected sex toys, and sex with men, may be denied. Indeed, as we note in the next section, epidemiologic studies conducted in the United States and Europe have suggested that the main HIV risk for bisexual women is sexual contact with men.

The United States Experience

Distribution and Characteristics of Female Bisexuals

The prevalence of female same-sex behavior in the general population has been estimated from a population-based survey of adults in the United States (Laumann, Gagnon, Michael, & Michaels, 1994). In the National Health and Social Life Survey, 9% of 1,749 randomly selected women reported adult same-gender sexuality (defined as being sexually attracted to persons of the same gender, having sex with persons of the same gender, or identifying oneself as a homosexual), with 4% of women reporting ever having had a female sex partner. In terms of bisexual behavior, 1% of the women reported male and female sex partners in the past 5 years and 4% reported having had male and female sex partners since age 18. However, only 0.5% of these women identified themselves as bisexual. Of those with any same-sex behavior, women were more likely than men to report bisexual behavior.

In addition to estimates from probability surveys, the rates of bisexual behavior and identity have been assessed in smaller samples, particularly in HIV-related studies. In general, the prevalence of bisexual behavior for HIV-related study populations is higher than that for the general population. Although reasons for the higher rates are not entirely clear, most HIV-related study populations are recruited from urban areas, where

same-sex behavior is more prevalent (Michael, Gagnon, Laumann, & Kolata, 1994). One study, however, found rates of bisexual behavior similar to that of the general population. In this sample, 15,685 women were recruited from 39 STD clinics and 8 women's health clinics from 1989 through 1991; 3% reported having had male and female sex partners since 1978 (McCombs, McCray, Wendell, Sweeney, & Onorato, 1992). In contrast, Bevier and colleagues found that in a predominantly poor, Black and Hispanic, New York City STD clinic, 8% of 1,518 women reported having had male and female sex partners since 1978 (Bevier, Chiasson, Heffernan, & Castro, 1995). In a study of 6,621 women who injected drugs or smoked crack and who were recruited systematically at 21 sites nationwide, 9% identified themselves as bisexual (Deren et al., 1996).

Other researchers have collected data both on bisexual behavior and on identity. In a cohort of HIV-infected women recruited because of a history of injecting drug use and HIV-related sexual risk behaviors (96% of whom had had sex with a man in the last 6 months), 18% reported ever having sex with a woman, and 6% reported sex with a woman in the past 6 months (Moore et al., 1996). In terms of sexual identity, 6% of the women in the cohort identified themselves as bisexual.

HIV Infection and AIDS Cases

The main risk factors for HIV infection in bisexual women and lesbians are injection drug use and sex with an infected man (Bevier et al., 1995; Chu, Hammett, & Buehler, 1992; Lemp et al., 1995; McCombs et al., 1992). The sexual transmission of HIV from an infected woman to her female partner is possible, but has been rarely reported (Chu, Buehler, Fleming, & Berkelman, 1990; Chu, Conti, Schable, & Diaz, 1994; Cohen, Marmot, Wolfe, & Ribble, 1993; Marmor et al., 1986).

Estimates of the prevalence of HIV infection and HIV-related risk behaviors among bisexual women are difficult to assess because of methodologic problems associated with attaining a representative sample of women or generalizing results from convenience samples (Kennedy, Scarlett, Duerr, & Chu, 1995). Estimates of HIV seroprevalence have come from studies in which participants were recruited from public venues, such as streets or bars where WSW congregate, or health clinics. Only one study has attempted to systematically determine HIV seroprevalence in a population of WSW recruited from public venues. In this sample of 498 women, 76%

reported male and female partners since 1978, and 68% identified themselves as lesbian (Lemp et al., 1995); 1% were infected with HIV, and 5% had markers for hepatitis B. The prevalence of HIV infection did not differ significantly by age, race or ethnicity, or self-identified sexual orientation. McCombs et al. (1992) found that for STD and women's health clinic attendees who reported male and female partners since 1978, HIV seroprevalence was 3%; seroprevalence did not differ by race. A much higher seroprevalence was found for a predominantly poor, Black and Hispanic, New York City STD clinic population; the behaviorally bisexual women in the sample were significantly more likely to be HIV-infected than were women who reported only male partners since 1978 (18% vs. 11%) (Bevier et al., 1995). Similarly, among injection drug users in drug treatment in King County, Washington, the HIV seroprevalence for women who identified themselves as lesbian or bisexual was 8% compared with 1.5% for heterosexual women (Harris, Thiede, McGough, & Gordon, 1993). Data were not reported for bisexual women alone because of the small sample.

The reasons for the increased rates of reported HIV infection in some studies of bisexual women are unclear. Some researchers have speculated that such rates may be related to the HIV-seroprevalence in the subjects' sexual partners and needle sharing partner networks; in other words, they may be more likely to have sex with and inject drugs with MSM (Friedman, Jose, Deren, Des Jarlais, & Neaigus, 1995).

As of December 1996, 85,500 cases of AIDS in women had been reported to the CDC (CDC, 1996). Of these, 45% were attributed to injection drug use and 38% to heterosexual contact with an HIV-infected or an at-risk man. The remaining 17% were infected through contaminated blood products or an infection route that could not be determined. It is unclear how many of these AIDS cases occurred in bisexual women because data on same-sex contact among women are often not available on AIDS case report forms.

Prevalence of HIV Risk Behaviors

Data on HIV risk behaviors of bisexual women come from three types of samples: (a) samples recruited from events that draw predominantly self-identified lesbian participants (Einhorn & Polgar, 1994; Tybee, 1990); (b) systematic samples drawn from public venues where WSW congregate (Gomez, Garcia, Kegebein, Shade, & Hernandez, 1996; Lemp et al., 1995); and (c) samples of women recruited on the basis of their HIV-related

behaviors or their clinic attendance (Bevier et al., 1995; Moore et al., 1996). Given the biases of these samples, generalization from these results to the larger population of bisexual women should be made with caution. For example, data that come from samples recruited from events or public venues where WSW congregate may be more reflective of the behavior of self-identified lesbians than that of bisexuals. Samples of women recruited because of HIV risk may provide information about a group of bisexual women who engage in HIV risk behaviors but do not provide information about the range of behaviors in which all bisexual women engage.

Despite these significant sampling limitations, a number of themes have begun to emerge from the data. First, the results from studies have consistently shown that women who have sex both with men and with women or who identify themselves as bisexual engage in risky sexual behaviors and, indeed, may engage in these behaviors with male partners who are at particularly high risk for HIV (Einhorn & Polgar, 1994; Gomez et al., 1996; Lemp et al., 1995). For example, of a systematic sample of 405 women who were recruited from San Francisco and Berkeley and who reported both male and female sex partners in the past 3 years, 39% reported unprotected vaginal sex, and 11% reported unprotected anal sex during that period. Additionally, 10% reported unprotected vaginal or anal sex with gay and bisexual men, and 6% reported this behavior with male IDUs (Lemp et al., 1995). Similar results were found in a study in which the sexual behavior of behaviorally bisexual women who self-identified as bisexual was compared with the behavior of women who self-identified as lesbian (Gomez et al., 1996). In this sample of women who were recruited from public venues in San Francisco, the self-identified lesbians, compared with bisexual women, reported significantly more female sex partners and were more likely to report having a female partner who injected drugs. However, self-identified bisexuals reported significantly more male partners and were more likely than self-identified lesbians to report having a male partner who injected drugs or who had sex with men.

Second, populations of women who have sex with women and men or self-identify as bisexual engage in risky drug-using behaviors. WSW (21% of whom self-identified as bisexual) recruited from public venues in San Francisco and Berkeley reported high levels of injecting drug use (10% since 1978). Of those 10%, 71% reported sharing needles, and 31% reported sharing needles with gay or bisexual men (Lemp et al., 1995). Sexual orientation was not a significant predictor of injection drug use in analyses, suggesting that self-identified bisexual and lesbian women were equally likely to inject. Other

surveys conducted in samples of WSW have found lower rates of past injecting drug use. Of women recruited through community events and gathering places in several states in the northeastern United States, 2% of women who identified themselves as bisexual reported past injecting drug use (Einhorn & Polgar, 1994). Similarly lower rates of past injecting drug use were found for WSW (19% of whom identified themselves as bisexual) recruited in 1992 and 1993 from street and community locations in San Francisco (San Francisco Department of Health, 1993).

Third, the rates of risky sexual and drug-using behaviors may be higher for bisexual women than for women who report sex exclusively with men. Of inner-city STD clinic attendees, the women who reported same-sex contact (93% of whom also reported having male partners) were more likely than those who reported only male partners to engage in HIV risk behaviors, such as injecting drug use, sex with high-risk male partners (IDUs, bisexual men, HIV-infected men), and anal sex (Bevier et al., 1995). Similarly, in a cohort of HIV-infected women recruited because of a history of HIV-related risk behaviors, WSW (regardless of reported sexual identity) reported more high-risk drug and sexual behaviors than did women with only male partners (Moore et al., 1996). When this cohort was examined by self-reported sexual identity, bisexual women were more likely than heterosexual women to report having traded sex for drugs or money and having had five or more partners in the past 5 years. Finally, among only those women reporting a heterosexual identity, comparisons were made between those reporting having ever had sex with a woman and those who reported exclusively male partners. Heterosexuals with a history of female sexual contact were more likely than those with exclusively male sexual contact to report having a history of injection drug use and crack use, having a male partner who injected drugs, and trading sex for drugs or money.

Fourth, bisexual women who inject drugs may be a subgroup at particularly high risk for HIV transmission. Support for this theme comes from studies of sexual identity and behavior among groups of female drug users. For example, in a study of drug injectors in low seroprevalence cities, Friedman and colleagues (1995) found that being a woman who reported sex with women in the past 6 months was related to HIV seroconversion. These authors hypothesized that HIV infection in drug-injecting WSW may be related to their engaging in sex or injecting drugs with MSM. Finally, in a sample of women who injected drugs and smoked crack, self-identified bisexual women

were significantly more likely than their self-identified heterosexual matches to report high-risk sexual and drug-using behaviors (Deren et al., 1996).

Determinants of Risk Behaviors

Very little information is available about what influences the risk behaviors among bisexual women. No research has been published on the psychological, social, or structural factors that may facilitate or those that may discourage risk behaviors. One possible determinant of high-risk sexual behaviors of bisexual women may be drug use. Moore and colleagues (1996) report data relevant to this issue. They found that among IDUs, bisexual women engaged in more sexual risk behaviors than did heterosexual women, suggesting that injecting drug use alone may not account for the increased sexual risk behaviors seen among bisexual women. Similarly, other researchers have found increased sexual risk behaviors for bisexual women in samples of drug users (Deren et al., 1996). However, because neither investigator was able to examine sexual behavior for women who did not use drugs, the extent to which drug use may contribute to increased sexual risk behaviors of bisexual women can not be determined.

As we note, little has been written about potential determinants for the higher rates of risk behaviors among behaviorally bisexual women. Drug use could be a factor linking bisexual behavior and HIV risk, with drug-using women engaging in more sexual risk, including sex trading and having more sex partners, some of whom are female and some of whom are male. Alternate explanations for increased risk behaviors may be one or more determinants that increase the possibility that women choose partners of both sexes and engage in sex and drug-using behaviors that put them at risk for HIV infection. Two determinants that may play a role are sensation seeking behavior and having a history of sexual abuse. People who are high sensation seekers may be more likely than others to experiment with behaviors that have been linked to HIV risk, including drug use and involvement in varied and unconventional sexual behavior (Kalichman & Rompa, 1995). Researchers have also shown an association between HIV-related risk behaviors, such as prostitution and unprotected sex, and childhood sexual abuse (Bartholow et al., 1994; Widorn & Kuhns, 1996). Although these determinants have not been examined for bisexual women, such research may help disentangle the relationship between bisexual behavior and HIV risk.

Prevention Approaches: Scientific Data and Programs

Research on prevention programs targeting WSW is extremely limited. In one study, in which safe sex kits were provided to WSW who attended bars, bisexual behavior was fairly common; however, there was no evaluation component in this study (Stevens, 1994). We were unable to find any HIV prevention programs that specifically targeted bisexual women.

It has been suggested that women who identify themselves as bisexual may be at the highest risk for HIV infection but may be most difficult to target (Gomez et al., 1996). Gomez et al. reported focus group information indicating that bisexually identified women are difficult to distinguish in communities because of their varied social networks and because visible bisexual communities, unlike gay and lesbian communities, are uncommon. Consequently, many HIV prevention messages have targeted bisexual women and lesbians as one group. Because of the differences in behavior by the self-identified bisexual women and the lesbians in their sample, these authors suggested that bisexual women might be best served by including them in prevention messages aimed at high-risk heterosexual women. However, recent researchers have suggested that bisexual women may be even harder to target than are high-risk heterosexual women. In a cohort of HIV-infected women, self-identified bisexual women were more likely than heterosexuals to live alone and to report having had no safe place to live in the past year (Moore et al., 1996). Researchers must attempt to identify and to characterize populations of bisexual women so that HIV prevention programs may reach them.

Conclusions and Next Steps

Early in the epidemic, bisexual males were a concern to public health policy makers responsible for establishing HIV prevention programs in Canada and the United States. Though little was known about these men or their risk behaviors, discussions were concentrated on the assumed threat to their sex partners and how sex educators and public health officials might notify unsuspecting female partners of their risk. Although educators responsible for HIV prevention referred to "gay and bisexual" men, they did little to focus on issues specific to bisexual subgroups. The HIV-related public health concerns of bisexual women were rarely discussed, and the issues of bisexual women were seldom reflected in educational initiatives.

These early public health responses to bisexual behavior reflected the state of the research describing these populations. Data on gay and bisexual men were aggregated into a single category, and bisexual women were largely ignored. However, as is true of other aspects of sexual behavior, this body of research has grown in tandem with the changing face of the AIDS epidemic. In this final section, we summarize themes that have emerged in this scientific literature and point out continuing gaps in our understanding of bisexual behavior and its relationship to HIV risk.

With regard to bisexual men, four themes have emerged in the findings from both countries. First, in general, bisexual men probably engage in less unsafe sexual behavior than do exclusively homosexual men. Second, some bisexual men may be at particularly high risk for HIV; estimates range generally from 20% to 35% of men engaging in unprotected anal sex with male partners. Third, bisexual men use condoms less often with female than with male partners. Fourth, bisexual men may have high rates of injection drug use.

In addition to these similarities in the two countries, other patterns emerged in the United States research. As the Canadian database on these populations grows, it will be interesting to see whether similar patterns are identified. First, in a variety of the United States studies, specific risks for the female partners of bisexual men--from lower condom use and higher rates of anal sex to the failure of partners to disclose their same-gender contacts--have been highlighted. Second, bisexual men who are more involved in gay communities, engage in commercial sex work, and are younger have been recognized in the United States as being at probable increased risk. Third, rates of bisexual behavior, HIV seroprevalence, and possibly HIV risk are greater in African American and Hispanic communities in the United States, suggesting that men of color represent another bisexual subgroup at particularly high risk. Perceived higher rates of homophobia in communities of color may hinder the development and sustainability of prevention efforts for bisexual men in the United States.

Our review of data suggests that little is known about bisexual women in Canada or the United States. In much of the scant research that exists, data have been reported from studies of lesbian women who have described their sexual behaviors with male and female partners. Despite this and other limitations of these data, several themes have emerged. First, depending upon the study, 20% to 35% of the male partners of bisexual women do not use condoms. Second, bisexual women may have sexual contact with male

partners at particularly high risk for HIV, namely IDUs and gay or bisexual men. Third, the rates of injection drug use for bisexual women may be high. And fourth, bisexual women probably engage in higher rates of risky sexual behavior and drug use than do exclusively heterosexual women. Because most research has been conducted in the United States, it is unclear whether these results could be replicated in Canada. Additionally, very little is known about subgroups of bisexual women at particularly high risk, or the context of that risk, in either country.

Not surprisingly, almost no intervention research with bisexual men and women has been published. Important themes that could be applied to interventions for bisexual men have been documented and have begun to be used in programs. These themes stress outreach in locations where men work, live, and interact with medical and other social service providers, as well as the use of anonymous venues such as personal ads, hotlines, and HIV testing centers. In both countries, HIV intervention research with bisexual women is in its infancy. However, increases in the proportion of AIDS cases for women in the United States and Canada and recent studies indicating elevated rates of HIV risk behaviors in self-identified or behaviorally bisexual women may prompt HIV researchers to more fully examine women's sexuality and its relationship to HIV risk.

The difference in the amount and type of research focusing on bisexuals in Canada and the United States is evident, though explanations are not readily apparent. Funding for research may be more available in the United States, a country with nearly 10 times the population of Canada. However, research on sexuality has historically been difficult to conduct in both countries, though sexuality is increasingly recognized as a relevant area of health and social science research. The failure to record bisexual behavior in HIV research in Canada may be related to the perception that the epidemic in Canada is largely a homosexual one and not of heterosexual concern. The apparent reluctance to record information about sexual orientation and identity may also reflect a reticence to identify risk groups per se.

No HIV-related biomedical or behavioral data have been reported on bisexuals from ethnic minority communities in Canada. As we noted earlier, HIV risk may be particularly high for bisexual men of color in the United States. We do not know whether similar patterns would be found in Canada were these data available. Differences in reporting race and ethnicity may reflect what has been suggested as an overemphasis on racial differences in United States scientific literature even when other explanations

may be more plausible. Cappon et al. (1996) recently commented on the differences between Canadian and United States publications on HIV transmission, risk behaviors, and prevention in ethnic communities. These authors suggested that United States researchers often distinguish groups on the basis of race (e.g., inherited characteristics such as skin color) rather than ethnicity. Substantial cultural differences in Canadian and United States ethnic subgroups hinder generalizing between the two countries. However, if higher levels of bisexuality and risk behaviors were found in ethnic subgroups in both countries, it would be interesting to compare cultural values and practices to discern attitudes or norms that facilitate, or those that discourage these behaviors. Such information would help expand the theory base related to bisexuality. Comparative data on subgroups based on age, geographic location (urban vs. rural), or relationship status would also advance the development of theory on bisexuality in general and HIV risk specifically.

Differences in the amount and quality of the literature on male versus female bisexuals, regardless of country, are also noticeable in our review. This may in part be related to the HIV focus of a substantial portion of the literature on bisexual men, which, as we noted, constitutes nearly half of the articles published on male bisexuality in the United States since 1986. Concerns about HIV risk for WSW have surfaced only recently, so female bisexuality has not become a major focus of the scientific literature on HIV. According to one review of the scientific literature (Doll, in press), 396 articles were published on WSW since 1986, though only 61 articles mentioned bisexual women and only 25 of those contained specific information about this population. Female bisexuals have apparently not been seen as an important group to study. The perception that they are not at risk for HIV has certainly in part driven this research agenda. In addition, it may have been assumed that bisexual women did not differ from heterosexual women and thus would be reached through general prevention messages.

Because of the relative lack of a research base on bisexuality, our suggestions for additional research remain broad. It is critical to assess basic questions about male and female bisexuality. Certainly, much research needs to be done on the theory, definitions, and sampling methods used in studies of male and female bisexuality. We need to understand the relationship between measures of bisexuality, including those based on sexual behavior, identification, fantasy, and attraction. We must know how persons integrate their bisexual behavior into their self-identity. We also need to know more

about how bisexuals are organized and about the social and sexual networks in which they live. In particular, we need to understand the extent of their association with gay, bisexual, or heterosexual communities and the factors, such as ethnicity and culture, that may influence membership and association.

In relation to HIV, it is important to understand the risky and the protective sexual behaviors of bisexuals, the extent to which and under what conditions their behavior remains undisclosed, and how stigma, along with many other determinants of behavior, relate to risk taking. We must understand the subgroups of bisexual men and women and the extent and context of risk for each group. In the subgroups, the interaction between drug use and bisexual behavior of men and women should be examined. We do not know whether the increased reports of HIV risk behaviors, including commercial sex work, are being driven by drug use or some other factor. Finally, this information must be applied to interventions for bisexual men and women. We must determine how bisexual men and women can be reached and retained in HIV interventions and what messages should be delivered by whom. Also, we must understand under what conditions and with what success these men and women might be reached through prevention efforts targeting homosexual or heterosexual men and women, instead of bisexuals specifically.

Clearly, a range of research methods, including ethnography and other qualitative methods, population-based surveys, and surveys of targeted samples, will be necessary to fully answer these questions and adequately address the prevention needs of bisexual men and women. Although continued focus on individual-level factors is important, focus on social structural-level factors that may encourage the expression of bisexual behavior or HIV-related risk is equally important. If at all possible, the basic research on bisexuality that we propose may be best conducted outside the context of HIV research. In this way, biases attributed to high HIV-seroprevalence locations, or to specific populations, such as persons living with HIV, IDUs, or commercial sex workers, may be avoided. However, this need for more basic research on bisexuals does not diminish the critical importance of additional HIV-related research on these populations. Finally, the reviews in this chapter highlight an important opportunity for a North American collaboration on research related to sexual behavior. The many similarities and yet cultural diversities of Canada and the United States argue for studies that compare the expression of sexual behaviors and the psychological and social contexts in which they take place.

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