BRIEF REPORT

The Female Role in the Transmission of HIV Infection

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Women are increasingly recognized as a significant population at risk for human immunodeficiency virus (HIV) infection. In major cities in Africa, the Americas, and Europe, HIV infection is the leading cause of death in women aged 25 through 29 years. New patterns have emerged in the epidemic, the most dramatic of which is the increased rate of transmission for heterosexuals, directly associated with an increase in seropositivity among women and children. Between 1989 and 1990, the number of women diagnosed with the acquired immunodeficiency syndrome rose 34% compared with a 22% rise in men. The Centers for Disease Control and Prevention have increased support for studies related to prevention of HIV infection in response to these trends. Health professionals should demonstrate an understanding of the complex nature of sexuality, femininity, and the female role in society when educating female patients about virus avoidance, so that preventive behavior will be perceived as consistent with a woman's personal standards for sexual relationships. *(Arch Fam Med. 1993;2:870-873)*

Mortality data from the Centers for Disease Control and Prevention (CDC) and the National Center for Health Statistics (NCHS) now rank human immunodeficiency virus (HIV) infection fourth among causes of death in adults of both genders aged 25 through 64 years, placing this cause of mortality ahead of stroke, suicide, and homicide. HIV infection is also ranked as the sixth-leading cause of death for adolescents and young adults (15 through 24 years of age).[1] Despite the fact that HIV disease in the United States assaults many segments of the population dispassionately and with equal consequence, rates of infection are increasing among bisexual men, blacks, Hispanics, adolescents, and women, even as the infection rate levels off for homosexual men. Women account for 11.5% of reported cases of acquired immunodeficiency syndrome (AIDS) among adolescents and adults; 51.9% of these cases occur among black females, 25.3% among white females, and 21.9% among Hispanic females.[2] AIDS has risen to become the eighth-leading cause of death among women aged 25 through 44 years (**Figure**). Surveys conducted in 23 states and in three additional metropolitan areas from January 1988 through February 1990 found infected women of childbearing age in all states and in both urban and rural areas, although infection rates were highest in large cities.[3] The geographic circle of HIV infection is expanding, with relatively more seropositivity being reported outside large coastal cities, in the central region of the country, and in smaller cities and rural communities.[4] While exact infection rates are extremely difficult to measure, publicly funded counseling and testing programs provide useful information. There were approximately 1 million HIV tests among US women during 1989 and 1990, and 20 000 of these tests had positive results.[3] All of these data suggest that AIDS is clearly an issue for women in the United States that merits attention and action.

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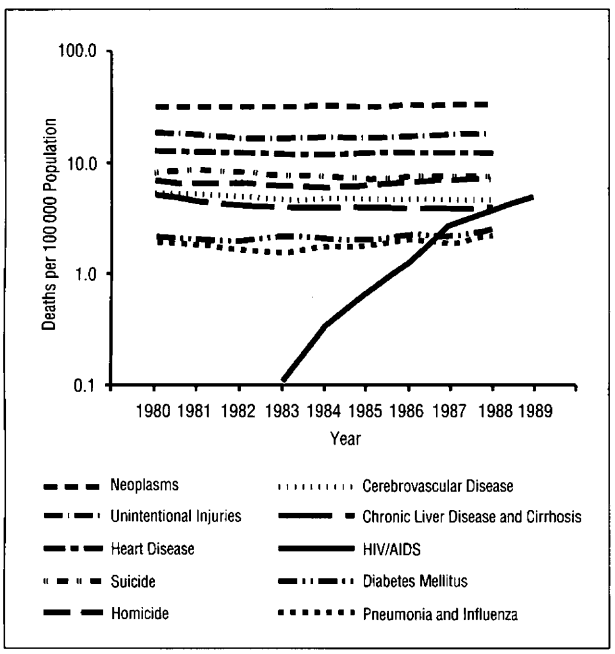
HIV SPREAD AND WOMEN

It is by now well documented that transmission of HIV is facilitated by blood, sexual activity, and birth. The ability of saliva to mitigate HIV transmission is still in question.[4,5] It is more difficult to isolate the virus from saliva and tears than from semen and blood.[6,7] Presumably, this is because of the virus' affinity for lymphocytes, which are less numerous in saliva and tears than in blood and semen. Transmission of HIV infection from man to woman during vaginal intercourse has been reported in individual cases[8] and is supported by epidemiologic evidence.[9,10] The large number of reported heterosexually acquired HIV cases among women may be related to several factors: (1) A greater number of men are infected with HIV, and therefore a woman is more likely than a man to encounter an infected partner.[11,12] (2) Male-to-female transmission of HIV may be more efficient than female-to-male transmission.[13] (3) Women may be less likely to practice "safer sex" because they may be less aware of their risk for HIV infection, or they may be less able to assert themselves and insist on protective sexual practices.[14] The efficiency of male-to-female transmission may be accounted for by the fact that cervical cells have been identified as the most likely initial site of infection. HIV has successfully been isolated from cervical biopsy specimens, and HIV antigen has been identified in monocyte-macrophage and endothelial cells of the submucosa of the cervix. Sloughing of these infected cells into genital secretions may also account for transmission from female to male partners and to neonates,[15] although the female-to-male transmission theory has been less certain and more controversial until very recently. However, there is some agreement that vaginal intercourse between an infected woman and an uninfected man should be considered unsafe and carries a high risk for transmitting infection. Seronegative male partners of infected spouses engaging in unprotected vaginal intercourse over 2 years have seroconverted.[16] Although the site of inoculation of the male partner remains uncertain, most speculative mechanisms have involved ulcers, sores, or breaks in penile skin and inflamed urethral mucosa as sites of HIV entry from vaginal secretions into the male bloodstream.[13,17] There is no demonstrated correlation between cervical secretions and menses.[4]



Death rates for human immunodeficiency virus infection/acquired immunodeficiency syndrome (HIV/AIDS) and other leading causes among women 25 through 44 years of age, 1980 through 1989. Data are from the National Center for Health Statistics, the Center for Infectious Diseases, and the Centers for Disease Control and Prevention.

THE ROLE OF WOMEN IN PREVENTION

Evidence is mounting that heterosexual transmission of HIV through vaginal intercourse places the woman at risk for infection by partners who are infected through intravenous drug use and by partners who are bisexual. How then can a female patient who is not an intravenous drug abuser, who does not report a high number of partners, or who simply does not want to rely on a partner's word that he is not infected protect against male-to-female transmission from, for example, a man who has had unprotected relations with another man and has become infected, but who may not know or is not willing to admit he is HIV-seropositive? The following case may serve as an example of the kinds of problems with which these patients may present. A young female patient, an educated professional woman, revealed to her physician that a very serious relationship with a man was ended after she inquired whether he was certain he was HIV-seronegative. She was prompted to bring up the subject of protection when he had alluded to several previous relationships that included sex and prior to what was mutually determined would be this couple's first experience together with sexual intercourse. When the man denied he had reason to be tested, even for sexually transmitted diseases other than HIV infection, the patient protested that she would then prefer to be protected by using a condom, which she was prepared to provide. Her partner became angry and left the premises and the relationship ended. This patient wanted feedback from the physician about her approach to the situation and reassurance and advice for handling such negotiations in future relationships.

One set of authors advises that carefully choosing a sexual partner is the most important behavior in the prevention of HIV infection.[4] The ideal way to form a relationship is by building trust through relating past experiences, sharing new experiences, and observing the other as he/she reacts to persons and situations. However, physicians and other health professionals should take into account that conditions often lead a couple toward sexual

consummation before the relationship has fully matured.[18] It is argued that self-esteem, feelings about intimacy, and sexuality are more frequently inseparable in women than in men.[19] Therefore, despite increasing societal support for women assuming positions in business, government, the professions, and other occupations of a wide variety, including many previously considered to be only for men, women continue to associate behavior in intimate relationships with what they define as "femininity." A woman may be an executive in a prestigious corporation or she may be a journeyman electrician daily pursuing an assertive, confident, and independent work role. However, she may require assistance in feeling comfortable with her femininity during sexual intimacy if she also needs to employ some of the characteristics she uses

Women often have no idea they are at risk for HIV infection

in the workplace. Thus, a natural wariness of the consequences of unprotected sex may be negated by notions of passion, romance, and what one should be prepared to do "if really in love with a man."[20]

Studies have shown that the sexual socialization of women is also traditionally more restrictive than that of men, and women are more likely to be inundated with messages regarding restraint and the necessity of love as a prerequisite to sex.[21] Therefore, negotiation for use of condoms for a purpose other than prevention of pregnancy can appear unacceptable or at least awkward to both the woman and her partner. Contradictions occur in heterosexual encounters because women are often pulled in different directions by social pressures related to the power of men in society.[19] In Western cultures, the institutionalized power, authority, and domination of men frequently result in acceptance of the male view as the norm. Inferior social and legal rights and the burdens of caregiving and managing families' daily needs, whether maintaining a salaried job outside the home or not, may create a perceived powerlessness in women.[3] Recently, questions have arisen about male bias in the choice of AIDS research studies that focus on women's problems.[21] Research has emphasized women as vectors of transfer of HIV to male partners or fetuses, and researchers have failed to include large numbers of women in trials of aztreonam and other drugs. The emphasis on practical and acceptable means for female control in preventing acquisition of the virus may also be considered a bias that merits correction.

EDUCATIONAL NEEDS

Not enough attention is given to educating women to confront the psychosocial impediments that may exist when they need to exert control over protection during sex. Awareness campaigns and information dissemination programs targeting women have focused on partner selection, reducing the number of partners, mode of intercourse, and use of condoms for prevention of heterosexual transmission of HIV infection.[14] The efficacy of correct and consistent usage of synthetic (latex) condom and spermicide in decreasing, but not completely eliminating, HIV transmission is supported by epidemiologic evidence.[5,16] However, as Erhardt[22] states: "The threat of HIV infection dramatically reduces women's control. Use of a condom reduces the risk of transmission through sexual behavior, but correct use of condoms requires the cooperation of a male partner." Women often have no idea they are at risk for HIV infection.[23] They do not view themselves as promiscuous if they have relatively few sexual partners, and they often do not know the sexual history of their partners. Women also need to accept the fact that a partner may engage in sex with other men. Men who have sex with men but identify themselves as heterosexual use condoms far less often than men who admit they are gay or bisexual,[24] compounding the problem for women with whom these individuals have sex. Increasing numbers of women who are testing HIV-positive (44% in one study) report that they cannot identify a risk factor associated with their source of infection.[25] Accounts by women that their only possible source of risk was from heterosexual intercourse with a man who told them he was not HIV-positive were not taken seriously until these reports were corroborated by a study of men in which 35% admitted they would lie about their HIV status and 20% said they *had* lied.[26] Lay media and educational programs have not focused on the disadvantage women suffer from the fact that men may deny that they have a desire for and do engage in sex with other men.

RECOMMENDATIONS

To protect women against HIV infection, physicians should be prepared to educate patients by reminding them that they may have difficulty negotiating with a partner to protect against HIV transmission during a sexual encounter, particularly in balancing feminity and loving-giving behavior with control and assertion. Consider these points for female patients who need to protect against transmission:

- Remind the patient of the seriousness of HIV infection.
- Provide the patient with details about the modes of transmission of the virus.
- Recommend one or limited partners.
- Recommend close knowledge of the partner before engaging in sex.
- Recommend choosing partners who are sensitive to female concerns.
- Recommend continuous and correct use of latex condoms.
- Provide the patient with understanding of the social-

ization of women in our culture about the female role in sex.

- Support the patient in being able to separate an intellectual response to a serious disease from an emotional and physical response associated with love and passion.
- Recommend a follow-up discussion.

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