



## Obstacles to HIV prevention

**T**he explosion of knowledge about the etiology, virology, epidemiology, pathogenesis, and prevention of acquired immunodeficiency syndrome (AIDS) amassed since the first cases were identified only 11 years ago is unprecedented. Despite this remarkable progress, until chemoprophylactic agents or vaccines are developed for preventing infection with the human immunodeficiency virus (HIV), the cornerstones of most current prevention strategies are education and behavior modification. Such strategies are necessarily grounded in basic epidemiologic studies of HIV transmission.

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■ See Smucny and associates, p. 573

The study of risk factors for HIV infection by Smucny and associates reported in this issue of the *Cleveland Clinic Journal of Medicine* provides additional insight into risk factors for HIV infection in a population of homosexual men. Conducted during the early phase of the epidemic in a region of low HIV prevalence, this study reaffirms previously published findings regarding risk behaviors associated with HIV transmission—findings which remain applicable today.

Since this study was conducted, the epidemiology of HIV in the United States has evolved. The mechanisms of HIV transmission persist: ie, sexual contact, parenteral inoculation (of infected blood, blood products, or other body fluids) through skin or mucosal membranes, and perinatal transfer from mother to infant. However, patterns of HIV infection among exposure groups are changing: the proportion of AIDS cases associated with male homosexuality and receipt of blood, blood products, and antihemophilic factors is decreasing, whereas the proportion of cases associated with intravenous drug use and heterosexual contact is increasing.<sup>1</sup>

In some respects, we appear to be losing the battle of preventing the spread of HIV infection. HIV and AIDS have become the second leading causes of death among men between ages 25 and 44 in the United States.<sup>2</sup> Recent estimates indicate that at least 1 million persons are infected with HIV in the United States, and over 200,000 persons who meet the surveillance case definition for AIDS have been reported to the Centers for Disease Control since reporting began in the mid-1980s.<sup>3</sup>

The societal implications of HIV infection and its perceived epidemiology are enormous and complex, as members of the health care professions are acutely aware. After the identification of a single cluster of infections among patients of an HIV-infected dentist,<sup>4</sup> disproportionate concern has been focused on the remote risk of acquiring HIV infection from health care providers. A large segment of society views health care provider-to-patient transmission as a singular threat, demanding mandatory HIV testing of providers and restricting the practices of HIV-infected personnel. This approach would divert enormous economic and personnel resources from other more critical HIV prevention efforts, with the prospect of preventing few, if any, HIV infections. More appropriately, albeit at great cost, the federal government has mandated that the health care industry implement stringent employee training programs and engineering and work practice controls to eliminate or minimize employee exposures to blood and other potentially infectious materials.<sup>5</sup>

Technological and other regulatory advances have greatly decreased some risks of acquiring HIV infection. Notable among these are the development of serologic screening tests, viral inactivation procedures for blood products, and blood donor exclusion practices. However, the greatest reduction of further spread of the virus would be achieved by preventing sexual and needle-sharing transmission; these interventions require behavior modification. Prevention of sexual

transmission may prove daunting, given our limited arsenal of education, information, and condoms, and it has been further complicated by the objections of some segments of society to these politically unpopular prevention measures. As the HIV epidemic continues to mature, heterosexual transmission of HIV will continue to increase in the United States.

Prevention of infection among drug users presents a formidable challenge, since reducing high-risk behaviors in this population is extremely difficult to achieve. Because drug use may also be associated with the exchange of sex for drugs, sexual and perinatal transmission of HIV also occurs frequently in this group. To combat the spread of HIV infection among drug users, effective drug treatment, educational, and risk reduction programs are urgently needed.

Even in the most enlightened circumstances, the equitable allocation of scarce resources for prevention is difficult to achieve. Technological advances and regulatory requirements, although costly, are generally viewed as socially and politically acceptable; therefore, they are more easily implemented than educational and risk-reduction programs.

To be successful, educational and risk-reduction programs must include not only adults currently prac-

ticing high-risk behaviors, but also children before they begin risky sexual or needle-sharing behaviors. However, targeting children for these programs is viewed as morally objectionable by some segments of society. Despite unparalleled medical advances in understanding the HIV epidemic, the political, social, and behavioral sciences are the arenas where the prevention battle must be fought.

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