



HIV Transmission Rates in the United States, 1977–2006

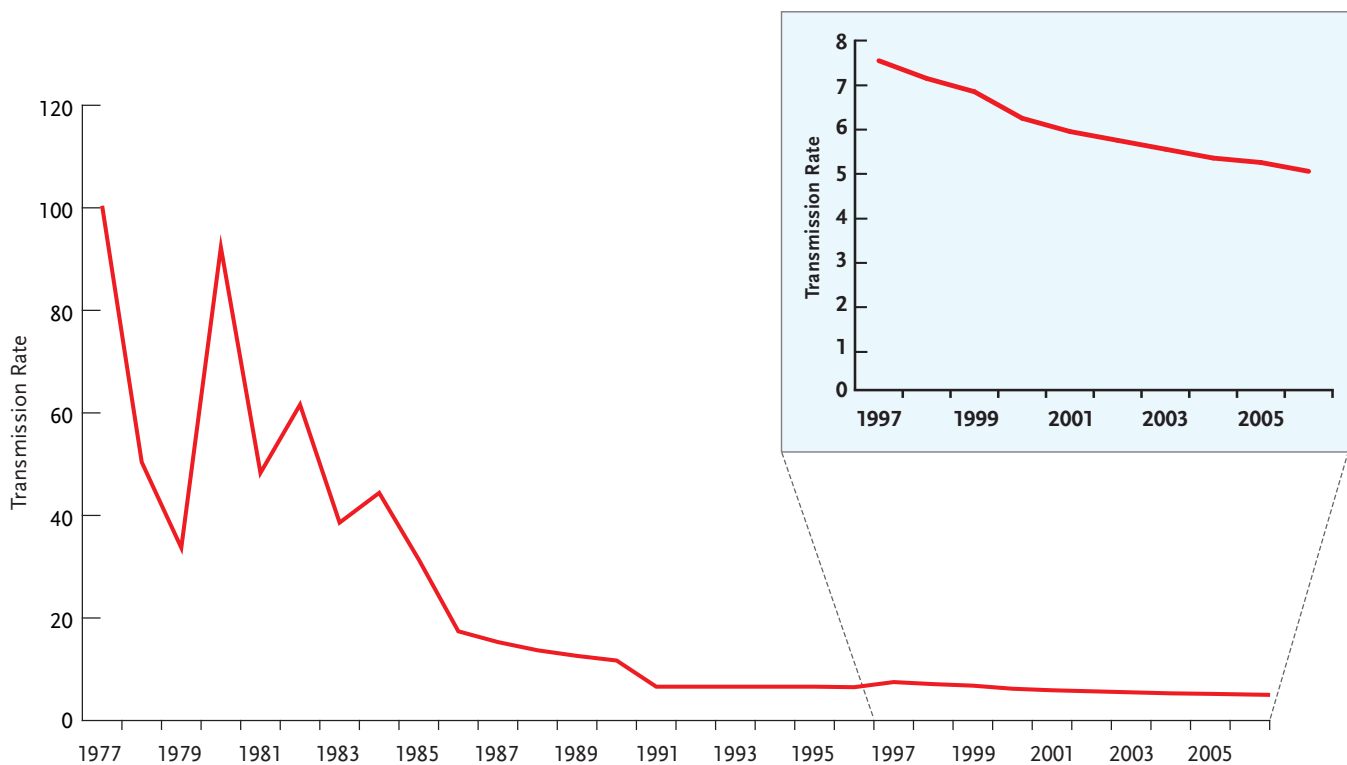
Dramatic Declines Indicate Success in HIV Prevention Nationwide

The Centers for Disease Control and Prevention (CDC) estimates that approximately 1.1 million persons are living with HIV in the United States.¹ This number is expected to continue to increase over time, as antiretroviral treatments prolong the lives of those who are infected and more people become infected with HIV than die from the disease each year. As the number of people living with HIV — or HIV prevalence — grows, so does the opportunity for HIV transmission to others. Therefore, it is critical to have not only a clear understanding of the number of new infections that occur annually — or HIV incidence — it is also important to know the rate of HIV transmission in order to accurately gauge the impact of HIV prevention efforts on the U.S. epidemic.

Innovative Measure of HIV Prevention Shows Success

Although CDC recently reported that annual HIV incidence has remained stable in the United States in recent years,² these estimates do not provide a full picture of the effect that HIV prevention efforts are having across the country. While stability in new infections is one sign of progress, these incidence data alone cannot quantify the amount of transmission that occurs in relation to the growing population infected with HIV.

Annual Transmission Rates per 100 Persons Living with HIV, 1977–2006



Source: Holtgrave D, Hall HI, Rhodes P, et al. Updated Annual HIV Transmission Rates in the United States, 1977–2006. *JAIDS*. Advance copy available at www.jaids.com



To understand the impact of prevention efforts on the U.S. HIV epidemic, Johns Hopkins researcher Dr. David Holtgrave conducted an analysis designed to measure the annual rate of HIV transmission in the United States. Dr. Holtgrave worked with CDC researchers to apply the latest annual data on new HIV infections in the United States to this analysis. The resulting measure, the transmission rate, represents the annual number of new HIV infections transmitted per 100 persons living with HIV. It is calculated by dividing HIV incidence for a given year by HIV prevalence for the same year, and multiplying this number by 100.

Put simply, the transmission rate compares the annual number of new infections to the number of persons living with HIV, and indicates the likelihood that an HIV-infected individual will transmit HIV to others. In this way, it provides a better means to assess the effects of public health efforts to promote changes in risk behavior as well as the preventive effects of HIV diagnosis and treatment.

The analysis, which shows significant declines in HIV transmission rates over the course of the U.S. epidemic, will be published in an upcoming edition of the *Journal of Acquired Immune Deficiency Syndromes* and is now available on the journal's website.

“By measuring rates of HIV transmission, we can now gauge the effectiveness of prevention efforts better than ever before.”

— Dr. Richard Wolitski, acting director,
Division of HIV/AIDS Prevention

Significant Declines in Transmission Rates

Researchers found that the HIV transmission rate has declined dramatically since the early days of the epidemic. In 1980, for example, when the disease was still undetected, the transmission rate was 92 percent, meaning there were 92 transmissions per 100 persons living with HIV at the time. After the identification of AIDS, and later HIV, and the implementation of HIV testing and other prevention efforts, transmission rates began to decline.

Since the peak level of new infections in the mid-1980s, just prior to the introduction of HIV testing, the transmission rate has declined by approximately 89 percent (from 44 transmissions per 100 persons living with HIV in 1984 to five transmissions per 100 persons living with HIV in 2006). Over the last decade, as prevention efforts have been expanded and improved treatments for HIV became available, the transmission rate has declined by 33 percent (from an estimated eight transmissions per 100 persons living with HIV in 1997 to five in 2006). Five transmissions per 100 persons living with HIV in 2006 means more than 95 percent of persons living with HIV did not transmit the infection that year.

These data underscore the importance of reaching all infected individuals with HIV testing and prevention services. Previous research has shown that the majority of people who know they are infected take steps to prevent transmission to their partners.³ CDC currently estimates that approximately one in five persons living with HIV in the U.S. is unaware of their infection and may be unknowingly transmitting the virus to others.¹

Declines in Transmission Rates Reflect Success of Prevention Efforts Nationwide

Declines in HIV transmission rates reflect the success of prevention efforts across the U.S., on a national, community, and an individual level. CDC has and will continue to work on a number of fronts to reduce the impact of HIV across the nation by: expanding access to and the number of available prevention programs, increasing HIV testing and knowledge



of HIV status, improving surveillance to identify the leading edge of the epidemic, and exploring innovative and promising new prevention approaches. Communities and public health partners are working to tailor prevention efforts to meet local needs, mobilize communities, and expand the reach of HIV prevention. These data also indicate that people living with HIV are taking steps to protect themselves and their partners from infection.

These findings add to several recent signs of success in HIV prevention. Stable incidence in recent years, as well as dramatic declines in mother-to-child HIV transmission and declines in new infections among injection drug users and heterosexuals, are also important signs of progress against this disease.

Implications of the Findings

Despite these successes, we must remember that the fight against HIV is far from over. As the number of people living with HIV in the U.S. continues to grow, opportunities for HIV transmission and the burden on the health care system also grow. Additionally, too many people — both HIV-infected and uninfected individuals — are not yet reached by the prevention efforts that we know to be most effective.

HIV continues to take a severe toll on multiple communities in the U.S., with gay and bisexual men of all races, African Americans, and Latinos bearing the heaviest burden. Waging a continued battle against HIV will take a continued commitment across the country to address HIV among these populations. We all must do more — as individuals, communities, and as a nation — to expand the reach of effective prevention efforts to those at risk and stop the spread of HIV.

“While dramatic declines in HIV transmission rates reflect great success in the fight against HIV, the fight is far from over.”

—Dr. Kevin Fenton, director, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

References

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- 2 Hall HI, Song R, Rhodes P, et al. Estimation of HIV Incidence in the United States. *JAMA*. 2008;300:520-529.
- 3 Marks G, Crepaz N, Janssen R. Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. *AIDS*. 2006;20:1447-1450.