



# New Estimates of U.S. HIV Prevalence, 2006

The Centers for Disease Control and Prevention (CDC) has developed new estimates of HIV prevalence, or the total number of people living with HIV in the United States. CDC's analysis reveals that there were more than a million people — an estimated 1,106,400 adults and adolescents — living with HIV infection in the United States at the end of 2006 (95% Confidence Interval: 1,056,400–1,156,400),<sup>1</sup> and that gay and bisexual men of all races, African Americans, and Latinos were most heavily affected. The new estimates are published in the October 3, 2008 issue of CDC's *Morbidity and Mortality Weekly Report*.

## Growing Population Living with HIV

Since CDC's last estimate of HIV prevalence for 2003 (released in 2005), there have been several improvements to the national HIV reporting data set upon which these estimates are based. Importantly, data from ten additional states with reliable HIV reporting data have been added and extensive de-duplication efforts have been implemented at the national level. Based on this improved data set, researchers have also refined the estimate for HIV prevalence at the end of 2003. Results indicate that approximately 994,000 individuals were living with HIV at the end of 2003, and that HIV prevalence increased by approximately 112,000 (or 11%) from 2003 to 2006 (from 994,000 to 1,106,400 total persons). This increase was expected, due to the fact that antiretroviral treatment has greatly extended the life spans of people with HIV, and because more people become infected with HIV than die from the disease each year.

## Knowledge of HIV Status Increases

In addition to estimating overall prevalence, CDC also updated its estimates of the percentage of HIV-infected individuals who were unaware of their infection. The new analysis indicates that approximately one in five people living with HIV in 2006 — 21 percent, or 232,700 total persons — were unaware of their infections. This represents a slight decline from an estimated 25 percent unaware in 2003.

The reduction in the proportion unaware since 2003 reflects increased diagnoses among the population infected with HIV (both previously infected and undiagnosed, as well newly infected during this time period) and a decline in deaths among persons living with HIV. While this is a promising sign that HIV testing efforts across the nation are having an impact, there remain far too many undiagnosed individuals. To address this need and further reduce the number of Americans who are unaware of their HIV status, CDC has intensified HIV testing efforts in recent years.

## Definitions

**HIV prevalence:** The number of people living with HIV — with or without a diagnosis of AIDS — at a point in time.

**HIV incidence:** The number of people who become *newly* infected with HIV in a given time period. CDC estimates that 56,300 new HIV infections occurred in the U.S. in 2006.

**HIV diagnoses:** The number of people diagnosed with HIV in a given time period, regardless of when they originally became infected.

**AIDS diagnoses:** The number of people diagnosed with AIDS in a given time period. An AIDS diagnosis occurs when an HIV-infected individual's immune system becomes severely compromised (measured by CD4 immune cell count) and/or the person becomes ill with an opportunistic infection. In the absence of treatment, the onset of AIDS normally occurs 8 to 10 years after initial HIV infection. With early HIV diagnosis and treatment, an AIDS diagnosis may be delayed by many years.



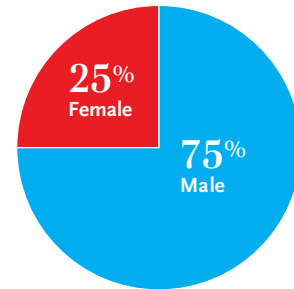
# HIV Prevalence among Specific Populations

The new estimates indicate that gay and bisexual men of all races, African Americans, and Latinos continue to represent the majority of persons living with HIV in the United States.

## Gender

Most persons living with HIV in the United States continue to be men. In 2006, men made up three quarters of people living with HIV (828,000 persons), and women made up one-quarter (278,400 persons).

**Figure 1. Estimated HIV Prevalence, 2006, by Gender**

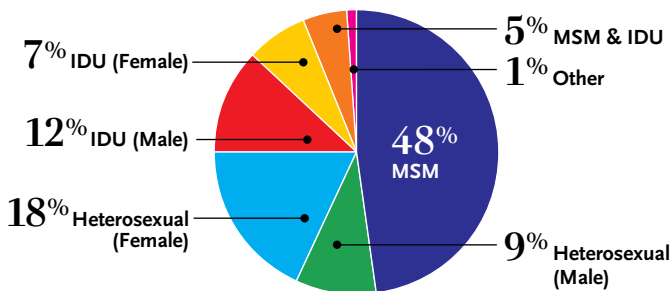


## Transmission Category

Nearly half of all people living with HIV in the U.S. in 2006 (48%, or 532,000 total persons) were men who have sex with men<sup>2</sup> (MSM). Among men, MSM accounted for 64 percent of those living with HIV.

People infected through heterosexual contact accounted for more than one-quarter of all people living with HIV (28%, or 305,700 persons). Thirteen percent of men (104,000 persons) and 72 percent of women (201,700 persons) living with HIV were infected through heterosexual contact.

**Figure 2. Estimated HIV Prevalence, 2006, by Transmission Category**



People infected through injection drug use accounted for 19 percent of all people living with HIV (204,600 persons). Sixteen percent of men (131,500 persons) and 26 percent of women (73,100 persons) living with HIV were infected through injection drug use.

## Race/Ethnicity

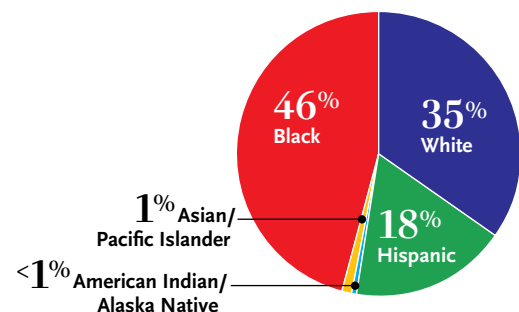
HIV takes a disproportionate toll on communities of color, with the most severe impact among African Americans, followed by Latinos.

While blacks make up only 12 percent of the U.S. population, they represented nearly half of all people living with HIV in the U.S. in 2006 (46%, or 510,100 total persons).

Overall, the HIV prevalence rate for blacks (1,715 per 100,000 population) was almost eight times as high as that of whites (224 per 100,000). African American men bear the greatest burden of HIV; the prevalence rate for black men (2,388 per 100,000) was six times as high as the rate for white men (395 per 100,000). African American women are also severely affected. The prevalence rate for black women (1,122 per 100,000) was 18 times the rate for white women (63 per 100,000).

Latinos are also disproportionately affected by HIV. Although Hispanics account for 15 percent of the population, they accounted for 18 percent of people living with HIV in 2006 (194,000 total persons). The overall prevalence rate for Hispanics (585 per 100,000)

**Figure 3. Estimated HIV Prevalence, 2006, by Race/Ethnicity**



<sup>2</sup> The term men who have sex with men is used in CDC surveillance systems because it indicates the behaviors that transmit HIV infection, rather than how individuals self-identify in terms of their sexuality.



was nearly three times the rate for whites (224 per 100,000). The prevalence rate for Hispanic men (883 per 100,000) was more than two times the rate for white men (395 per 100,000), while the prevalence rate for Hispanic women (263 per 100,000) was four times the rate for white women (63 per 100,000).

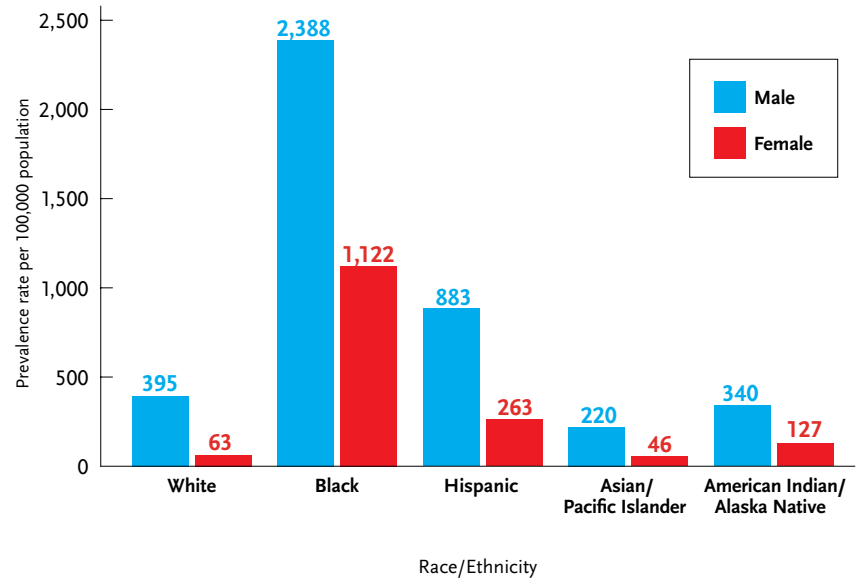
Although prevalence rates among whites were significantly less than those of blacks or Hispanics, whites made up more than one-third of all people living with HIV (35%, or 382,600 total persons).

Asian/Pacific Islanders made up approximately 1 percent of persons living with HIV, while American Indian/Alaska Natives made up less than 1 percent.

### Age

Seventy percent of people living with HIV in 2006 were between the ages of 25 and 49 (770,000 persons), 25 percent were age 50 and older (280,000 persons), and five percent were between the ages of 13 and 24 (56,500 persons). It is important to note that because HIV prevalence is the population *living with*, not *newly* infected with, HIV, this is not an indication of the likely age of infection.

**Figure 4: Estimated HIV Prevalence Rate (per 100,000 population) by Race/Ethnicity and Sex, 2006—United States**



## Methods

HIV prevalence cannot be measured directly, because not all HIV-infected individuals have been tested, not all states yet have reliable HIV reporting data, and not all diagnosed cases are reported. Instead, prevalence must be estimated based on the best available data and complex statistical modeling. As the epidemic and HIV surveillance methods have evolved over time, CDC has periodically published new estimates of prevalence.

To derive the new estimates, CDC utilized information on new HIV diagnoses (taken from 40 states with reliable, name-based HIV data) and AIDS diagnoses and deaths (taken from all 50 states plus the District of Columbia), along with a statistical method called “back-calculation.”

Back-calculation begins with the number of new HIV diagnoses — regardless of stage of disease — in specific

populations and works backward to calculate the total number of HIV infections that would have to occur over time to produce this number of reported HIV diagnoses. Information on the stage of disease at diagnosis is also considered, specifically whether newly diagnosed cases are reported as HIV only or also have AIDS diagnosed within the same calendar year. By examining only new diagnoses of HIV infection, researchers were able to create the estimates without needing to adjust for the effect of antiretroviral treatment, which delays the onset of AIDS. For states without reliable data on HIV (not AIDS) diagnoses, researchers estimated the number of diagnoses based on the trends seen in HIV and AIDS cases in similar geographic areas as a part of the statistical modeling procedures.

HIV prevalence over time is calculated by subtracting the total number of deaths among persons with HIV and/or AIDS from the total number of new infections estimated to have occurred through back-calculation.



## Implications of the New Estimates

The growing number of people living with HIV in the United States points to an increased need for HIV testing, treatment, and prevention services to slow the U.S. epidemic. With more HIV-infected individuals, and with those persons living longer, there is a growing population of HIV-infected men and women who must be reached with testing, medical care, and prevention services. As the number of persons living with HIV grows, so does the cost of providing medical services to this population and the burden on health care systems. In order to reduce these increased costs of care in the future, greater attention needs to be paid to preventing these infections in the first place. Growing HIV prevalence also means increased opportunities for transmission to HIV-negative individuals. Efforts to reduce the number of new infections must therefore be designed to meet the needs of both infected and uninfected populations.

Ensuring everyone infected with HIV knows their status is a critical part of the solution. While the new HIV prevalence estimates indicate that more infected individuals know their status, far too many HIV-infected people in the U.S. are still diagnosed late in the course of infection — 38% within a year of developing AIDS.<sup>3</sup> HIV testing is the essential first step in linking HIV-infected people to life-extending medical care, and studies show that once people learn they are HIV-infected, most take steps to protect others. It is estimated that the majority of new infections are transmitted by those who are unaware of their infection;<sup>4</sup> therefore, early testing and diagnosis play a key role in reducing HIV transmission.

HIV testing and prevention work when we apply what we know. While the total number of people living with HIV in the U.S. is increasing, data from a separate CDC analysis<sup>5</sup> indicate that new infections overall have remained stable in recent years. This stability is an important sign of progress, since a growing number of people living with HIV would be expected to increase opportunities for HIV transmission. To slow the spread of HIV in the United States, action is needed on every front — from government, businesses, individuals, and communities — to increase access to testing and prevention in order to reach everyone in need.

<sup>3</sup> CDC. HIV/AIDS Surveillance Report, 2006. Vol. 18. Atlanta: US Department of Health and Human Services, CDC; 2008. <http://www.cdc.gov/hiv>.

<sup>4</sup> 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.

<sup>5</sup> Hall HI, Ruiting S, Rhodes P, et al. Estimation of HIV incidence in the United States. *JAMA*. 2008;300:520-529.