

**The science is clear: HIV prevention can and does save lives.** Scores of scientific studies have shown that well-designed prevention programs can significantly reduce HIV risk<sup>1-6</sup>; HIV transmission rates have dropped dramatically; and prevention efforts have contributed to significant declines in new infections in multiple populations over time. In addition, more Americans are being tested for HIV than ever before. While the HIV crisis in the United States is far from over, substantial progress has been made in combatting the HIV epidemic to date. This document highlights several indicators of success, including the latest data on trends in new HIV infections, HIV transmission rates, HIV testing rates, and models estimating the lives and resources saved through U.S. prevention efforts.

## Trends in New HIV Infections

The nation's investment in HIV prevention has contributed to dramatic reductions in the annual number of new infections since the peak of the epidemic in the mid-1980s, and an overall stabilization of new infections since the mid-1990s (from roughly 130,000 new infections to 50,000 annually).<sup>7,8</sup> While new infections per year continue at too high a level, this stabilization is in itself a sign of progress. With continued increases in the number of people living with HIV thanks to effective HIV medications, there are more opportunities for HIV transmission than ever before.<sup>9</sup> Yet, the annual number of new infections has not increased, indicating that HIV testing, prevention, and treatment programs are effectively reducing the rate of transmission overall. Declines in new infections have also been documented in several key populations over time, underscoring the impact and importance of concentrated prevention efforts:

- **HIV-infected infants:** In 1995, CDC began recommending routine HIV screening of pregnant women, following research findings that HIV medications significantly reduce the risk of transmission from HIV-infected pregnant women to their infants. Since that time, testing of pregnant women and treatment for those who are infected have resulted in a dramatic decline in the number of babies born with HIV, from a peak of 1,650 in 1991 to fewer than 200 per year today.<sup>10</sup>
- **Individuals who inject drugs:** Studies show that comprehensive prevention and drug treatment programs, including needle exchange, have dramatically cut the number of new HIV infections among injecting drug users (IDUs).<sup>11-13</sup> In fact, HIV infections among IDUs have dropped from a peak of nearly 35,000 infections annually in the late 1980s to just 4,500 new infections in 2009.<sup>7,8</sup>
- **Heterosexuals:** The number of new infections among heterosexuals in the United States increased during the 1980s and fluctuated somewhat throughout the 1990s,

### Indicators of Prevention Success

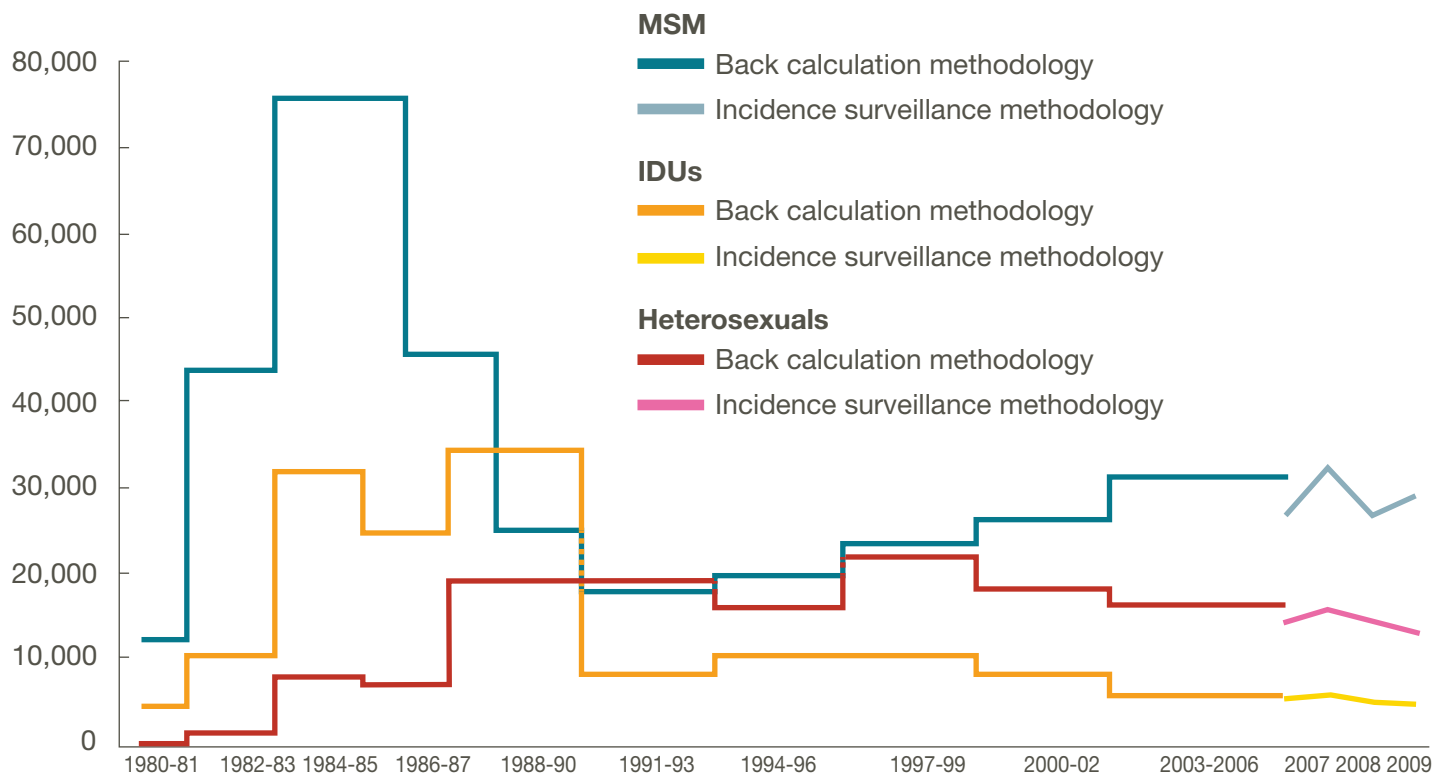
- Trends in new HIV infections
- HIV transmission rates
- HIV testing rates
- Models of the impact of prevention

reaching 21,900 per year at its peak.<sup>7</sup> Since then, new infections declined and have remained relatively stable in recent years, with 12,900 infections occurring in 2009.<sup>7,8</sup>

### Gay and bisexual men

In addition to working to build on the successes in these populations, it is also critical to accelerate progress in combatting the current HIV crisis among gay and bisexual men. Community and public health prevention efforts led to dramatic success in this population in the early years of the epidemic. After new HIV infections among men who have sex with men (MSM) peaked in the mid-1980s at more than 75,000 new infections a year, the number of new infections plummeted to less than 18,000 per year by the early 1990s. Unfortunately, after years of steady progress, new infections again began to rise among MSM throughout the 1990s.<sup>7</sup> While in recent years, prevention efforts may have helped stabilize infections, they are occurring at far too high a level (29,300 per year).<sup>8</sup> Additionally, young MSM are the only risk group in which new infections are increasing, due in large part to increases among young, black MSM. This underscores the need to sustain and re-invigorate prevention efforts for gay and bisexual men of every race and to ensure that each generation is effectively reached.

## New HIV Infections by Transmission Category, 1980 – 2009



Note: Back calculation estimates are for 2-year intervals during 1980-1987, 3-year intervals during 1988-2002, and a 4-year interval for 2003-2006.

## HIV Transmission Rates

Another useful measure of the impact of prevention and treatment efforts among individuals living with HIV is the estimated rate of HIV transmission – which indicates the likelihood that an HIV-infected individual will transmit the virus to others. CDC estimates that there are only four transmissions per year for every 100 people living with HIV in the United States, which means that the vast

majority (at least 95 percent) of people living with HIV do not transmit the virus to anyone else.<sup>14</sup> This represents an 89 percent decline in the transmission rate since the mid-1980s, reflecting the combined impact of testing, prevention counseling, and treatment efforts targeted to those living with HIV infection.<sup>15</sup>

## HIV Testing Rates

More Americans than ever before are getting tested for HIV. According to a recent CDC analysis, the proportion of adults who had ever been tested for HIV increased from 40 percent in 2006 to 45 percent in 2009, representing an additional 11.4 million people tested.<sup>16</sup>

Increasing the number of people tested is a critical component of the nation's HIV prevention efforts, especially in light of data showing that half of new infections in the

United States are transmitted by people who are unaware of their infection.<sup>17</sup> Linkage to care following a diagnosis allows people with HIV to receive treatment that can protect their health, extend their lives, and greatly reduce the likelihood of transmitting HIV to others. Additionally, research shows that when people learn they are infected, they take steps to protect their own health and prevent HIV transmission to others.<sup>18</sup>

## Models of the Impact of Prevention

Because it is difficult to measure what does not occur – the number of infections prevented, illnesses avoided, and lives saved – scientists have developed models to help quantify the overall impact of prevention. Based on the trajectory of the epidemic before prevention programs were initiated, researchers can estimate the number of HIV infections that have been averted. These models suggest that more than 350,000 HIV infections have been avoided because of the nation's HIV prevention efforts.<sup>19</sup>

In addition to lives saved, HIV prevention has also generated substantial economic benefits. For every HIV infection that is prevented, an estimated \$360,000 is saved in the cost of providing lifetime HIV treatment. It is estimated that HIV prevention efforts have averted more than \$125 billion in medical costs since the beginning of the epidemic.<sup>19</sup>

By building upon progress to date and maximizing the impact of the range of proven prevention tools now available, there is more hope than ever before of ending the HIV epidemic in the United States.

### Fighting HIV Among Heterosexual Women: Access Community Health Network

The Access Community Health Network (ACCESS), Chicago's largest private provider of primary and preventive health care, uses surveillance data from the Chicago Department of Public Health to identify specific neighborhoods with high rates of HIV infection, particularly among African American women. ACCESS reaches out to women in these communities with customized HIV counseling, testing, and linkage-to-care services using a number of targeted programs supported by CDC, including:

- WILLOW (Women Involved in Life Learning from Other Women), which helps HIV-positive women stay in medical care
- CLEAR (Choosing Life: Empowerment! Action! Results!), a program of personalized counseling and care for women at greatest risk for HIV infection
- SISTA (Sisters Informing Sisters about Topics on AIDS), which helps HIV-negative women build self-esteem and insist on condom use
- CTR (HIV Counseling, Testing & Referral), which works directly with at-risk women to provide prevention information and testing

ACCESS is able to scale up its intensive individual and small-group programs by training instructors to participate in multiple interventions and applying lessons learned in each program to all the others. Program participants also expand the organization's reach, helping to refer additional women through social networking. These efforts allow ACCESS to deliver proven prevention tools widely – for example, providing HIV testing to nearly 20,000 individuals and distributing more than 60,000 condoms each year.

**CLEAR: Choosing Life:  
Empowerment, Action, Results!**



**ACCESS community  
HEALTH  
NETWORK** Caring. Committed. Connected.

CLEAR helps participants make healthy choices in all areas of their lives

## HIV Testing in Action: Washington, D.C.

Expanded HIV testing is helping Washington, D.C.'s HIV/AIDS, Hepatitis, STD, and TB Administration (HAHSTA) make encouraging progress in the fight against HIV in the nation's capital. With support from CDC, HAHSTA launched the Municipal Scale-up of HIV Screening program in 2006. This initiative is expanding HIV testing in a variety of health care settings and, increasingly, non-traditional settings, such as Low Income Benefits centers where families apply for economic assistance and the Department of Motor Vehicles, where individuals can obtain an HIV test while waiting for a driver's license.

HAHSTA encourages residents to seek HIV testing using a range of marketing channels and materials, including print ads, radio spots, billboards, and the DC-TakesOnHIV.com website. Since the program began, testing has increased by 400 percent, from fewer than 30,000 tests in 2006 to 122,000 in 2011.

HAHSTA also carefully examined its counseling and testing procedures to help ensure that people testing positive receive the care and treatment they need – and now successfully links three-quarters of people with HIV to care.



Routine voluntary HIV testing is the standard of care in Washington, D.C.

### Key References

- 1 Wolitski RJ, Janssen RS, Holtgrave DR, et al. The public health response to the HIV epidemic in the U.S. In: Wormser GP, editor. *AIDS and other manifestations of HIV infection*. 4th ed. San Diego, CA: Elsevier Academic Press; 2004:997-1012.
- 2 Herbst JH, Sherba RT, Crepaz N, et al. A meta-analytic review of HIV behavioral interventions for reducing sexual risk behavior of men who have sex with men. *J Acquir Immune Defic Syndr* 2005;39:228-41.
- 3 Mullen PD, Ramirez G, Strouse D, et al. Meta-analysis of the effects of behavioral HIV prevention interventions on the sexual risk behavior of sexually experienced adolescents in controlled studies in the United States. *J Acquir Immune Defic Syndr* 2002;30(Suppl 1):S94-S105.
- 4 Neumann MS, Johnson WD, Semaan S, et al. Review and meta-analysis of HIV prevention intervention research for heterosexual adult populations in the United States. *J Acquir Immune Defic Syndr* 2002;30(Suppl 1):S106-S117.
- 5 Semaan S, DesJarlais DC, Sogolow E, et al. A meta-analysis of the effect of HIV prevention interventions on the sex behaviors of drug users in the United States. *J Acquir Immune Defic Syndr* 2002;30(Suppl 1):S73-S93.
- 6 Crepaz N, Lyles CM, Wolitski RJ, et al. Do prevention interventions reduce HIV risk behaviours among people living with HIV? A meta-analytic review of controlled trials. *AIDS* 2006;20:143-57.
- 7 Hall HI, Song R, Rhodes P, et al. Estimation of HIV incidence in the United States. *JAMA* 2008;300(5):520-29.
- 8 Prejean J, Song R, Hernandez A, et al. Estimated HIV incidence in the United States, 2006-2009. *PLoS ONE* 2011;6(8):e17502.
- 9 CDC. HIV surveillance – United States, 1981-2008. *MMWR* 2011;60(21):689-93.
- 10 Taylor A, Little K, Zhang X, et al. Estimated perinatal antiretroviral exposures, cases prevented and infected infants in the era of antiretroviral prophylaxis in the United States. Presented at the 19th Conference on Retroviruses and Opportunistic Infections, Seattle, Washington, March 7, 2012. Poster #1000. Available at: <http://www.retroconference.org/2012b/PDFs/1000.pdf>. (Accessed June 25, 2012)
- 11 Des Jarlais DC, Perlis T, Kamyar A, et al. HIV incidence among injection drug users in New York City, 1990 to 2002: Use of serologic test algorithm to assess expansion of HIV prevention services. *Am J Public Health* 2005;95:1439-44.
- 12 Strathdee SA, Patrick DM, Currie SL, et al. Needle exchange is not enough: lessons from the Vancouver injecting drug use study. *AIDS* 1997;11:F59-65.
- 13 CDC. HIV infection among injection-drug users—34 states, 2004-2007. *MMWR* 2009;58:1291-95.
- 14 Holtgrave DR, Hall HI, Prejean J. HIV transmission rates in the United States, 2006-2008. *OPEN AIDS J* 2012;6:26-28.
- 15 Holtgrave DR, Hall HI, Rhodes PH et al. Updated annual HIV transmission rates in the United States, 1977-2006. *J Acquir Immune Defic Syndr* 2009;50(2):236-38.
- 16 CDC. Vital signs: HIV testing and diagnosis among adults – United States, 2001-2009. *MMWR* 2010;59(47):1550-55.
- 17 Hall HI, Holtgrave DR, Maulsby C. HIV transmission rates from persons living with HIV who are aware and unaware of their infection. *AIDS* 2012;26(7):893-96.
- 18 Weinhardt LS, Carey MP, Johnson BT, et al. Effects of HIV counseling and testing on sexual risk behavior: a meta-analytic review of published research, 1985-1997. *Am J Public Health* 1999;89(9):1397-1405.
- 19 Farnham PG, Holtgrave DR, Sansom SL, Hall HI. Medical costs averted by HIV prevention efforts in the United States, 1991-2006. *J Acquir Immune Defic Syndr* 2010;54:565-67.