

Medical Education
Systems, Inc.



Course 913

HIV & AIDS

HIV/AIDS --- United States

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Learning Objectives

Upon successful completion of this course, you will be able to:

- Discuss the magnitude of the HIV/AIDS incidence in the United States
- Identify when Aids was first reported in the United States, and explain its growth
- Describe Epidemiology of HIV/AIDS in United States
- Describe and discuss the evolution of HIV/AIDS prevention programs
- Identify the steps taken by the CDC to meet the AIDS crisis in the United States

Introduction

Nearly 25 years after the first report of a handful of cases of a nameless deadly disease among gay men in New York and Los Angeles, there are still over 1 million persons living with HIV in the United States. About one-fourth of those with HIV have not yet been diagnosed and are unaware of their infection. The “new” syndrome discovered 25 years ago has become one of the deadliest epidemics in human history, killing more than 25 million people around the world, including more than 500,000 Americans.

In the last decade, major advances in prevention and treatment for HIV/AIDS have prolonged and improved the lives of many, but despite extremely beneficial advances, the epidemic is far from over. An estimated 40,000 Americans still become infected with HIV every year, and many of these are young persons under the age of 25. African American men and women are among the hardest hit populations in the U.S. In 2004, they accounted for half of all new HIV diagnoses in this country and more than a third of AIDS deaths to date. African American men who have sex with men (MSM) are especially hard hit. Recent data show significant declines in HIV diagnoses in nearly every group of African Americans except black MSM. Women also remain a particularly vulnerable population, accounting for 29% of all HIV diagnoses in 2004.

The inescapable truth is that, to defeat HIV and AIDS, we need to reduce the number of people who become infected in the first place. Twenty-five years since the onset of the epidemic, prevention is still the only “cure” we have for HIV/AIDS. A comprehensive approach must be used to prevent the further spread of HIV and AIDS. Comprehensive HIV prevention strategies include monitoring the epidemic to target prevention and care activities, researching the effectiveness of prevention methods, diffusing proven effective interventions, funding the implementation and evaluation of prevention efforts in high-risk communities, encouraging early diagnosis of HIV infection, and fostering linkages between prevention and treatment programs. Many governmental and non-governmental organizations at all levels collaborate to implement, evaluate, disseminate, and further develop and strengthen effective HIV prevention efforts nationwide.

The Initial Reports

On June 5, 1981, *MMWR* published a report of *Pneumocystis carinii* pneumonia in five previously healthy young men in Los Angeles, California. These cases were later recognized as the first reported cases of acquired immunodeficiency syndrome (AIDS) in the United States. Since that time, this disease has become one of the greatest public health challenges both nationally and globally. Human immunodeficiency virus (HIV) and AIDS have claimed the lives of more than 22 million persons worldwide, including more than 500,000 persons in the United States.

In 2006, more than 1 million persons are living with HIV/AIDS in the United States, and an estimated 40,000 new HIV infections are expected to occur this year. Since the beginning of the epidemic, countless persons and organizations, inside and outside of government, have mobilized to prevent and treat this disease. These efforts have been enhanced by the commitment and involvement of those living with HIV/AIDS. At this milestone marking the 25th year of AIDS, one way to recognize those persons who have died and those who have been affected by this epidemic is to accelerate the development of measures for preventing HIV transmission.

Successes in HIV Prevention

CDC's overarching HIV-prevention goal is to reduce the number of new HIV infections and to eliminate racial and ethnic disparities by the promotion of HIV counseling, testing, and referral and by encouraging HIV prevention among both persons living with HIV and those at high risk for contracting the virus.

The decrease in mother-to-child (perinatal) HIV transmission is a public health achievement in HIV prevention in the United States. The number of infants infected with HIV through perinatal transmission has decreased from 1,650 during the early- to mid-1990s to 144--236 in 2002. This decline is attributed to multiple interventions, including routine voluntary HIV testing of pregnant women, the use of rapid HIV tests at delivery for women of unknown HIV status, and the use of antiretroviral therapy by HIV-infected women during pregnancy and by infants after birth.

Widespread availability and use of diagnostic and screening tests for HIV infection to promote individual knowledge of HIV serostatus and to ensure the safety of the nation's blood supply has been another success. Since the mid-1980s, blood donor screening methods and testing technology have steadily improved; today, with nucleic acid testing, the risk for HIV transmission is estimated at as low as one per 2 million blood donations. Widespread HIV testing promotion and uptake have resulted in approximately 50% of persons aged 15--44 years in the United States reporting that they have had an HIV test, with a high proportion of those at increased risk (e.g., men who have sex with men [MSM] and injection-drug users) reporting having an HIV test during the preceding year.

National HIV-prevention initiatives have been supported by HIV-prevention programs of state and local health departments, community-based organizations, and other partners. Prevention interventions, including drug treatment programs, peer outreach, and risk reduction, have contributed to a steady decline in new HIV/AIDS diagnoses among injection-drug users in 35 areas with HIV reporting, from an estimated 8,048 in 2001 to 5,962 in 2004. Another prevention success has been the diffusion of evidence-based effective behavioral interventions (DEBIs) for primary and secondary HIV prevention among persons, small groups, and communities. These interventions help to ensure that those persons at greatest risk for HIV transmission or acquisition are able to obtain intensive support to reduce risk behaviors and adopt protective strategies for their health and the health of their partners.

Remaining Challenges

Despite these successes, several challenges remain. HIV/AIDS continues to be a leading cause of illness and death in the United States. An estimated 252,000--312,000 HIV-infected persons in the United States are unaware of their HIV infection. Not only are they at high risk for transmitting HIV to others, but they are much less likely to take advantage of effective medical treatments.

Certain subpopulations remain at increased risk. MSM account for approximately 45% of newly reported HIV/AIDS diagnoses and nearly 54% of cumulative AIDS diagnoses. A recent survey indicated that in several large U.S. cities, approximately one in four MSM surveyed in social venues is infected with HIV, and nearly 50% of MSM are unaware of their HIV infection. Moreover, young MSM were least likely to know they were infected, and MSM from racial/ethnic minority populations consistently demonstrated higher prevalence than white MSM. Annual HIV incidence among MSM is high, ranging from 1.2% to 8.0%. Racial and ethnic minority communities also are disproportionately affected by HIV/AIDS (13). During 2001--2004, in 35 areas with HIV reporting, 51% of all new HIV/AIDS diagnoses were among blacks, who account for approximately 13% of the U.S. population.

Of these, 11% (12,650) of HIV/AIDS diagnoses in men were in black men who were infected through heterosexual contact, and 54% (23,820) of HIV/AIDS diagnoses in women were in black women infected through heterosexual contact. Today, women account for approximately one quarter of all new HIV/AIDS diagnoses and, in 2002, HIV infection was the leading cause of death for black women aged 25--34 years.

A scaling up of the diffusion of effective behavioral interventions (e.g., DEBIs) is required; however, limitations exist in CDC's ability to meet current training and technical assistance needs, as well as states' abilities to implement them widely. Other gaps include the lack of data regarding the effectiveness of adapting DEBIs to all at-risk populations. In many locales, the community-level workforce might be weakened by attrition, fatigue, and inadequate program skills. Changing public perceptions of HIV/AIDS in the United States, coupled with the widespread availability of highly active antiretroviral treatment, has led to the widespread belief that AIDS is no longer a problem or a severe disease in the United States. Although 26% of persons in the United States consider AIDS as a top health concern for the nation (second only to cancer [35%]), the proportion who see it as the number one health problem has declined during the past few years. Complacency, stigma, and discrimination persist and all decrease motivation among persons and communities to adopt risk-reduction behaviors, get tested for HIV, and access prevention and treatment services.

New Strategies

Despite these challenges, substantial opportunities remain to enhance and demonstrate the effectiveness of HIV-prevention measures. New strategies will need to be combined with a scaling up of traditionally effective interventions that are tailored for local epidemiology and context to maximize public health impact despite resource constraints.

Partnerships. Eliminating HIV/AIDS in the United States cannot be achieved by any single agency or group, but will require public health partnerships comprising persons, communities, agencies, and the private sector. Strong partnerships are especially important to address stigma and discrimination and to promote greater acceptance of those living with HIV/AIDS. Religious and business communities and correctional and mental health services all need to be part of a national mobilization in the prevention of HIV transmission. Improved collaboration across government agencies is also required to provide a unified public health infrastructure dedicated to research, prevention, treatment, care, and rehabilitative services for persons affected by HIV/AIDS.

Increased access to voluntary HIV testing. For the estimated quarter of a million persons living with HIV who are unaware of their HIV infection, testing is the gateway to lifesaving treatment. Persons who know they are infected with HIV are more likely to take steps to prevent themselves from transmitting the virus to others. To reduce the number of persons with undiagnosed HIV infections, a sustained expansion of access to and uptake of HIV testing will be required. This reduction can be achieved by making voluntary HIV testing a routine part of medical care, reducing the barriers to HIV testing, and ensuring easy access to new rapid HIV tests that, in many jurisdictions, can be performed by trained persons who are not clinicians.

Prevention messages focused on both HIV-positive and HIV-negative persons. Providing culturally and contextually appropriate messages is essential to help persons at risk avoid contracting HIV infection and to help those who are infected with HIV avoid transmitting the virus. Prevention messages also need to focus on the role of alcohol and drug abuse in HIV risk.

Substance abuse (via injection drugs, alcohol, or methamphetamines) can facilitate risky behaviors among persons who might otherwise protect themselves and others from HIV.

Preventing substance abuse and increasing access to substance-abuse treatment are examples of effective interventions for reducing HIV transmission.

Integrated prevention programs. Federal, state, and local prevention measures are increasingly focused on maximizing public health impact for any given program. One approach to increasing program effectiveness is increasing the development and implementation of integrated HIV-prevention programs. Several integrated programs exist across the nation, combining HIV, sexually transmitted disease (STD), viral hepatitis, mental health, and substance abuse services. Effective integration requires that program leaders 1) better define program integration goals, 2) identify best practices in the field and ensure that they are disseminated and implemented widely, 3) implement policies and regulations that enhance and support integration at local levels, and 4) evaluate the most cost-effective strategies.

Improved monitoring of new HIV infections. Reliable, population-based data are essential to track the HIV epidemic and target prevention measures accurately. For decades, AIDS surveillance has been a cornerstone of national, state, and local efforts to monitor the scope and impact of the HIV epidemic. However, AIDS surveillance data no longer accurately describe the full extent of the epidemic because effective therapies have slowed the progression of the disease. Since 1999, CDC has recommended that states conduct HIV reporting using the same name-based approach currently used for AIDS surveillance nationwide. Currently, 43 states and five territories use confidential, name-based HIV case reporting. Several of the remaining states intend to implement name-based HIV surveillance in 2006. Moreover, in 2006, data from a new national HIV incidence surveillance system will provide the most accurate estimates of new HIV infections. These data, combined with improved surveillance of the patterns and distributions of risk behaviors in the population, will refine the targeting and delivery of HIV-prevention efforts.

New prevention technologies. Certain prevention technologies still under development, including preexposure prophylaxis, microbicides, and vaccines, are unlikely to provide full protection against HIV, might offer little or no protection against other STDs such as gonorrhea and chlamydia infections, and will not prevent unwanted pregnancies. Instead, new technologies are more likely to be incorporated into the spectrum of tools for comprehensive approaches to disease prevention. Effective behavior-change programs will still be needed to address possible behavioral disinhibition (i.e., continuing or returning to high-risk behaviors when one feels protected) among persons who receive these interventions. Prevention counseling that addresses informed choice and consent; the HIV-prevention behaviors of abstinence and delay of sexual debut, being monogamous, having fewer sex partners, and using condoms correctly and consistently; and other reproductive health needs (e.g., STD treatment and family planning) must be incorporated alongside these new prevention interventions.

Epidemiology of HIV/AIDS --- United States, 1981--2005

In June 1981, the first cases of what was later called acquired immunodeficiency syndrome (AIDS) in the United States were reported in *MMWR*. Since 1981, the human immunodeficiency virus (HIV) epidemic has continued to expand in the United States; at the end of 2003, approximately 1,039,000--1,185,000 persons in the United States were living with HIV/AIDS, an estimated 24%--27% of whom were unaware of their infection.

This report highlights several major epidemiologic features of the U.S. HIV epidemic, including the decrease in overall AIDS incidence, the substantial increase in survival after AIDS diagnosis (especially since highly active antiretroviral therapy [HAART] became the standard of care in 1996), and the continued disparities among racial/ethnic minority populations. These findings emphasize the need for a comprehensive national surveillance system, expanding the use of new HIV-testing technologies, promoting knowledge of HIV serostatus, and improving access to care and prevention interventions.

The analysis described in this report included 1) HIV/AIDS case reports (i.e., HIV infection with or without AIDS) from the 35 areas (33 states, Guam, and the U.S. Virgin Islands) with integrated, confidential, name-based HIV/AIDS surveillance of sufficient duration to produce reliable data (i.e., 2001--2004) and 2) AIDS case reports from the District of Columbia, the 50 states, and U.S. territories received by CDC through June 30, 2005. Cases of AIDS and HIV/AIDS were analyzed by year of earliest reported diagnosis of AIDS or HIV infection, respectively. Estimated case counts reflect adjustments made to annual numbers to account for case reporting delays and deaths. Cases without an assigned HIV-transmission category were redistributed based on historical trends in risk factors. For the analysis of trends and the impact of HAART on these trends, AIDS cases were divided into three cohorts on the basis of year of diagnosis: 1981--1995 (pre-HAART), 1996--2000 (early HAART), and 2001--2004 (HAART era). Survival analysis was conducted using the Kaplan-Meier method.

At the end of 2004, an estimated 1,147,697 HIV or AIDS cases had been diagnosed and reported to CDC. AIDS cases increased rapidly in the 1980s and peaked in 1992 (an estimated 78,000 cases diagnosed) before stabilizing in 1998; since then, approximately 40,000 AIDS cases have been diagnosed annually. Over the course of the epidemic, before this stabilization and during early prevention and treatment advances, the number of AIDS cases decreased 47% from 1992 to 1998, and decreases occurred in all demographic and transmission categories. The majority of AIDS cases continue to occur among males; however, the proportion of all AIDS cases increased from 15% (1981--1995) to 27% (2001--2004) for females. Among age groups, the proportion of all AIDS cases decreased from 1.4% (1981--1995) to 0.2% (2001--2004) for persons aged <13 years.

Racial and ethnic minority populations have been disproportionately affected by the HIV epidemic. During 1981--1995, non-Hispanic whites were the predominant racial/ethnic group among persons who had AIDS diagnosed (47%); however, over time the proportion of cases among racial and ethnic minorities increased (2001--2004 cohort: non-Hispanic blacks accounted for 50%, and Hispanics accounted for 20%). Over time, all HIV-transmission categories demonstrated decreases in AIDS case numbers; however, the proportion of all AIDS cases for high-risk heterosexual contact (i.e., sexual contact with a person at high risk for or infected with HIV) during 1981--1995 was 10% and increased to 30% during 2001--2004.

During 2001--2004, an estimated 157,468 persons had HIV/AIDS diagnosed in the 35 areas reporting to CDC, with the annual case number decreasing from 41,270 in 2001 to 38,730 in 2004. Fifty-one percent of HIV/AIDS cases diagnosed during 2001--2004 were among blacks. In 2004, estimated HIV/AIDS case rates for blacks (76.3 per 100,000 population) and Hispanics (29.5 per 100,000) were 8.5 and 3.3 times higher, respectively, than rates for whites (9.0 per 100,000). Among males and females, case rates among blacks (males: 131.6 per 100,000; females: 67.0 per 100,000) were seven and 21 times higher, respectively, than rates for whites (males: 18.7 per 100,000; females: 3.2 per 100,000)

Among HIV/AIDS cases reported during 2001--2004, the most common route of HIV infection was attributed to male-to-male sexual contact (men who have sex with men [MSM]) (44%), followed by heterosexual contact (34%), injection-drug use (IDU) (17%), MSM/IDU (4%), and perinatal (0.6%). Although the HIV/AIDS case trend (2001--2004) for MSM was stable, the estimated annual percentage change for all other transmission categories indicated a substantial decrease, with the greatest decrease occurring for IDU (9.1%).

During 1981--2004, a total of 522,723 deaths among persons with AIDS have been reported to CDC. Substantial increases in survival after diagnosis of AIDS have been observed, particularly since 1996. The proportion of persons living at 2 years after AIDS diagnosis was 44% for those with AIDS diagnosed from 1981--1992, 64% for 1993--1995, and 85% for 1996--2000. Survival for more than 1 year after diagnosis for persons with AIDS diagnosed during 1996--2003 was greater among Asians/Pacific Islanders, whites, and Hispanics, than among blacks and American Indians/Alaska Natives.

Editorial Note from the CDC:

HIV epidemiology continues to evolve. Although considerable progress has been made in reducing the impact of the HIV epidemic, certain populations, especially racial and ethnic minorities, continue to bear a disproportionate burden. Survival differences among racial and ethnic minorities might be attributed in part to late HIV diagnosis and differential access to care. Comprehensive and culturally sensitive approaches to prevention, treatment, and care are needed to reduce disparities in infection rates and disease progression.

An estimated 252,000--312,000 persons in the United States are unaware that they are infected with HIV and, therefore, are unaware of their risk for HIV transmission. CDC and its partners are working together using a comprehensive approach to better understand risk behaviors and barriers that prevent persons from getting tested for HIV and accessing medical and preventive services. Analysis of data collected by the National HIV Behavioral Surveillance System, which surveys populations at high risk for HIV to assess prevalence and trends in risk behavior, HIV testing, and use of prevention services, revealed that of MSM surveyed in five U.S. cities, 25% were infected with HIV and of those, 48% were unaware of their infection. These results underscore the need to increase HIV testing and prevention efforts among populations at high risk.

With the advent of HAART, the overall progression of HIV infection to AIDS and from AIDS to death has slowed. Consequently, AIDS surveillance no longer serves as a reliable surrogate for monitoring HIV-infection trends. Conducting timely, accurate, complete, and confidential name-based HIV surveillance, which includes both the initial and subsequent collection of relevant clinical and laboratory information (e.g., CD4 count, viral load), is critical for monitoring the changing spectrum of HIV disease. The use of potent combination antiretroviral therapy has also been linked to the development of adverse consequences (e.g., metabolic complications and viral resistance), which can pose challenges to clinical management. CDC and its partners conduct supplemental studies to monitor clinical outcomes of HIV/AIDS cases, including integrating laboratory technologies with HIV/AIDS surveillance to monitor variant, atypical, and drug-resistant strains of HIV.

The national surveillance system for HIV/AIDS has evolved with advances in the understanding of this epidemic. The system now includes surveillance data from persons diagnosed with HIV to describe the epidemiology more accurately.

CDC and the Council of State and Territorial Epidemiologists recommend that all states and territories conduct confidential, name-based HIV surveillance. As of May 2006, a total of 43 states and five territories had implemented confidential, name-based HIV-infection reporting. This integrated surveillance provides the only population-based monitoring of the HIV epidemic in the United States and provides invaluable epidemiologic data to local, state, and federal agencies to improve resource allocation, program planning, and evaluation for HIV-prevention and treatment services.

Diagnosis of asymptomatic HIV infection in a person does not necessarily signify recent infection. On average, 8--11 years elapse before a person has onset of symptoms of HIV infection. To provide a population-based estimate of HIV incidence (i.e., new HIV infections), CDC, in conjunction with 34 state and local health departments, is conducting HIV-incidence surveillance by using STARHS (Serologic Testing Algorithm for Recent HIV Seroconversion). Knowledge of newly acquired (e.g., <6 months) HIV infections will enable more accurate monitoring of trends among persons recently infected. This will allow more effective targeting of treatment and prevention measures, thereby increasing opportunities to interrupt HIV transmission. CDC expects to report data from this system in late 2006.

Despite impressive accomplishments, many new challenges have arisen since the beginning of the HIV epidemic. A comprehensive national surveillance system must be complete and timely to better identify and monitor trends in HIV risk, HIV infection, and HIV infection outcomes. Twenty-five years into the HIV epidemic, surveillance data continue to highlight the need for a multifaceted approach that promotes knowledge of serostatus (e.g., via routine HIV testing), linkage to care, and risk-reduction strategies for seronegative persons at high risk for HIV infection and persons living with HIV.

Achievements in Public Health: Reduction in Perinatal Transmission of HIV Infection --- United States, 1985--2005

During 2005, an estimated 92% of acquired immunodeficiency syndrome (AIDS) cases reported among children aged <13 years in the United States were attributed to mother-to-child transmission of human immunodeficiency virus (HIV) (CDC, unpublished data, 2006). Transmission can occur during pregnancy, labor, delivery, or breastfeeding. Estimates of the number of perinatal HIV infections peaked in 1991 at 1,650 and declined to an estimated range of 144--236 in 2002 (CDC, unpublished data, 2006). This reduction is attributed to routine HIV screening of pregnant women, use of antiretroviral (ARV) drugs for treatment and prophylaxis, avoidance of breastfeeding, and use of elective cesarean delivery when appropriate. With these interventions, rates of HIV transmission during pregnancy, labor, or delivery from mothers infected with HIV have been reduced to less than 2%, compared with transmission rates of 25%--30% with no interventions.

Despite these gains, substantial challenges to reducing perinatal transmission of HIV remain. Every perinatal HIV infection represents a sentinel health event, often indicating a woman who had undiagnosed HIV infection before pregnancy or did not receive appropriate interventions to prevent transmission of the virus to her infant. Therefore, to strengthen and sustain measures to maximally reduce perinatal transmission, public health activities should give high priority to collection of data to identify where missed opportunities occur and target prevention efforts accordingly.

Trends in Perinatal HIV/AIDS

AIDS cases. Pediatric AIDS cases were reported as early as 198 . The estimated number of perinatally acquired AIDS cases in the United States peaked at 945 in 1992 and declined rapidly with expanding prenatal testing and implementation of appropriate preventive interventions. In 2004, an estimated 48 perinatally acquired cases of AIDS were reported (5), a decrease of approximately 95% from 1992. In 2004, approximately 38% of perinatally acquired AIDS cases were reported in children aged <1 year. As with adults, reporting of children with AIDS underestimates the current burden of HIV infection in children.

HIV cases. Because not all states conduct name-based HIV-infection reporting,* estimates of HIV infections among children over time are more uncertain than for AIDS cases. Availability of highly active antiretroviral therapy (HAART) has changed the progression time to AIDS; therefore, using reported AIDS cases to estimate HIV cases among children has been more difficult in recent years. Previous estimates placed the peak of HIV-infected infants at approximately 1,650 in 1991, followed by a steep decline. A similar procedure, which did not produce a point estimate, yielded a range of 284--367 for the estimated number of HIV-infected infants born in 2000.

More recent estimates have used perinatal HIV data from 35 states[†] with confidential, name-based HIV reporting of pediatric HIV infections since at least 2002 to extrapolate proportionately, on the basis of perinatal AIDS cases, to the entire U.S. population. Using this procedure, an estimated 144--236 HIV-infected infants were born in the United States in 2002 (CDC, unpublished data, 2006). The precision of perinatal HIV case estimates should improve as additional states adopt name-based HIV-infection reporting.

Milestones in the Reduction of Perinatal HIV Transmission

HIV testing. The observed decreases in pediatric AIDS and HIV cases likely resulted primarily from increased identification of infected mothers and exposed infants and timely intervention to prevent perinatal HIV transmission. The need for pregnant women to know their HIV status was recognized early in the epidemic as a key step to preventing perinatal transmission. In 1985, CDC recommended that pregnant women in groups at high risk be offered counseling and voluntary HIV testing. At the time, risk-based screening for HIV was recommended because no treatment was available for HIV infection; however, many women with HIV infection were not identified by risk-based screening.

In 1995, after a clinical trial determined that zidovudine (ZDV) was able to reduce perinatal HIV transmission, CDC and the American Academy of Pediatrics (AAP) recommended universal voluntary counseling and HIV testing for all pregnant women to allow timely prophylactic use of ZDV. In 1999, the Institute of Medicine reported that the lack of timely HIV diagnosis in pregnant women was the largest contributor to continued perinatal transmission in the United States and recommended universal HIV screening of pregnant women with patient notification and the ability to decline screening (i.e., the opt-out approach). AAP and the American College of Obstetricians and Gynecologists (ACOG) published a joint statement in 1999 recommending universal opt-out HIV screening for pregnant women. CDC testing guidelines in 2001 recommended routine HIV screening as early as possible during pregnancy for all pregnant women with streamlined counseling and consent processes to reduce barriers to testing, and in 2003, a letter from CDC to U.S. health professionals also recommended the opt-out screening approach.

Despite such measures, from 2001 to 2004, nearly 7% of HIV-infected pregnant women reported from 28 states with confidential, name-based perinatal HIV exposure reporting since at least 2001 had HIV that remained undiagnosed by the time of delivery. However, the majority of these women delivered in hospital settings, where they might be tested. In 2001, CDC recommended rapid or expedited testing for all women during labor and delivery with undocumented HIV status. With the approval of a rapid HIV test by the Food and Drug Administration (FDA) in 2002, providing testing for women with undocumented HIV status in labor became more feasible. Such testing allows provision of interventions to reduce the risk for transmission of HIV infection even in the absence of treatment during pregnancy. In 2004, the Mother-Infant Rapid Intervention at Delivery study demonstrated that rapid testing was acceptable and feasible in the delivery setting, and ACOG also expanded its recommendations to include rapid testing for women in labor with unknown HIV status.

As HIV testing during pregnancy became more routine, some areas (e.g., New York state) documented an increasing proportion of neonatal HIV infections transmitted by women who tested HIV negative earlier in pregnancy. In response, ACOG and CDC recommended a routine second HIV test during the third trimester for women known to have elevated risk for HIV infection (e.g., history of sexually transmitted disease [STD] or illicit drug use) and in areas with elevated HIV prevalence among women of childbearing age.

Although nationally representative data on prenatal HIV testing rates do not exist, in four states the proportion of HIV-infected pregnant women in whom HIV infection was diagnosed before giving birth increased from 68% in 1993 to 81% in 1996. Recently, among all HIV-exposed infants reported to CDC through the HIV/AIDS Reporting System (HARS) (i.e., from 28 states with confidential, name-based perinatal HIV exposure reporting for infants who were born during 2001--2004), 93% of mothers had known HIV status before or at the births of their infants.

Antiretroviral use. In February 1994 the Pediatric AIDS Clinical Trials Group (PACTG) 076 trial demonstrated a breakthrough prevention intervention with a 67% reduction in perinatal HIV transmission by using a three-part regimen consisting of administration of ZDV to the mother during pregnancy, intravenous ZDV during labor, and ZDV to the infant for 6 weeks. In April 1994, CDC issued provisional guidelines for ZDV use to reduce perinatal transmission, and, in July 1994, FDA approved ZDV for this use. In August 1994, the U.S. Public Health Service Task Force (USPHSTF) and CDC issued consensus recommendations for use of this regimen to reduce perinatal HIV transmission.

In the late 1990s, additional ARV medications were developed and licensed, and administration of HAART became the standard of care, which usually consists of three or more drugs used in combination to inhibit viral replication at multiple steps of the replication cycle. Such therapy is capable of reducing viral replication to levels undetectable by available assays. In 1998, USPHSTF and CDC recommended HAART for pregnant women who required the therapy for their own health and recommended that all HIV-infected pregnant women be offered combination therapy, while acknowledging uncertainty about benefits and risks to the fetus.

Subsequent studies determined that maternal treatment with HAART reduced perinatal transmissions to <2% of deliveries by women with HIV; the risk of mother-to-child transmission was independently correlated with the complexity of ARV therapy (i.e., the number and types of different medications) and with maternal HIV RNA levels. Current guidelines recommend use of HAART (including ZDV whenever possible)

for women who require it for their own health and for all women whose plasma HIV RNA levels are $\geq 1,000$ copies/mL and also recommend that such therapy be considered instead of ZDV alone for women with plasma HIV RNA levels $< 1,000$ copies/mL. Certain less complex regimens, administered only intrapartum and postnatally to infants, also have been shown to reduce perinatal transmission, although to a lesser extent than when antepartum therapy also was administered. Such regimens are recommended in the United States when the mother has not received ARV prophylaxis during pregnancy, such as women first identified during labor as infected with HIV.

Some evidence from in vitro and in vivo models has suggested the potential for teratogenic or carcinogenic effects from some ARV agents in pregnancy. However, analysis of all prospective cases reported to the Antiretroviral Pregnancy Registry during January 1989--July 2005 identified no detectable increase in overall risk of birth defects or of specific birth defects in human.

Toxicity related to mitochondrial dysfunction has been reported in patients receiving long-term treatment with nucleoside analogs; infants exposed to these agents should be regularly monitored for the development of such toxicity. Data are conflicting regarding whether receipt of combination ARV therapy in pregnancy is associated with other adverse pregnancy outcomes, such as preterm birth; all pregnant women receiving such therapy and their infants should receive monitoring for pregnancy complications and potential toxicity.

The use of ARV drugs for prevention of perinatal HIV transmission increased dramatically after 1994. A four-state (Louisiana, Michigan, New Jersey, and South Carolina) study determined that, during 1993--1996, the proportion of HIV-infected pregnant women offered prenatal ZDV increased from 27% to 85%, the proportion offered intrapartum ZDV increased from 5% to 75%, and the proportion offered neonatal ZDV increased from 5% to 76%. In 24 areas conducting enhanced perinatal HIV surveillance during 1999--2001, nearly 79% of HIV-infected pregnant women received some ARV therapy during pregnancy; 77% received ARV therapy during the intrapartum period, and 92% of HIV-exposed infants received some form of ARV therapy. In the Women and Infant Transmission Study, the rate of perinatal transmission decreased from 22.6% in 1990, when most women received no ARV therapy or only ZDV for treatment of HIV infection, to 1.2% in 2003, when 87% received combination.

Avoidance of breastfeeding. In 1985, breastfeeding was reported as potentially associated with mother-to-child transmission of HIV, and HIV was isolated from breast milk. That year, CDC recommended that women with HIV infection avoid breastfeeding. Subsequent international studies estimated that one third to one half of perinatal HIV transmission among breastfeeding populations occurred during breastfeeding. Avoidance of breastfeeding is now recommended in areas, including the United States, where safe alternatives are reliably accessible and affordable.

Scheduled cesarean delivery. Several studies have confirmed that cesarean delivery performed before onset of labor and membrane rupture can reduce HIV transmission to infants whose mothers do not receive ARV therapy during pregnancy or who receive only ZDV. Rates of cesarean delivery among HIV-infected pregnant women in one large cohort study increased from 20% to 44% after presentation of the results of these studies in 1998. However, the efficacy of cesarean delivery in women who have received potent combination therapy and have low HIV RNA levels ($< 1,000$ copies/mL) remains unclear. The uncertain benefit for prevention of perinatal HIV transmission is likely outweighed by the potential risks of operative delivery in such women, given that the risk for HIV transmission is less than 2%. USPHSTF recommends that scheduled cesarean delivery be offered to women with HIV RNA levels $> 1,000$ copies/mL near the time of delivery.

Current Challenges

The decreases in perinatal HIV infections and perinatally acquired AIDS cases in the United States represent an important achievement in public health. However, perinatal transmission of HIV continues to occur. Infant infections can be associated with interruptions of care at any stage for HIV-infected women and their infants.

Females aged >13 years accounted for only 7% of reported new AIDS cases in 1985 (CDC, unpublished data, 2006) but 27% of reported cases in 2004. Enhanced primary HIV-prevention strategies are needed to prevent new infections in women, which will, in turn, prevent perinatal HIV infections.

Lack of prenatal care for HIV-infected women also contributes to ongoing perinatal transmission. Data from HARS for births during 2001--2004 indicate that 16% of mothers of HIV-infected infants had no documented prenatal care visits, excluding cases where no infant birth history information was available. For many HIV-infected women, mental health or substance use concerns and HIV-related stigma present barriers to prenatal care. Increasing accessibility to prenatal care services is crucial to sustain and maximize the decline in perinatal HIV infections.

Pregnant women also might have increased susceptibility to HIV infection and infection of women during pregnancy might lead to a substantial number of perinatal transmissions. In addition to universal HIV screening as early as possible in pregnancy, CDC now recommends a second HIV test during the third trimester for populations of women with elevated HIV incidence and rapid HIV testing for women in labor with undocumented HIV status.

Requirements for lengthy HIV-prevention counseling and written documentation of informed consent for HIV testing might present additional barriers to routine prenatal testing. Among the 28 states with perinatal HIV-exposure and HIV/AIDS reporting through HARS, during 2001--2004, approximately 26% of mothers of HIV-infected infants were not recognized as infected with HIV before delivery. Testing rates often are higher in areas employing opt-out testing for pregnant women, compared with opt-in strategies that require specific written documentation of informed consent for HIV testing.

Many HIV-infected women and their infants still do not receive appropriate ARV treatment and prophylaxis. Of all HIV-infected infants reported to HARS during 2001--2004 from 28 states with confidential, name-based infant HIV-exposure reporting, 46% had not received prenatal ZDV, 41% had not received ZDV during labor and delivery, and 25% had not received postnatal ZDV. Many of these infant infections could have been prevented if the HIV infections of their mothers had been identified through adequate preconception and prenatal care and if appropriate prophylactic interventions had been administered.

Maximal reduction of perinatal HIV infection is one of the four primary goals of CDC's Advancing HIV Prevention initiative, announced in 2003. CDC perinatal HIV-prevention programs currently focus on five key areas: 1) implementation of rapid HIV testing in labor and delivery for women with undocumented HIV status; 2) social marketing efforts to increase awareness of the need for HIV testing among pregnant women; 3) outreach efforts to promote receipt of prenatal care by pregnant women; 4) case management services to promote receipt of prenatal care and receipt of appropriate medication and interventions among HIV-infected pregnant women; and 5) provider training to increase availability of rapid testing services. Programs are also underway to increase collaboration between perinatal HIV programs and programs addressing other important perinatal infections. In addition,

CDC continues to monitor infections among children and adults and produces periodic surveillance reports to provide data for public health decision makers. To monitor perinatal HIV-prevention measures and address missed opportunities for prevention, CDC and the Council of State and Territorial Epidemiologists recommend that all states require public health reporting of all cases of perinatal HIV exposure in infants.

Implementation of recommendations for universal prenatal HIV testing, ARV prophylaxis, elective cesarean delivery, and avoidance of breastfeeding has resulted in a 95% decrease in the number of perinatal AIDS cases in the United States since 1992 and a decline in the risk for perinatal HIV transmission from an HIV-infected mother to less than 2%. However, barriers to the elimination of perinatal HIV infection remain, as the number of HIV infections continues to rise among women, and health-care services are not universally accessed by women in need of these services. Finally, the success in reducing perinatal HIV transmission observed in the United States contrasts with the situations in poorer countries, particularly in sub-Saharan Africa, where perinatal HIV transmission remains largely unabated. Continued success in the United States and reduction of perinatal HIV transmission in areas where such transmission remains common will require sustained commitment to prevention of HIV infection among women and to treatment for women affected by HIV/AIDS.

Evolution of HIV/AIDS Prevention Programs --- United States, 1981--2006

When the first cases of what would become known as acquired immunodeficiency syndrome (AIDS) were reported in 1981, the magnitude of the epidemic and the numbers of deaths were unimaginable. During the next 25 years, an unprecedented mobilization of individual, community, and government resources was directed at stopping the epidemic. CDC currently supports a wide range of human immunodeficiency virus (HIV) prevention activities in the United States, including 1) collection of behavioral and HIV/AIDS case surveillance data that document trends in the epidemic and risk behaviors; 2) programs conducted by state, territorial, and local health departments, community-based and national organizations, and education agencies; 3) capacity building to improve HIV-prevention programs; 4) program evaluation to monitor the delivery and outcomes of prevention services; and 5) research leading to new strategies for preventing transmission of HIV/AIDS. Since 1994, local and state health departments have allocated resources to specific programs and populations through local community planning processes that involve health department staff, prevention providers, and members of affected communities. A three-pronged approach has been developed, consisting of 1) prevention activities directed at persons at high risk for contracting HIV; 2) HIV counseling, testing, and referral services; and 3) prevention activities directed at improving the health of persons living with HIV and preventing further transmission.

Persons at High Risk for Contracting HIV

The first HIV-prevention programs in the United States were grassroots measures initiated in 1982 predominantly by homosexual men in San Francisco, California, and New York City. These and other early HIV-prevention activities primarily were designed to increase AIDS awareness, reduce unfounded fears about transmission, and provide basic information regarding symptoms, likely transmission routes, and risk-reduction strategies.

Early CDC activities included establishment of the National AIDS Information Line (1983) and National AIDS Clearinghouse (1987), institution of the nationwide America Responds to AIDS public information campaign (1987), and distribution of *Understanding AIDS* (1988), a brochure prepared in consultation with U.S. Surgeon General C. Everett Koop; this was the first mailing regarding a major public health problem that was delivered to every residential mailing address in the United States. CDC programs during the mid- to late 1980s addressed high-school and college-aged populations, persons at increased risk for HIV, racial and ethnic minority populations, perinatal transmission, and health-care workers. These programs increased basic knowledge about HIV transmission and prevention, reduced risk behavior within populations at high risk for infection, and decreased negative attitudes toward persons living with HIV/AIDS.

However, as important as these gains were, they were not sufficient to motivate behavior change among some persons at high risk for HIV infection. More intensive, targeted interventions were developed, including the five-city CDC AIDS Community Demonstration Projects (1989), which produced effective, community-level interventions for difficult-to-reach populations that led to increased condom use with main and nonmain sex partners. A wide range of behavioral intervention strategies, operated at individual, small-group, and community levels, and complemented by structural interventions and medical/technological advances, has been implemented for persons at high risk for HIV infection.

Behavioral interventions were observed to substantially reduce HIV risk while remaining cost effective or cost saving for a wide range of populations at high risk. The CDC HIV Prevention Research Synthesis Project has conducted meta-analyses of data from scientifically rigorous intervention trials since 1996. These analyses have determined that behavioral interventions substantially reduce sexual risk among young adults, men who have sex with men (MSM), heterosexual men and women, and drug users. More than 50 interventions for populations at high risk have been identified that meet stringent criteria for efficacy and scientific rigor. A growing number of these evidence-based interventions have been packaged for use in local HIV-prevention programs. These packages, or kits, and training on how to use them are available through the CDC Diffusion of Effective Behavioral Interventions (DEBI) project. In addition, CDC supports a wide range of other activities designed to build the capacity of local HIV-prevention providers and their organizational infrastructures.

HIV Counseling, Testing, and Referral Services

In 1983, identification of HIV as the cause of AIDS made possible the development of tests to detect the virus. In January 1985, the U.S. Public Health Service (PHS) issued provisional recommendations for screening donated blood and plasma in anticipation of a commercial HIV-antibody test. The first test for HIV antibody was licensed by the Food and Drug Administration in March 1985 and was widely implemented in blood banks, plasma collection centers, health departments, and clinical-care settings. Concurrent with licensing of the new test, PHS announced availability of funding for health departments to establish test sites that would provide an HIV-test alternative to blood donation for persons at high risk to enable them to learn their HIV-antibody status. By the end of 1985, a total of 874 alternate test sites had been established, and 79,100 persons had been tested.

In 1986, new recommendations published by CDC substantially expanded use of HIV-antibody testing. These recommendations encouraged confidential and anonymous HIV-antibody testing of persons at high risk in combination with risk-reduction counseling and, for HIV-seropositive persons, referral of sex and needle-sharing partners for medical evaluation and testing.

Since then, the number of CDC-supported test sites has increased to approximately 11,000, providing approximately 2.2 million HIV-antibody tests in 2004 (CDC, unpublished data, 2006).

For most of the epidemic, HIV-antibody testing has required two visits. The first visit consisted of a pretest counseling session and a blood draw, but test results and posttest counseling were not provided until the second visit (usually 2 weeks after the blood draw), after completion of the laboratory test. The need for a second visit posed a major barrier; depending on the setting and population, 10% to >50% of persons tested failed to return for their results.

Counseling was initially based on standard messages about the test, the meaning of positive and negative test results, and risk reduction. Early studies of HIV counseling and testing observed considerable reductions in risk among persons who learned that they were HIV seropositive but found little change among those who were HIV seronegative. On the basis of these findings, CDC recommended a shift to client-centered counseling that emphasized increasing the client's perception of risk and developing a personalized risk-reduction plan. This approach substantially increased condom use and decreased new sexually transmitted diseases (STDs) among HIV-seronegative patients at STD clinics.

In recent years, CDC has issued new guidelines and supported new initiatives to make HIV-antibody testing more accessible, incorporate advances in testing technologies, better integrate testing into routine medical care, recognize resource and provider constraints, and accommodate the diverse needs and preferences of persons seeking testing. The availability of oral fluid, urine, and finger-prick testing, along with rapid tests, has made it easier to provide HIV testing in a wide range of clinical and nontraditional settings and has led to new strategies for reaching more persons with undiagnosed HIV infection. Rapid tests produce results in 20 minutes and make it possible to give HIV-seronegative and provisional HIV-seropositive test results in a single visit, increasing the percentage of persons who receive their test results in a single visit to more than 95% in many testing programs. CDC also is developing recommendations to make HIV screening a routine part of medical care, remove barriers that hamper early HIV diagnosis and treatment, and demonstrate and disseminate effective models for testing in clinical and nontraditional settings.

Persons Living with HIV

The availability of highly active antiretroviral therapy (HAART) in the mid-1990s led to a dramatic decline in AIDS-related deaths and a new era in which many persons newly diagnosed with HIV can expect to lead active and productive lives that extend for decades. This treatment breakthrough underscored the need for additional prevention services for the estimated 1.0--1.2 million persons living with HIV in the United States. Although most persons who have HIV infection diagnosed reduce or eliminate behaviors that place themselves at risk for STDs and transmitting HIV to others, some do not eliminate risk behaviors, and others resume risk behaviors later in life.

Historically, most prevention programs were designed to address the needs of persons who were at risk for contracting HIV. During the first decade of the epidemic, fewer prevention programs focused on persons living with HIV with the following notable exceptions: 1) measures to prevent perinatal transmission; 2) HIV counseling, testing, and referral programs to identify undiagnosed HIV infections and to provide HIV-seropositive persons with risk-reduction counseling, partner-referral services, and referrals to medical care and other supportive services around the time of diagnosis; 3) prevention case management for HIV-seropositive and other persons with multiple needs; and

4) pioneering community and health department-based programs that integrate prevention with medical or social services for persons living with HIV.

In 2001, CDC introduced the Serostatus Approach to Fighting the HIV Epidemic (SAFE), which defined a framework for improving the health of persons living with HIV and preventing transmission to others. In 2003, CDC implemented the Advancing HIV Prevention (AHP) initiative, which formally adopted prevention with persons living with HIV as a core element of a comprehensive approach to HIV prevention. AHP funded large-scale demonstration projects to evaluate public health strategies for identifying undiagnosed HIV infections and preventing transmission by persons living with HIV.

Recommendations were made to incorporate HIV prevention into the medical care of HIV-seropositive patients. A meta-analytic study of 12 HIV trials published during 1988--2004 determined that behavioral interventions for persons living with HIV led to a 43% relative reduction in unprotected sex and also reduced acquisition of STDs (34); CDC is disseminating effective behavioral interventions for persons living with HIV to state and local programs through capacity-building activities.

Successes and Current Challenges

Considerable success in the prevention of HIV infection in the United States has been achieved. HIV testing and donor deferral have markedly increased the safety of the nation's blood supply. Perinatal transmission of HIV has been greatly reduced. Reductions in needle sharing have resulted in a substantial decrease in HIV transmissions associated with injection-drug use. These and other prevention successes have reduced incidence of HIV infection from more than 150,000 cases per year in the mid-1980s to approximately 40,000 cases per year since the late 1990s.

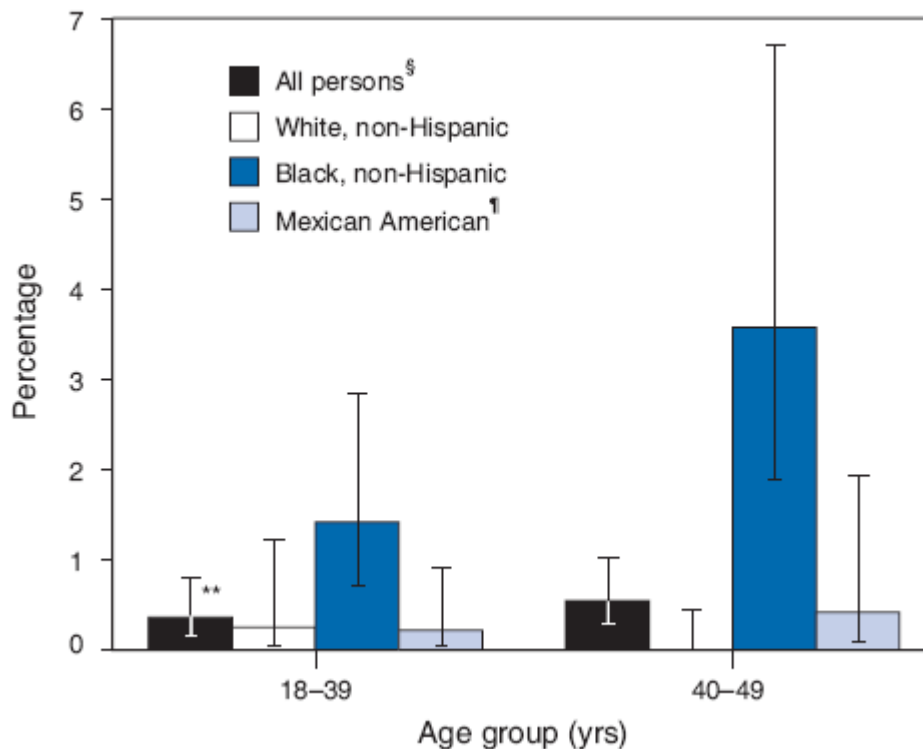
Despite this success, considerable prevention challenges remain. Racial/ethnic disparities have increased during the past 25 years, especially among black men and black women. HIV prevalence remains high among MSM overall, new cases of HIV increased substantially among MSM from 2003 to 2004, and prevalence among black MSM was reported as high as 46% in a study in five U.S. cities during 2004--2005. The growing number of persons living with HIV means that more persons are potentially capable of transmitting the virus to others, and existing resources might not be adequate to ensure that all HIV-seropositive persons have access to appropriate care, treatment, and prevention services. Despite the substantial progress, an estimated one quarter of persons living with HIV do not know they are infected and are at considerable risk for developing AIDS and unknowingly transmitting HIV.

Changes in beliefs regarding the severity of HIV infection, prevention fatigue, and increases in methamphetamine abuse and STDs also present new challenges to HIV prevention. These challenges are compounded by deep-rooted social problems and inequities. Poverty, homelessness, racism, homophobia, and gender inequality all affect HIV risk and can limit the effective delivery of prevention programs and medical services. Other social factors might also be associated with increased risk behaviors. HIV stigma and discrimination remain pervasive, causing some persons to avoid HIV testing and others living with HIV to delay medical care, be less adherent to care, and fear disclosing their HIV status to others.

HIV-prevention programs must continue to evolve to address these challenges, incorporating biomedical advances and findings (e.g., preexposure and postexposure prophylaxis, microbicides, male circumcision, vaccine development, and effects of antiretroviral treatment on infectivity) and innovations in HIV-testing technologies, and other breakthroughs.

New interventions are needed for underserved populations at high risk, to improve effectiveness of existing interventions, and to further develop the capacity of health departments and community-based organizations to implement effective behavioral and public health interventions. In addition, the need continues for CDC and its local, state, and national prevention partners and affected communities to work together to improve the quality and efficiency of HIV-prevention programs to best serve the prevention needs of persons who are at risk for or living with HIV infection.

Percentage of Persons Aged 18--49 Years with HIV* Infection,[†] by Age Group and Race/Ethnicity --- United States, 1999--2002



* Human immunodeficiency virus.

[†] A total of 32 persons tested positive for HIV antibody out of 5,926 persons tested, including zero non-Hispanic whites in the group aged 40--49 years. Data are weighted to represent the total civilian, noninstitutionalized U.S. household population.

[§] Includes persons of all races/ethnicities, not only those shown separately.

[¶] Persons in this subpopulation might be of any race.

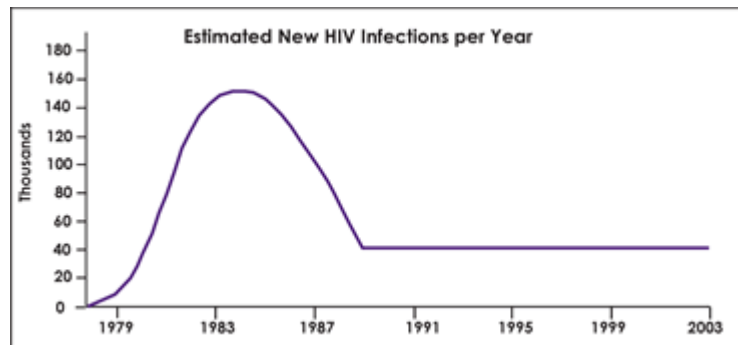
** 95% confidence interval.

During 1999--2002, the seroprevalence of HIV was 0.37% among persons aged 18--39 years and 0.54% among persons aged 40--49 years. Among persons aged 18--49 years, the highest percentage of HIV infection (3.58%) was among non-Hispanic blacks aged 40--49 years. These prevalences likely are underestimates of HIV infection because the survey sample is the U.S. household population and excluded homeless persons and those in institutions, who might be at higher risk for infection.

SOURCE: McQuillan GM, Kruszon-Moran D, Kottiri BJ, et al. Prevalence of HIV in the US household population: the National Health and Nutrition Examination Surveys, 1988--2002. *J Acquir Immune Defic Syndr* 2006;41:651--6.

The Past 2 Decades: How Far Have We Come?

During the early 1980s, as many as 150,000 people became infected with HIV each year. by the early 1990s, this rate had dropped to approximately 40,000 each year, where it remains today.



Advances in Prevention and Treatment

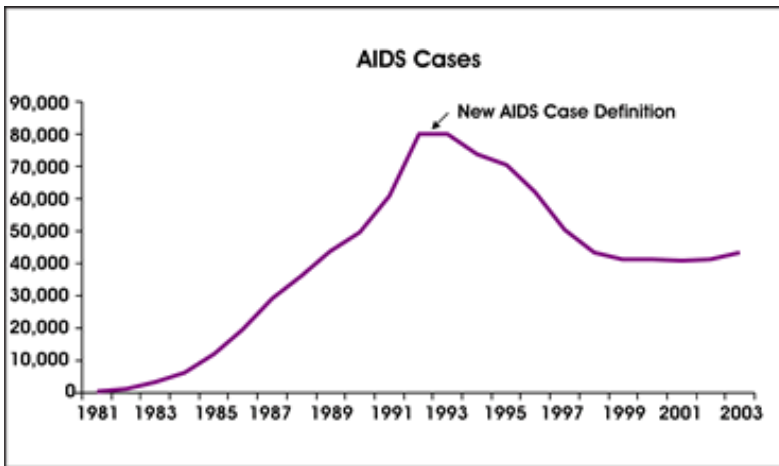
- Drastic reductions in mother-to-child HIV transmission
- New drug combinations to treat HIV and delay the onset of AIDS
- Increased community involvement in HIV prevention efforts
- Better understanding of which communities are at high risk for HIV infection
- Behavioral interventions shown to be effective through randomized, controlled clinical trials

Well-designed and well-delivered HIV prevention programs have contributed to safer behaviors and have helped reduce the number of new infections.

Prevention effectiveness has been proven scientifically. Among those who have benefited are MSM, IDUs, heterosexual men and women at high risk, youth at high risk, and children born to HIV-infected mothers. These results reflect sustained, focused, and collaborative efforts among CBOs, federal agencies, foundations, prevention scientists, and state and local health departments.

Overall Decline in AIDS Cases

AIDS cases have declined dramatically in certain populations and regions. New AIDS cases in the United States increased rapidly during the 1980s, peaked in the early 1990s, and then began to decline dramatically in 1996. The peak in 1993 was associated with expansion of the AIDS case definition. Subsequent declines are most likely the result of improved HIV treatment.



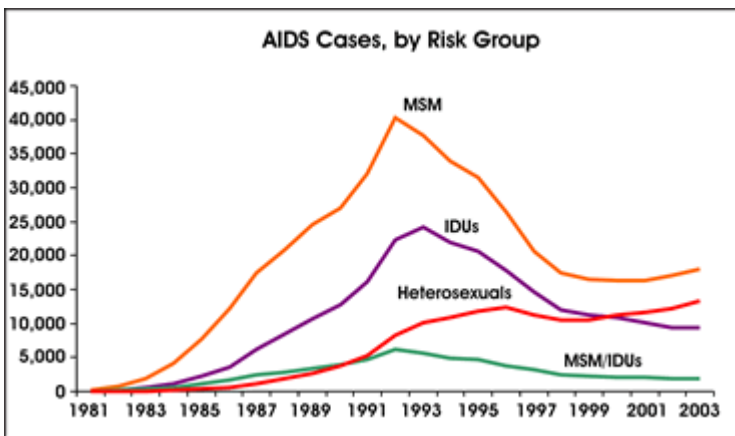
Declines in AIDS Cases in Certain Risk Groups

MSM

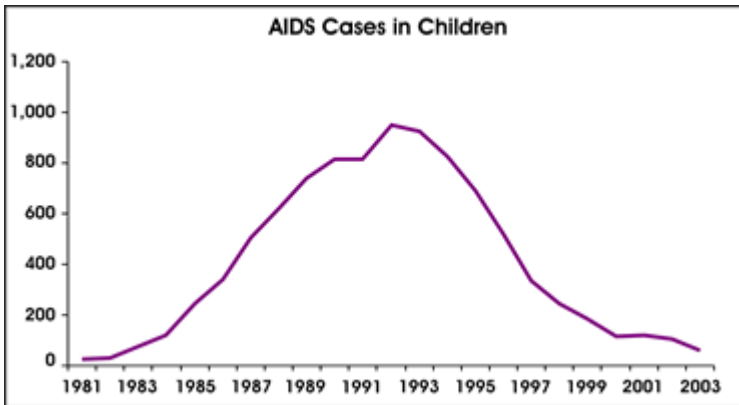
It has been estimated that during the mid 1980s, nearly 50% of MSM in some major urban gay communities in the United States were infected with HIV. Although MSM continue to account for the largest number of people for whom a diagnosis of AIDS is made each year, new AIDS cases in this population declined dramatically before stabilizing and then increasing slightly.

IDUs

During the 1980s, injection drug use was another major route for HIV transmission in the United States. After more than a decade of prevention interventions—drug treatment programs, needle exchange programs, safer injection practices, peer support, street outreach, and counseling—new AIDS cases in IDUs declined.



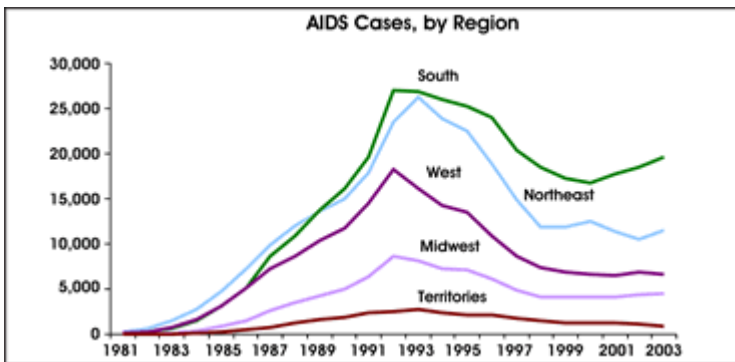
Declines in AIDS Cases in Children



The estimated number of US children with AIDS declined 94% from 1992 (when the number of cases peaked) through 2003. This decline reflects the use of antiretroviral therapy to prevent HIV transmission from mother to child.

Declines in AIDS Cases in Geographic Regions

In most US regions, new AIDS cases were first observed to decline in 1996. More recently, from 2002 through 2003, the number of AIDS cases increased in the Northeast, South, and Midwest and decreased in the West.



The HIV/AIDS Epidemic: What is the Magnitude?

How Serious Is It?

The HIV/AIDS epidemic has taken a tremendous toll on people in the United States. From the beginning of the epidemic in 1981 through 2003, an estimated 1.3–1.4 million people in this country have been infected with HIV/AIDS. Of these, about one third (more than 500,000) have died.

Despite declines in new infections in the early 1990s, more people are living with HIV/AIDS than ever before. CDC estimates that about 1 million people in the United States are living with HIV or AIDS. About one quarter of these people are unaware of their infection, which puts them and others at risk. Those who do not know that they are infected cannot take advantage of treatment and may unknowingly transmit HIV to others. And even of the three quarters who know that they are HIV-infected, one third may not be receiving ongoing care. About half of all HIV-infected people may be untested, untreated, or both.

AIDS

New AIDS cases and deaths have declined dramatically since the beginning of the epidemic. However, this decline began to stabilize in 1999 and may not drop further unless new HIV infections also decrease or new treatments are developed. The decline in AIDS cases should not be confused with a decline in new HIV infections or an end to the epidemic. It can mean that fewer HIV infections are progressing to AIDS.

HIV

New HIV infections have also declined but have remained stable for several years. At an estimated 40,000 new HIV infections per year, this number is unacceptably high. It represents the spreading of the epidemic into new, vulnerable populations.

Although effective treatment will ensure that fewer HIV infections progress to AIDS, it means that more and more people will be living with HIV, producing a wellspring of potential new infections. It is also important to note that treatment does not cure HIV infection. And no one knows whether treatment may produce long-term adverse effects or whether the drugs will remain effective. These realities underscore the importance of tracking the epidemic and using scientifically proven prevention programs to protect the people who are most at risk.

How is it Changing?

The epidemic is changing in terms of how many people are living with HIV, where they are living, who is most vulnerable, and how we track the epidemic.

- More people are living with HIV. because of treatment advances, people with HIV are living longer. As a result, more people are living with HIV today than at any other time during the history of the epidemic. Along with this growing population of HIV-infected persons, chances for transmission are increasing.
- The epidemic keeps moving. The HIV/AIDS epidemic varies considerably across the country, not only by region, but within regions and states, and even within communities. Currently (as well as for the past several years), many people with AIDS live in rural areas or small cities in the South.

- Populations affected are changing. In addition to the groups who have been at highest risk since the beginning of the epidemic—MSM and IDUs—other groups are also at risk for HIV.
 - Racial and ethnic minorities. The epidemic has expanded from primarily affecting white people to primarily affecting people of color.
 - Women. More than half of heterosexually acquired HIV infections occur in women.
 - Youth. New generations are replacing those who benefited from early prevention strategies.

Tracking the epidemic is more complex. Early on, CDC tracked the epidemic by monitoring new AIDS cases. Today, trends in the epidemic are better reflected by new HIV infections, which are more difficult to track. New HIV infections cannot be measured directly because many newly infected people do not get tested and because a positive test result alone does not indicate whether the infection is recent.

The Changing Epidemic: How is CDC Responding?

Surveillance

CDC'S HIV/AIDS surveillance system is the nation's source for key information used to track the epidemic. CDC funds and assists state and local health departments, which collect the information. Health departments in turn report their data to CDC so that information from around the country can be analyzed to determine who is being affected and why.

The ultimate surveillance goal is a nationwide system that combines information on AIDS cases, new HIV infections, and behaviors and characteristics of people at high risk so that CDC can track the epidemic and direct HIV prevention funding to where it is needed the most.

Tracking AIDS Trends

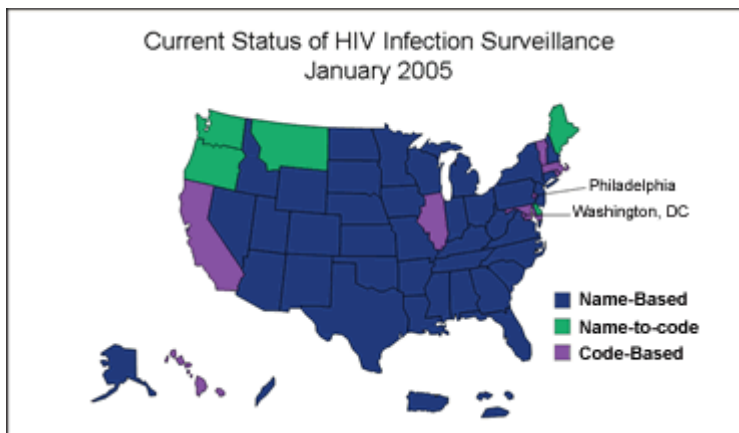
During the 1980s, AIDS cases alone provided an adequate picture of HIV trends because the time between infection with HIV and progression to AIDS was predictable. This predictability, however, has diminished since 1996, when HAART became available. Access, adherence, and response to HAART affect whether or when HIV progresses to AIDS. Thus, trends in AIDS cases alone no longer accurately reflect trends in HIV infection. AIDS trends do, however, continue to provide important information about where care and treatment resources are most needed.

Tracking HIV Trends

By April 2004, all states had adopted some type of system for reporting HIV diagnoses to CDC. Tracking HIV trends is challenging and depends on several factors, such as how often people are tested, when during the course of their infection they are tested, whether and how test results are reported to health departments, and how case reports (with personal identifiers removed) are forwarded to CDC.

A major advance has been the development of the serologic testing algorithm for recent HIV seroconversion (STARHS). STARHS is a way of analyzing HIV-positive blood samples to determine whether an HIV infection is recent or has been ongoing. In 2001, an expert panel agreed that STARHS is the best method available for measuring new HIV infections.

After funding 5 areas to pilot test this method, CDC has now funded a total of 34 areas to include STARHS in their HIV incidence surveillance activities. After funding 5 areas to pilot test this method, CDC has now funded a total of 34 areas to include STARHS in their HIV incidence surveillance activities.



Monitoring HIV Risk Behavior

Behaviors are monitored with regard to risk taking, HIV testing, care seeking, and adhering to treatment for HIV. CDC obtains behavioral information from several different populations.

General population

Several federally supported surveys collect information about HIV related behaviors of the general population. They are conducted periodically so that trends can be evaluated. Here are a few examples.

- CDC conducts the behavioral Risk Factor Surveillance System, the National Survey of Family Growth, and the National Health Interview Study.
- The National Opinion Research Center (University of Chicago) conducts the General Social Survey, with indirect support from CDC.
- The Substance Abuse and Mental Health Services Administration conducts the National Survey on Drug Use and Health.

People who are HIV-infected

MMP (Morbidity Monitoring Project) is a new surveillance system designed to collect information from HIV/AIDS patients who received care from randomly selected HIV care providers. In 2004, CDC awarded funds to 20 states and 6 cities for this project. MMP collects information about access to and use of HIV care, treatment, and prevention services and prevalence of behaviors that can result in HIV transmission and affect disease outcomes (like adherence to therapy). Information is collected from medical records and patient interviews. Patients are selected in a way that will make the data nationally representative for persons who are living with HIV/AIDS and receiving care. Data for planning, evaluation, monitoring, and allocation of resources will be available by the end of 2006.

People who are at high risk for HIV

The NHBS (National HIV Behavioral Surveillance System), for populations at high risk, began in 2003. NHBS conducts surveys in cities with high levels of AIDS among MSM, IDUs, and heterosexuals at high risk to determine their risk behavior, testing behavior, and use of prevention services.

In the first cycle, MSM were interviewed in 17 cities. The second cycle will interview IDUs in 25 cities. In 2006, CDC will expand the system to include heterosexuals at high risk. For states with medium and low levels of AIDS, CDC provides technical assistance and support for behavioral surveys among MSM at specified events, such as gay pride.

HITS (HIV Testing Survey) primarily interviewed adults who were not HIV-infected but were at high risk for HIV infection. HITS collected information about what motivates people to get tested for HIV and what behaviors place people at risk for HIV. HITS was conducted in 24 states during 1995–2003. Data analyses from HITS are ongoing.

Monitoring HIV Counseling and Testing Behavior

The HIV Counseling and Testing System (CTS) has been used since 1989 to monitor CDC-funded HIV counseling and testing services. Through this system, each CDC-funded HIV counseling and testing episode is reported to CDC and includes information about demographics, self-reported behavior, and HIV test results. Data from this system are used to guide the development of HIV prevention programs in response to the needs of the community. beginning in 2005, CTS will be replaced by the Counseling, Testing, and Referral (CTR) module of the Program Evaluation and Monitoring System (PEMS). Data collected by CTR have been updated to include information on new testing technologies and client referrals to medical care and other services and to be consistent with other PEMS data collection and reporting requirements.

Prevention Programs

The primary component in CDC's fight against HIV/AIDS is HIV prevention programs. Programs consist of interventions intended to change risky behavior and improve the health of the people served. Interventions include encouraging early HIV diagnosis; delivering counseling, testing, and referral services; providing educational programs and materials; and training peers to be role models. They are delivered to individuals, groups, and communities in places such as storefronts, gay bars, health centers, housing communities, faith-based organizations, and schools. Street outreach techniques such as using mobile testing vans, offering incentives for participation or referral, and recruiting peers are some of the ways to reach as many people as possible.

CDC provides leadership, capacity building assistance, and funding for programs at the state, local, and community levels. CDC funding supports staffing, program infrastructure, implementation and evaluation of interventions. In many instances, CDC requires that those who receive funding for programs (grantees) have a proven track record of providing effective programs. CDC also strives to ensure that interventions meet local needs. Specifically, CDC asks that interventions be science based and culturally proficient; that is, they should meet the cultural needs, expectations, and values of the populations they serve. Community planning helps ensure that priorities for HIV prevention are determined locally with input from affected communities and that they are consistent with scientific findings about what interventions are most effective for decreasing HIV transmission.

Evaluation (to measure program effectiveness) is an important part of prevention programs. Programs funded by CDC are required to collect and submit evaluation data so that CDC can track and identify the most effective programs. CDC's evaluation efforts take several forms.

- Evaluation guidance outlining the types of data each funded health department must collect from its grantees

- Regular reviews of each funded health department to evaluate effectiveness in community planning
- Ongoing reviews of funded CBOs

In addition, CDC researches the effectiveness of HIV prevention interventions and the diffusion of these interventions. CDC's Prevention Research Synthesis Project identifies interventions that have proven effective with various groups. The Replicating Effective Programs (REP) project takes proven interventions and packages them in a tool kit for distribution. CDC's Diffusion of Effective behavioral Interventions (DEBI) project then looks at ways to get these effective interventions to a broader audience.

Health Departments

CDC funds and works with 65 state, local, and territorial health departments to support prevention efforts and programs for people living with HIV and people at risk for HIV. All 65 health departments provide HIV counseling and testing services, which include referral and partner notification. A requirement for CDC funding is the development of a community planning process, which unites health departments and community members in developing an HIV prevention plan that reflects their local epidemic and guides HIV prevention efforts in their local area. Health departments also use CDC funds to support CBOs (indirect funding).

Nongovernmental Organizations

CDC supports community-based, faith-based, and other nongovernmental organizations in building partnerships for HIV prevention. These efforts provide interventions for populations at high risk, including people of color, MSM, substance abusers, and correctional facility inmates. To help people living with HIV/AIDS access prevention and treatment services, these organizations also provide HIV counseling and testing services and programs.

Public-Private Partnerships

CDC works with business and labor groups to enhance the health, productivity, and well-being of workers and their families living with, affected by, or at risk for HIV/AIDS. The business Responds to AIDS (bRTA) and Labor Responds to AIDS (LRTA) programs are worldwide public-private partnerships that serve as a resource to business and labor on a full range of HIV/AIDS issues. These partnerships set up workplace and related programs that combat complacency and stigma and support community activism, volunteerism, and corporate philanthropy.

Another CDC partnership is AIDS: Act Now! This public-private effort has a council of 50 members from business, faith-based, public health, and HIV communities, and the media. In addition, 5 alliances focus on issues such as leadership, youth, media, HIV testing and clinical care, and Internet technology. In total, CDC has obtained the support of more than 100 partners who volunteer their time to explore how they can use their resources, influence, and outreach capabilities to enhance HIV prevention efforts in communities most affected by HIV and AIDS. As communities of color disproportionately bear the effects of the epidemic, most activities under AIDS: Act Now! are directed toward these groups.

Prevention Strategies

Among CDC's strategies for HIV prevention are

- providing up-to-date scientific information through guidelines
- promoting early diagnosis of HIV infection
- addressing the unique prevention needs of HIV-infected persons
- building the capacity of health departments and CBOs to deliver effective prevention programs that reduce risk for HIV transmission
- increasing the quality of HIV prevention programs through evaluation

Guidelines

Guidelines are written recommendations for health care providers in the public and private sectors. They are developed after consultations with health care providers, public health officials, patient advocates, and policy experts. They are based on available scientific evidence; where evidence is incomplete, the "best practices" opinions of specialists in the field are used.

Revised Guidelines for HIV Counseling, Testing, and Referral (2001)

Guidelines for HIV counseling, testing, and referral (CTR) were published in 1986 and revised in 1994. After a massive effort to review all current scientific evidence, obtain recommendations, and reach agreement on recommendations, CDC published the Revised Guidelines for HIV Counseling, Testing, and Referral in 2001. Using an evidence-based approach, these guidelines advise providers of voluntary HIV CTR how to improve the quality and delivery of HIV CTR. They underscore the importance of early knowledge of HIV status and of testing that is more accessible and available.

Revised Recommendations for HIV Screening of Pregnant Women

In 1995, the US Public Health Service issued guidelines recommending universal counseling and voluntary HIV testing of all pregnant women and treatment for those infected to prevent mother-to-child HIV transmission. Subsequently, mother-to-child HIV transmission declined dramatically. In 2001, the Revised Recommendations for HIV Screening of Pregnant Women were published. These guidelines strengthen the recommendation that all pregnant women be tested for HIV as part of routine perinatal care, while preserving a woman's right to make her own decisions about testing.

Recommendations for Incorporating HIV Prevention into the Medical Care of Persons Living with HIV

In 2003, CDC, the Health Resources and Services Administration, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America developed recommendations to help clinicians incorporate HIV prevention into the medical care of HIV-infected individuals. These recommendations include

- screening for HIV transmission risk behaviors and sexually transmitted diseases
- providing behavioral risk-reduction messages in the office and referral for other prevention interventions and related services
- facilitating the notification and counseling of sex partners and needle-sharing partners

Procedural Guidance for Selected Strategies and Interventions for Community-based Organizations Funded Under Program Announcement 04064

The Procedural Guidance provides information to CBOs about the interventions that are allowable under Program Announcement 04064. It is available at www.cdc.gov/HIV/partners/pa04064_cbo.htm.

HIV Prevention Community Planning Guidance

This guidance, revised in July 2003, defines CDC's expectations for health departments and HIV prevention community planning groups involved in HIV prevention community planning. These and other CDC recommendations and guidelines are available at www.cdc.gov/HIV/pubs/guidelines.htm.

Advancing HIV Prevention: New Strategies for a Changing Epidemic

Advancing HIV Prevention (in effort of CDC and other agencies (government and nongovernment). It is designed to reduce barriers to early diagnosis of HIV infection and increase access to quality medical care, treatment, and ongoing prevention services for people living with HIV. It emphasizes the use of public health approaches proven effective at reducing new infections and spread of disease, such as appropriate routine HIV testing; identification of new cases; partner counseling, testing, and referral services; and increased availability of treatment and prevention services for HIV-infected persons and their partners.

Other CDC-funded projects help communities improve referrals to care and prevention services.

- Project HEART (Helping Enhance Adherence to Antiretroviral Therapy), a clinic-based behavioral intervention for patients who have not previously received HAART
- Partnership for Health (Safer Sex and Adherence Intervention for HIV Outpatient Clinics), an intervention encouraging health care providers to promote safer sex and adherence to therapy
- INSPIRE (Interventions for HIV-Positive Intravenous Drug Users: Research and Evaluation), a behavioral intervention to help IDUs decrease their risk for HIV, increase access to care, and increase adherence to HAART

Capacity Building

CDC recognizes that organizations funded to conduct HIV prevention, such as health departments and CBOs, often face challenges to meeting the increased prevention needs of populations at high risk for HIV and other sexually transmitted infections. Examples of these challenges are the need

- to diversify the funding base to help sustain prevention services
- for effective behavioral interventions that are based on science and are culturally competent
- for competent staff
- for effective strategies to link HIV-negative and HIV-infected persons at high risk to services (testing, prevention, and care)

The goal of CDC's HIV prevention capacity building program is to ensure that health departments and CBOs receive scientifically sound and culturally appropriate capacity building assistance through the following:

- technology transfer—translating scientific research into programs and practice
- technical assistance—providing expert programmatic, scientific, and technical consultation and support to health department and CBO staff
- training—building the knowledge, skills, and abilities that health department and CBO staff need to deliver effective HIV prevention interventions and to effectively sustain the organizational infrastructure needed to support HIV prevention services
- information dissemination—sharing information through print materials, meetings, Web sites, and mass media

Diffusion of Effective Behavioral Interventions (DEBI) is an example of capacity building using technology transfer to disseminate science-based behavioral interventions. DEBI endorses the interventions that are identified by CDC’s Prevention Research Synthesis Project.

prevention planning, service delivery, and evaluation activities. The performance indicators will be used to monitor progress in critical areas of HIV prevention. The specific components of HIV prevention programs addressed by the indicators include

- HIV infections
- community planning
- prevention activities
 - Counseling, testing, and referral services
 - Partner counseling and referral services
 - Prevention for HIV-infected persons
 - Health education and risk-reduction activities
 - Prevention of mother-to-child HIV transmission
- evaluation of reporting compliance
- capacity building activities

PEMS (Program Evaluation and Monitoring System)

CDC has developed PEMS to strengthen monitoring and evaluation of HIV prevention programs. PEMS is to be used by health departments and CBOs funded through CDC HIV prevention cooperative agreements. PEMS is a secure Internet browser-based software program for data entry and reporting. PEMS software was first released in the fall of 2004 to 42 health departments and 27 CBOs. It allows grantees to collect agency, community planning, and program plan data. The next release, scheduled for fall 2005, will enable grantees to enter client-level data and report to CDC. by the end of 2005, PEMS will be available to over 200 agencies nationwide. PEMS will ensure that CDC receives standardized, accurate, and thorough program data from health department and CBO grantees. The data include

- agency information
- program plan details
- client demographics
- referral outcomes
- HIV test results
- partner elicitation and notification
- client use of services
- behavioral outcomes
- community planning priority populations and interventions

These data will allow more comprehensive reporting of HIV prevention activities, fiscal information, and community planning information. These data will help HIV prevention stakeholders examine program fidelity, monitor use of key program services and behavioral outcomes, and calculate and report the program performance indicators. PEMS will help CDC monitor, evaluate, and coordinate HIV prevention programs and support the rapid set-up of special studies and evaluation projects.

These interventions are

- Community PROMISE (Peers Reaching Out and Modeling Intervention Strategies for HIV/AIDS Risk Reduction in their Community), a community-level intervention based on behavior change theories
- Healthy Relationships, a small-group intervention for people living with HIV and AIDS
- Holistic Health Recovery Program, a group-level program to reduce harm and promote health for HIV-infected IDUs
- 3MV (Many Men, Many Voices), a group-level STD/HIV prevention intervention for MSM of color
- Mpowerment, a community-level intervention for young MSM
- Partnerships for Health, a provider-delivered counseling program for people living with HIV/AIDS
- POL (Popular Opinion Leader), an intervention to identify, enlist, and train key opinion leaders to encourage safe behaviors in their social networks
- RAPP (Real AIDS Prevention Project), a program to involve the community in reducing HIV risk and unintended pregnancy by increasing condom use
- Safety Counts, an intervention for active injection drug and crack cocaine users, aimed at reducing high-risk drug use and sexual behaviors

- SISTA (Sisters Informing Sisters About Topics on AIDS), a group intervention for African American women, to help them increase condom use
- Street Smart, a skills-building program to help runaway and homeless youth practice safer sexual behaviors and reduce substance abuse
- TLC (Together Learning Choices), an intervention for young people, 13–29 years old, who are living with HIV
- VOICES/VOCES (Video Opportunities for Innovative Condom Education and Safer Sex), a video-based intervention to increase condom use among heterosexual African American and Hispanic men and women who visit STD clinics

A second group of interventions will follow. Plans call for diffusion of more behavioral interventions as well as structural and biomedical interventions.

Evaluation

Evaluation activities focus on results by

- managing and measuring program performance
- improving the quality of HIV prevention programs
- promoting accountability

Program Performance Indicators

As specified in the President’s Management Agenda, CDC has incorporated program performance indicators into its cooperative agreements with HIV prevention providers. The purpose is to improve performance and accountability of programs. beginning in 2005 all directly funded health departments and CBOs will report on measures of HIV

Research

Among its many HIV research activities, CDC is involved in research related to : Diagnostic Test, Microbicides, Vaccines

Diagnostic Tests

Since November 2002, the Food and Drug Administration has approved 4 rapid HIV tests. These tests offer many advantages over conventional HIV blood tests. Sample collection is easier (for example, from a finger prick or oral fluid), and they are easy to use outside of traditional laboratories so they are suitable for doctors’ offices and community and outreach settings. Perhaps the biggest benefit of rapid tests is their ability to give results in 30 minutes or less. because test results are available quickly, rapid HIV tests dramatically increase the number of people who get tested and find out their results that day. This represents a significant public health achievement because those who know they are infected with HIV can get treatment. Evidence also shows that persons who know they are infected adopt changes that dramatically reduce their risk of transmitting the virus to others.

Rapid HIV tests also help further reduce the number of infected infants born to HIV-infected mothers. HIV transmission from mother to infant can be decreased by almost half if antiretroviral treatment is started during labor.

CDC is involved in many areas of rapid HIV testing, such as the following:

- Evaluating the accuracy of rapid tests
- Providing training on rapid tests
- Publishing information in the scientific literature
- Maintaining an updated Web site
- Helping other federal agencies introduce rapid HIV testing into their projects
- Funding demonstration projects

In 2003, CDC funded 21 health departments and CBOs for 2-year demonstration projects for rapid HIV tests. These awards are used for incorporating rapid testing into routine medical care, partner counseling and referral services, short-stay correctional facilities, nonclinical settings, and social networks. These projects have shown that rapid tests are an important part of HIV prevention efforts.

Microbicides

CDC is actively involved in research to identify and test potential HIV microbicides. Microbicides are gels, creams, or suppositories that can kill or neutralize viruses and bacteria. When applied in the vagina before sexual intercourse, they can protect against some sexually transmitted diseases. A safe, effective, and affordable microbicide against HIV could help to prevent many new infections.

Thailand

CDC collaborated with the Thailand Ministry of Health and the Population Council to conduct Phases I and II (safety and efficacy) clinical trials of Carraguard, a candidate vaginal gel microbicide, in HIV-negative women and heterosexual couples. Testing of other compounds will begin in 2005.

Botswana

CDC is collaborating with the Botswana Ministry of Health to develop a site for Phases I, II, and III (safety and efficacy) testing of microbicide candidates. Plans are under way to begin Phase I studies in 2006.

United States

CDC is conducting preclinical (animals and laboratory) and Phases I and II clinical trials of potential new HIV microbicides. In its own laboratories, CDC is also examining the toxicity and efficacy of some microbicides against HIV.

Drugs to Prevent HIV (chemoprophylaxis)

CDC is conducting studies to test an antiretroviral agent, tenofovir disoproxil fumarate. Tenofovir will be tested for safety, tolerance, and effectiveness when used by people at risk before exposure to HIV. Clinical trials began in 2005. Finding a drug that effectively prevents HIV without increasing drug resistance could significantly affect HIV prevention strategies.

Botswana

CDC is collaborating with the Botswana Ministry of Health to conduct safety and efficacy trials of tenofovir among heterosexual persons at risk for HIV infection.

Thailand

CDC is collaborating with the Thailand Ministry of Health to conduct safety and efficacy trials of tenofovir among IDUs.

United States

CDC is conducting clinical trials among MSM to test for the safety of tenofovir.

Vaccines

The intervention most anticipated by everyone working to stop the HIV/AIDS epidemic is a vaccine to prevent infection. CDC is no stranger to vaccine development (considering its experience with other vaccines such as measles, hepatitis b, polio, and smallpox), but developing an HIV vaccine presents unique challenges. For example, it is critical that no one (whether involved in the studies or not) abandon safer sexual and drug-related behaviors proven to prevent HIV infection. Overall, vaccine development must not endanger progress already made in HIV prevention.

Until a vaccine is available, and even afterwards, we must continue to reinforce the already proven methods of HIV prevention.

CDC's HIV vaccine research focuses on conducting and evaluating HIV vaccine trials in the United States and elsewhere. CDC played an important role in the world's first 2 efficacy trials of HIV vaccine candidates. Although the results indicated that the vaccines were not effective in reducing the risk for HIV infection, the trials provided critical information that will guide future research on HIV vaccines. Through an agreement with the National Institutes of Health and through membership in the Partnership for AIDS Vaccine Evaluation, CDC is currently contributing to the US government's effort to develop a safe and effective HIV vaccine.

United States

CDC collaborated with a US vaccine developer, VaxGen, in the world's first efficacy trial of an HIV vaccine (AIDSVAX b/b gp 120). At 6 sites, CDC also sponsored extensive substudies on how the vaccine affected risk behavior.

Thailand

CDC collaborated with VaxGen, the Bangkok Metropolitan Administration, and Mahidol University to test the efficacy of a vaccine (AIDSVAX b/E gp 120) in Bangkok. CDC helped develop counseling, educational, and prevention materials. CDC and the Thai government also identified persons willing to participate and to be followed up to evaluate risk behaviors and infection. CDC also worked with the community to build the understanding and support necessary for such a trial. CDC, Thai health officials, and VaxGen ensured that participants received appropriate risk-reduction counseling and were fully informed about how the trial worked, the potential risks and benefits, and the importance of maintaining good risk-reduction behaviors during the trial. CDC also evaluated the clinical care and disease progression of participants who become HIV-infected during the trial.

Africa

Along with Emory University and the National Institutes of Health, CDC helped develop a prototype vaccine (HIV-1 subtype A/G DNA+MVA) for people in West/Central Africa. CDC is also helping with preparations for HIV vaccine clinical trials in West/Central and East Africa. In Cameroon and Kenya, CDC is collaborating with Ministries of Health to help develop the capacity to conduct HIV vaccine clinical trials.

Post-Test

Select the *best* answer to each of the following items. Mark your responses sheet

1. There are _____ persons living with HIV in the United States today.
 - a. 50,000
 - b. 100,000
 - c. 600,000
 - d. over 1 million

2. Twenty-five years since the onset of the epidemic, the only “cure” we have for HIV/AIDS is _____.
 - a. abstinence
 - b. prevention
 - c. post infection medications
 - d. none of the above

3. On June 5, _____, *MMWR* published a report of *Pneumocystis carinii* pneumonia in five previously healthy young men in Los Angeles, California. These cases were later recognized as the first reported cases of acquired immunodeficiency syndrome (AIDS) in the United States.
 - a. 1970
 - b. 1976
 - c. 1981
 - d. 1987

4. CDC's overarching HIV-prevention goal is to reduce the number of new HIV infections and to eliminate racial and ethnic disparities by _____.
 - a. the promotion of HIV counseling
 - b. testing
 - c. by encouraging HIV prevention among both persons living
 - d. All of the above

5. The decrease in mother-to-child (perinatal) HIV transmission is a _____ in HIV prevention in the United States.

- a. goal
- b. challenge
- c. public health achievement
- d. none of the above

6. Widespread HIV testing promotion and uptake have resulted in approximately _____% of persons aged 15--44 years in the United States reporting that they have had an HIV test

- a. 20
- b. 35
- c. 50
- d. 75

7. _____decrease motivation among persons and communities to adopt risk-reduction behaviors, get tested for HIV, and access prevention and treatment services.

- a. Complacency
- b. Stigma
- c. Discrimination
- d. All of the above

8. An estimated _____ new HIV infections are expected to occur this year.

- a. 5,000
- b. 10,000
- c. 20,000
- d. 40,000

9. The majority of AIDS cases continue to occur among males.

- a. True
- b. False

10. During 1981--2004, a total of 522,723 deaths among persons with AIDS have been reported to CDC.

- a. True
- b. False

11. Rapid tests produce results in _____ minutes and make it possible to give HIV-seronegative and provisional HIV-seropositive test results in a single visit, increasing the percentage of persons who receive their test results in a single visit to more than 95% in many testing programs.

- a. 5
- b. 20
- c. 60
- d. 120

12. During the early 1980s, as many as 150,000 people became infected with HIV each year. by the early 1990s, this rate had dropped to approximately _____ each year, where it remains today.

- a. 10,000
- b. 20,000
- c. 40,000
- d. 70,000

13. Females aged >13 years accounted for only 7% of reported new AIDS cases in 1985 (CDC, unpublished data, 2006) but _____ of reported cases in 2004.

- a. 10%
- b. 17%
- c. 27%
- d. 47%

14. An estimated 252,000--312,000 persons in the United States are unaware that they are infected with HIV and, therefore, are unaware of their risk for HIV transmission.

- a. True
- b. False

15. Diagnosis of asymptomatic HIV infection in a person does not necessarily signify recent infection. On average, _____ years elapse before a person has onset of symptoms of HIV infection.

- a. 1-2
- b. 3-5
- c. 2-8
- d. 8-11