

HIV

Definition: Case definitions for human immunodeficiency virus (HIV) infection are age-dependent and include people with and without acquired immunodeficiency syndrome (AIDS). Because HIV infection often occurs without symptoms for many years, the U.S. Centers for Disease Control and Prevention (CDC) requires that a diagnosis of HIV infection be supported by laboratory evidence, such as a positive HIV antibody or HIV virologic test result. CDC defines AIDS as severe immunodeficiency caused by HIV infection. An AIDS diagnosis must be preceded or accompanied by an HIV diagnosis, and requires either laboratory evidence (CD4 lymphocyte count <200 cells/ μ l or <14% of total lymphocytes) or documentation of at least one of 26 AIDS-defining conditions such as *Pneumocystis carinii* pneumonia, Kaposi's sarcoma, or wasting syndrome.¹

Summary

The Washington State Department of Health estimates that in 2012 there were at least 13,000 people living with HIV infection across the state, including those with AIDS. Compared to the rest of the nation, Washington's HIV epidemic has been both moderate in scale and stable over time. Roughly 60% of the state's HIV epidemic is concentrated within King County. In 2012, there were 495 newly diagnosed cases of HIV infection in Washington. Washington's black residents, those of Hispanic origin, and American Indian and Alaska Native residents continue to have higher rates of HIV diagnosis than non-Hispanic whites. Nearly 75% of all cases occur among gay or bisexual men. About one in seven people living with HIV in Washington do not know they are infected. Statewide, HIV prevalence is increasing at a rate of about 4% per year.

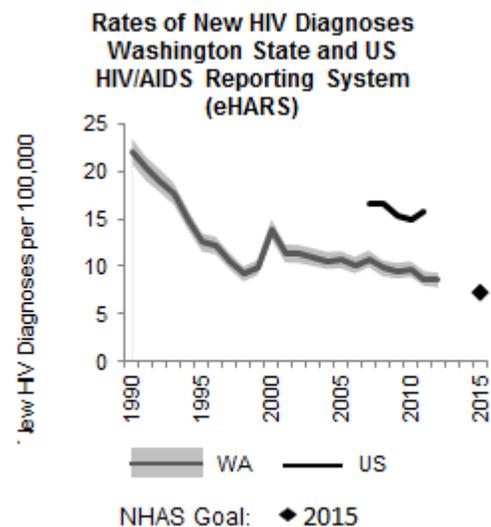
Time Trends

In the United States, the epidemic caused by the human immunodeficiency virus (HIV) has lasted more than 30 years. Acquired immunodeficiency syndrome, or AIDS, is an advanced stage of HIV illness. When the HIV epidemic began in the early 1980s, HIV screening tests did not exist and HIV surveillance depended on counting AIDS cases. The first AIDS case in Washington was reported in 1982. Consistent with national trends, the number of AIDS cases increased rapidly in the 1980s, peaking in 1993. AIDS incidence then dropped in the mid-1990s and stabilized toward the end of the decade.

Widespread access to effective drug treatment has slowed the progression of HIV disease for

many people, often preventing or delaying the onset of AIDS. In addition, HIV infection is characterized by a lengthy latent period, often lasting years, during which disease symptoms are not present. In combination, these factors have caused large variation in the timing of HIV diagnosis and treatment initiation among infected individuals, and have weakened the association between HIV incidence and AIDS diagnosis. Thus, AIDS data alone no longer accurately describe the scale or direction of the HIV epidemic.²

In 1999, Washington made HIV infection a reportable condition, with or without the presence of AIDS. Most experts now rely on new diagnoses of HIV infection to monitor the course of the HIV epidemic and characterize people who are at risk. In 2012, the rate of new HIV diagnoses among adult and adolescent Washington residents was 8.6 cases per 100,000 residents, or about half the national rate of 16.1 cases per 100,000.



Despite steady population growth, increasing HIV prevalence, and improved HIV screening efforts, the rate of new HIV diagnoses has been decreasing over the past decade.^{3,4} This suggests that HIV incidence, or the number of people who are **infected** by HIV each year, could be slowly decreasing. Incidence of HIV is difficult to measure because people can live with HIV for many years before being diagnosed.

National Goals

In 2010, the White House released the National HIV/AIDS Strategy (NHAS).⁵ This document features an extensive list of HIV-related goals and anticipated results which have since been adopted by *Healthy People 2020*.⁶ The three primary goals of the NHAS are: 1) reducing the number of people who become infected with HIV; 2) increasing access to care and optimizing health outcomes for people living with HIV; and 3) reducing HIV-related health disparities. One anticipated result of NHAS is to reduce national HIV incidence by 25% by 2015. To achieve this result, the United States will need to both reduce the HIV transmission rate by 30% and increase from 79% to 90% the percentage of people living with HIV who know their status.

In Washington, as elsewhere, incidence estimates are not precise, making monitoring the state's success in achieving NHAS benchmarks challenging. The Washington State Department of Health defines HIV incidence as the number of new HIV infections that occur within a defined time period, usually a calendar year. Since most people are not diagnosed until years after acquiring HIV, new HIV diagnoses (case counts) can only be used as a proxy measure for HIV incidence. The department estimates HIV incidence using methods developed by the U.S. Centers for Disease Control and Prevention (CDC). In 2011, the department estimated statewide HIV incidence to be between 330 and 725 new HIV infections per 100,000 (midpoint: 528).⁷

The department defines HIV prevalence as the total number of people in Washington who are living with HIV at a specific point in time, usually the end of a calendar year. Similar to incidence, HIV prevalence is hard to measure directly because not all people living with HIV have been diagnosed and not all diagnosed cases have been reported. CDC has not yet developed a standard method that states can use to estimate HIV prevalence. Based on a comprehensive

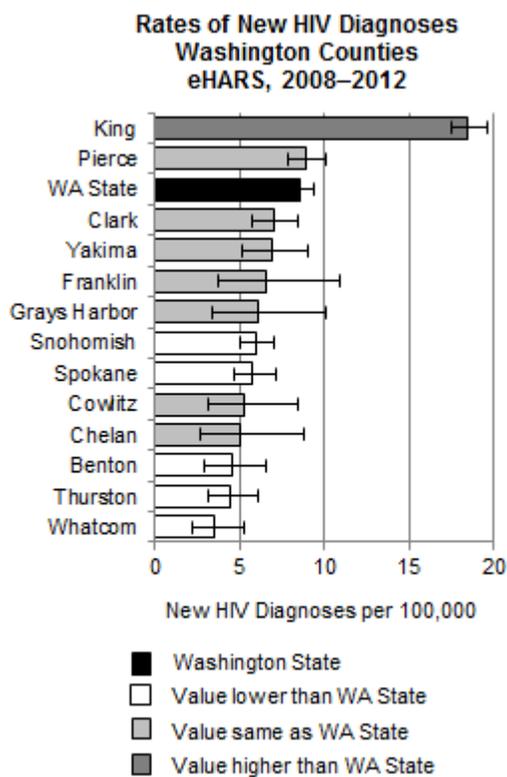
literature review and subsequent meta-analysis, the department developed rough prevalence estimates for Washington. Using this method, the department estimates that there are at least 13,000 Washington residents living with HIV, of which about one in seven remain unaware of their infection.⁸

Transmission rates are calculated by dividing incident (or new) cases by prevalent (or living) cases. The NHAS has called for a 30% reduction in national HIV transmission rates between 2010 and 2015, from 5.0 new infections to 3.5 new infections per 100 persons living with HIV. Based on estimated incidence and prevalence, Washington's HIV transmission rates are probably below 4% and decreasing.

In 2013, working closely with the Washington State HIV Prevention Planning Group, the department set its own goal to reduce new HIV infections across Washington State by 25% between 2012 and 2016. Details about statewide strategies to address all three primary goals of the NHAS are discussed in Interventions.

Geographic Variation

During 2008–2012, the average annual rate of new HIV diagnoses in Washington was 8.5 cases per 100,000 people.

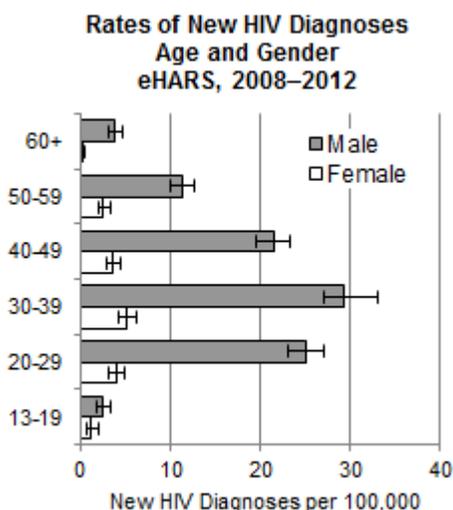


King County, which contains the city of Seattle, had a significantly higher rate of 16.7 new diagnoses per 100,000. During the same time period, 57% of all new diagnoses were among King County residents. Pierce County, which contains the city of Tacoma, had the second highest rate at 7.5 new cases per 100,000, and accounted for 11% of all new diagnoses in Washington.

The HIV epidemic in Washington is heavily concentrated in the state’s largest cities and urban areas, most of which are in the Puget Sound region. For example, according to the U.S. Census Bureau, Washington contains seven cities with populations of more than 100,000 people: Seattle, Tacoma, Everett, Bellevue, Kent, Spokane and Vancouver.⁹ Collectively, these cities comprise about 1.5 million people, or 22% of all people living in Washington. Yet, the same seven cities accounted for 60% of all new HIV cases reported between 2008 and 2012. The strong association between HIV and urban residence is somewhat difficult to explain. However, evidence suggests that gay and bisexual men in the United States have historically migrated towards larger cities which offer more tolerant, gay-friendly environments.^{10,11} Also, since cities are more densely populated, individuals engaging in risky behaviors could have more opportunities for HIV exposure, transmission or both.

Age and Gender

The overall decrease in rates of new HIV diagnoses in Washington since 2008 has been more pronounced among men (who carry a higher disease burden) than women.



During 2008–2012 combined, the rate of new HIV diagnosis among adult and adolescent males was 14.7 cases per 100,000, nearly five times higher than the female rate of 2.9 cases per 100,000. In recent years, males have accounted for about 85% of all people newly diagnosed with HIV.

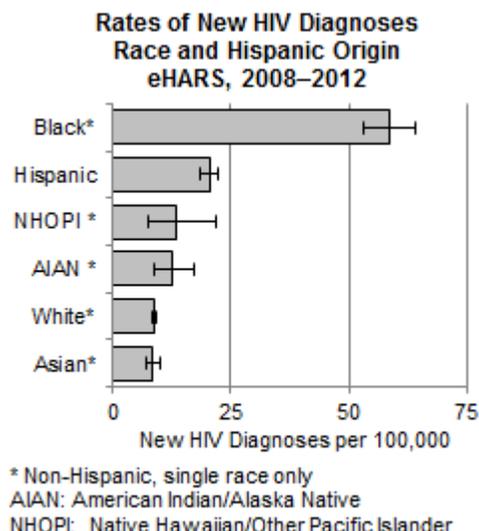
Most new HIV cases are diagnosed among adults in their twenties or thirties, but more than a quarter are diagnosed among adults ages 45 and older. HIV is extremely rare among children in Washington. Over the past decade in Washington, there have been three confirmed cases of perinatal HIV transmission, in which the virus was passed from an infected mother to her baby.

Economic Factors

Many studies have examined the relationships between socioeconomic factors and risk for sexually transmitted diseases, including HIV.¹² Complicated by social and behavioral factors, the manner and degree to which social determinants—such as poverty, income and housing status—affect HIV transmission remain unclear, and likely varies by population and geography.^{13,14,15,16} Evidence suggests that poverty increases HIV risk among heterosexuals living in lower income, urban neighborhoods in the United States.^{17,18,19} In addition, socially disadvantaged HIV-positive people are less likely to stick with HIV treatment, which increases the chances that they will develop AIDS and decreases their life expectancies.^{20,21,22}

Race and Hispanic Origin

During 2008–2012 combined, 56% of all people newly diagnosed with HIV in Washington were white, excluding those of Hispanic origin.



Black people make up only 3% of the state's general population, yet nearly one in five new HIV cases (18%) were black. During 2008–2012, HIV rates were more than six times higher among black residents than white residents. HIV rates among both the Hispanic and American Indian and Alaska Native populations were roughly twice those of the state's white population.

These differences in HIV rates continue to be studied closely, and their causes have long been the subject of intense debate. Emerging evidence indicates that differences in HIV risk might be caused by contextual or social factors. For example, racial and ethnic differences in how sexual networks are formed—including partner availability and partner preferences—might play a role in racial and ethnic disparities for HIV.^{23,24} Also, racial and ethnic differences in levels of “sexual concurrency,” or maintaining a sexual relationship with more than one partner during the same time period, has been shown to influence HIV disparities.^{25,26}

Although they comprise less than 14% of Washington's entire black population, foreign-born black people have become an increasingly larger part of Washington's HIV epidemic in recent years. During 2008–2012, black residents born outside the United States made up nearly half (49%) of all new HIV cases among blacks diagnosed in Washington. Nationally, HIV rates among the foreign-born black population are several times higher than the HIV rates of the black population born in the United States. Compared to U.S.-born blacks, foreign-born black residents represent a more diverse mixture of languages, cultures and social norms.²⁷ In Washington, most U.S.-born black residents with HIV are gay or bisexual men. Nearly all foreign-born HIV-infected black residents are heterosexual, and most were probably infected outside the United States. These factors must be taken into account when developing culturally appropriate and relevant HIV prevention services for each population.

Other Measures of Impact and Burden

HIV prevalence and knowledge of HIV status. CDC estimates that there are approximately 1.1 million people living with HIV infection in the United States; as many as 18% with HIV do not know they are infected.²⁸ The Washington State Department of Health estimates HIV prevalence

to be at least 13,000, or just over 1% of the national HIV burden. Statewide, the department estimates that about 14% of people living with HIV are not aware of their HIV status. Data taken from Washington's HIV reporting system are probably more representative of true HIV prevalence in our state than are nationally reported data. This is because gay and bisexual men are more likely to get tested than other HIV high-risk populations. Unlike in other parts of the United States, the vast majority of HIV cases in Washington occur among gay and bisexual men.

Costs of care. The number of HIV-infected patients requiring [hospitalization](#) in Washington has declined over the past decade, yet the costs associated with treating each infected person remain significant and are on the rise.²⁹ In 2010, the estimated lifetime cost of healthcare associated with HIV was estimated at \$379,668. More recent models suggest that a person diagnosed with HIV by age 30 will receive antiretroviral (ARV) therapy for 32 years, eight years longer than the basis for the 2010 estimate. This extended treatment will increase lifetime treatment costs significantly.³⁰ Additionally, more people than ever are now getting screened for HIV, resulting in earlier detection, and more people diagnosed with HIV are consistently using ARV therapy. As HIV prevalence in Washington continues to increase, the societal costs of HIV treatment will likely grow even more. Moreover, the cost of medical care is only a portion of the overall economic impact of the HIV epidemic, which also includes lost productivity, disability, and impacts on social support systems beyond healthcare.

Mortality. Since the HIV epidemic began, nearly 6,000 people living in Washington have died as a result of HIV. With effective treatment now widely available, HIV is considered by most to be a manageable chronic disease. During 2008–2012, HIV caused an average of fewer than 100 deaths per year in Washington. This is considerably fewer than in the past. During the 1990s, HIV deaths averaged more than 350 per year in Washington. The most common cause of death among people with HIV is liver failure, typically as a result of co-infection with Hepatitis B or C.^{31,32}

Risk and Protective Factors

Unprotected sex. Most HIV infections result from unprotected sex with someone who has HIV. While HIV can be transmitted by a single act of sexual intercourse, it is not transmitted with every act. The risk of HIV transmission during **unprotected** sexual intercourse with an HIV-positive person has been

estimated to range from 1 in 100 acts to 1 in 1,000.^{33,34,35} HIV risk associated with anal sex is much higher than that associated with vaginal sex. Both anal and vaginal carry a greater risk than oral sex. Risk of HIV transmission is also greater

- For the receptive sexual partner compared to the insertive sexual partner.
- If the HIV-positive partner was infected recently.
- If the HIV-positive partner has high levels of virus circulating in his or her body (high viral load).
- If either partner has another sexually transmitted infection (STI),
- If either partner is having a sexual relationship with more than one partner during the same time period.^{36,37,38}

The correct and consistent use of condoms during sex is one of the best ways to prevent the spread of HIV.³⁹

Gay and bisexual men are at high risk of HIV mainly due to unprotected anal sex. While the department estimates that gay and bisexual men comprise less than 3% of the state's male population,⁸ they account for approximately three-quarters of all HIV infections in Washington. Recent studies in King County indicate that many gay men continue to have unprotected anal sex, often with partners of unknown HIV status, and often while under the influence of drugs such as methamphetamine.^{40,41} Additionally, a major HIV risk factor among gay men is co-infection with another STI. National studies indicate increasing levels of STIs among gay men, another indication of unprotected sex.^{42,43}

Substance use. Sharing drug injection equipment is a significant factor in the transmission of HIV in Washington, although the proportion of reported HIV diagnoses among people who inject drugs has declined over the past decade. During 2008–2012, 15% of all new HIV diagnoses reported injection drug use, including those with other risk factors for HIV. Sharing HIV-contaminated needles and syringes and other injection equipment such as cookers and cottons can transmit HIV and other bloodborne diseases. Next to stopping the practice of injecting drugs, the consistent use of

new or unshared equipment is the most effective method of reducing the risk of HIV infection among injection drugs users.⁴⁴

Methamphetamine (or “meth”) is a highly addictive stimulant that has recently emerged as one of the most important risk factors for HIV, especially among gay and bisexual men. Meth can be smoked, snorted or injected. Meth often causes users to be sexually aroused and increases sexual stamina. Research suggests that even when meth is not injected, its use can increase risk of HIV transmission, because meth users have more sexual partners and are less likely to wear condoms during sex.^{45,46}

Regardless of what kind(s) of recreational drugs people use, these substances, especially stimulants, often lead to impaired decision-making, which can result in unhealthy or unsafe sexual behaviors such as exchanging sex for drugs, having anonymous sex partners, not using condoms, and not seeking medical treatment for disease symptoms. Sexual partners of people who use recreational drugs are also often at increased risk for HIV and other STIs, regardless of whether they themselves use drugs.⁴⁷

Maternal transmission. HIV can be transmitted to the fetus during pregnancy, during birth, or through breastfeeding. National studies have shown that 25%–30% of HIV-infected pregnant women who do not receive adequate treatment will transmit the virus to their newborns. Adherence to current perinatal HIV screening for pregnant mothers, and to treatment guidelines for both HIV-infected mothers and their infants, reduces the risk of transmission to less than 5%.⁴⁸

Other transmission routes. HIV is rarely transmitted through blood transfusions or the improper or accidental breakdown of infection control practices. Comprehensive screening of blood products, improved infection control practices, and safer medical devices have all contributed to the reduction in HIV transmission through these mechanisms.

[Intervention Strategies](#)

The Washington State Department of Health, working in close collaboration with local public health jurisdictions and community-based organizations, has moved rapidly toward implementing programs that are evidence-based and align closely with CDC and NHAS recommendations. For example, the national plan stresses the need to intensify HIV prevention efforts in communities where HIV is most heavily concentrated. The department uses HIV

reporting data to identify areas where HIV is most heavily concentrated and supports targeted, primary prevention programs in those areas. The department also uses reporting data to identify high-risk populations so that programs in high-concentration areas can be targeted to populations that carry the greatest disease burden, such as gay and bisexual men and injection drug users. Targeted HIV prevention strategies supported by the department include:

- **Increasing use of condoms.** Condoms act as a physical barrier during sex, preventing transmission of HIV and other STIs. Research has shown that the correct and consistent use of condoms can prevent 70% of HIV infections.⁴⁹ The department supports condom use through HIV education and by helping HIV prevention programs to purchase and distribute condoms to high-risk populations.
- **Increasing use of clean needles and syringes.** Many studies have demonstrated the effectiveness of syringe exchange programs for preventing the spread of HIV among injection drug users, as well as their sexual partners.^{50,51} The department provides support for syringe services programs in communities where both the disease burden and the numbers of injection drug users is greatest.
- **Reducing incidence of gonorrhea and syphilis.** Gonorrhea and syphilis are bacterial STIs. Having either condition makes a person more susceptible to HIV infection (when exposed to the virus), and increases the chances that someone who already has HIV will infect someone else.⁵² Research suggests that knowing one's STI status is a critical step towards preventing both HIV and STI transmission.⁵³ The department provides funding for STI screening and treatment programs in communities where HIV and bacterial STIs are most concentrated. In addition, the department supports partner services programs located across Washington, through which partners are confidentially notified of an STI/HIV exposure and offered HIV testing and follow-up services.^{54,55,56}
- **Increasing use of anti-HIV medication to prevent HIV infection.** Pre-exposure prophylaxis (PrEP) is a new prevention method which involves taking antiretroviral drugs **before** a potential exposure in order

to prevent HIV infection. When used consistently, PrEP has been shown to reduce by more than half the risk of HIV infection among people whose sexual or drug use behaviors put them at extremely high risk for HIV infection.^{57,58} Non-occupational post-exposure prophylaxis (nPEP) is a prevention method which can be used shortly **after** a potential HIV exposure, such as from condom breakage or sexual assault.^{59,60} To be effective, nPEP must be initiated less than 72 hours after the exposure occurred.

In addition to the targeted prevention strategies listed above, the department has also made a commitment to assure all Washington residents living with HIV are offered a core set of services designed to ensure they are linked to and retained in optimal medical care. These efforts are part of a "treatment as prevention" model, which is promoted by CDC and based on scientific evidence that shows that one of the best ways to prevent new HIV infections is to ensure that individuals living with HIV are treated as early as possible with antiretroviral therapy.^{61,62} Treatment decreases viral load—the amount of virus circulating in a person's body. Reducing viral load has a double benefit of keeping a person's immune system strong, while also making them far less infectious to others.

Core services for HIV-positive residents begins with assuring the statewide availability of HIV testing services, mainly via healthcare providers, AIDS service organizations and local health jurisdictions. The department also supports pilot programs promoting targeted, routine HIV testing in larger healthcare facilities which serve Washington communities where the number of undiagnosed HIV infection is believed to be greatest, based on the location of reported diagnoses.

Beyond testing, the department supports programs that help patients who have been diagnosed with HIV get successfully linked to optimal HIV medical care as soon as possible. The department works closely with Madison Clinic at Harborview Medical Center in Seattle, which is the state's HIV clinical center of excellence, and is the location of the Northwest AIDS Education Training Center (NAETC). Through the NAETC, the department helps ensure that healthcare organizations, local health departments, and individual care providers are offered training and assistance consistent with federally approved guidelines and standards of care when treating HIV patients.

Finally, the department relies on active reporting methods to support re-engagement services for residents living with HIV who have fallen out of care.

State law requires that all HIV-related laboratory results are reported to the state health department. Certain types of laboratory results can be used as an indicator of whether optimal HIV medical care is being delivered. The department routinely monitors laboratory reports to identify individuals who appear to have fallen out of HIV care. Local disease intervention specialists are then notified so that those who appear to be in need of care can be re-contacted and offered assistance in getting re-linked to care.

See Related Chapters: [Sexual Health](#), [Sexually Transmitted Infections](#)

Data Sources (For additional detail, see [Appendix B](#))

State HIV Data: Washington State Department of Health Infectious Disease Assessment Unit

National HIV Data: U.S. Centers for Disease Control and Prevention, Divisions of HIV/AIDS Prevention

State Death Data: Washington State Department of Health Center for Health Statistics

State Hospitalization Data: Washington State Department of Health Office of Hospital and Patient Data Systems

For More Information

Washington State Department of Health, Office of Infectious Disease Assessment Unit, (360) 236-3455

Technical Notes

Year of HIV diagnosis and year of report: Year of HIV diagnosis indicates the time at which an individual is diagnosed with HIV infection.

Time frame: Analyses in this chapter rely on HIV surveillance data reported through 2012.

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Endnotes

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