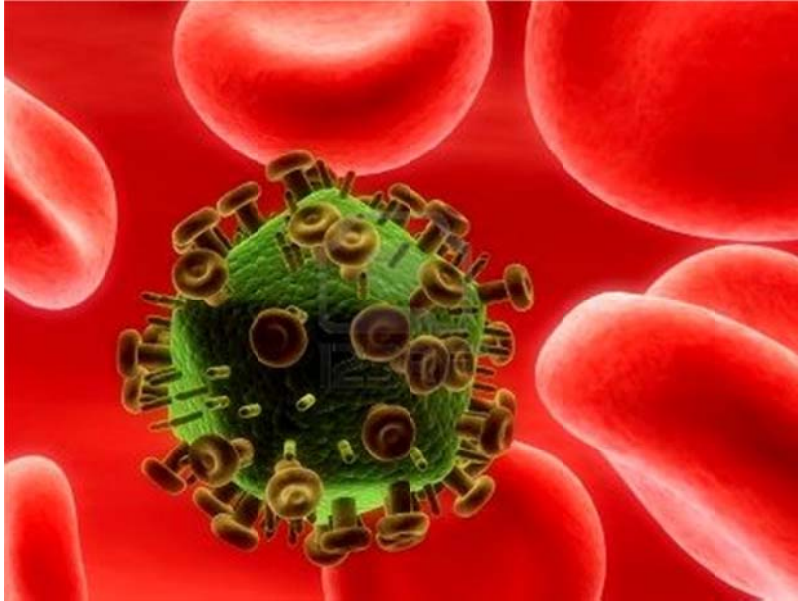


Basic Facts About HIV/AIDS



The HIV virus depicted in the bloodstream.

What is HIV?

HIV stands for human immunodeficiency virus. It is the virus that causes AIDS. A member of a group of viruses called retroviruses, HIV infects human cells and uses the energy and nutrients provided by those cells to grow and reproduce.

What is AIDS?

AIDS stands for acquired immunodeficiency syndrome. It is a disease in which the body's immune system breaks down and is unable to fight off infections, known as "opportunistic infections," and other illnesses that take advantage of a weakened immune system.

When a person is infected with HIV, the virus enters the body and lives and multiplies primarily in the white blood cells. These are immune cells that normally protect us from disease. The hallmark of HIV infection is the progressive loss of a specific type of immune cell called T-helper, or CD4, cells. As the virus grows, it damages or kills these and other cells, weakening the immune system and leaving the person vulnerable to various opportunistic infections and other

illnesses ranging from pneumonia to cancer. A person can receive a clinical diagnosis of AIDS, as defined by the U.S. Centers for Disease Control and Prevention (CDC), if he or she has tested positive for HIV and meets one or both of these conditions:

- The presence of one or more AIDS-related infections or illnesses;
- A CD4 count that has reached or fallen below 200 cells per cubic millimeter of blood. Also called the T-cell count, the CD4 count ranges from 450 to 1200 in healthy individuals.

How quickly do people infected with HIV develop AIDS?

In some people, the T-cell decline and opportunistic infections that signal AIDS develop soon after infection with HIV. But most people do not develop symptoms for 10 to 12 years, and a few remain symptom-free for much longer. As with most diseases, early medical care can help prolong a person's life.

How many people are affected by HIV/AIDS?

The Joint United Nations Programme on HIV/AIDS (UNAIDS) estimates that there are now 33 million people living with HIV/AIDS worldwide. Most of them do not know they carry HIV and may be spreading the virus to others. In the U.S., approximately 1.1 million people are living with HIV/AIDS; about 56,300 Americans became newly infected with HIV in 2006. And the CDC estimates that one-fifth of all people with HIV in the U.S. do not know they are carrying the virus.

Since the beginning of the epidemic, AIDS has killed more than 25 million people worldwide, including more than 583,000 Americans. AIDS ranks with malaria and tuberculosis as one of the top three deadliest infectious diseases among adults and is the fourth leading cause of death worldwide. More than 15 million children have been orphaned by HIV.

How is HIV transmitted?

A person who has HIV carries the virus in certain body fluids, including blood, semen, vaginal secretions, and breast milk. The virus can be transmitted only if such HIV-infected fluids enter the bloodstream of another person. This kind of direct entry can occur (1) through the linings of the vagina, rectum, mouth, and the opening at the tip of the penis; (2) through intravenous injection with a syringe; or (3) through a break in the skin, such as a cut or sore. Usually, HIV is transmitted through:

- Unprotected sexual intercourse (either vaginal or anal) with someone who has HIV. Women are at greater risk of HIV infection through vaginal sex than men, although the virus can also be transmitted from women to men. Anal sex (whether male-male or male-female) poses a high risk mainly to the receptive partner, because the lining of the anus and rectum is extremely thin and is filled with small blood vessels that can be easily injured during intercourse.

- Sharing needles or syringes with someone who is HIV infected. Laboratory studies show that infectious HIV can survive in used syringes for a month or more. That's why people who inject drugs should never reuse or share syringes, water, or drug preparation equipment. This includes needles or syringes used to inject illegal drugs such as heroin, as well as steroids. Other types of needles, such as those used for body piercing and tattoos, can also carry HIV.
- Infection during pregnancy, childbirth, or breast-feeding (mother-to-infant transmission). Any woman who is pregnant or considering becoming pregnant and thinks she may have been exposed to HIV—even if the exposure occurred years ago—should seek testing and counseling. In the U.S., mother-to-infant transmission has dropped to just a few cases each year because pregnant women are routinely tested for HIV. Those who test positive can get drugs to prevent HIV from being passed on to a fetus or infant, and they are counseled not to breast-feed.
- Unprotected oral sex with someone who has HIV. There are far fewer cases of HIV transmission attributed to oral sex than to either vaginal or anal intercourse, but oral-genital contact poses a clear risk of HIV infection, particularly when ejaculation occurs in the mouth. This risk goes up when either partner has cuts or sores, such as those caused by sexually transmitted infections (STIs), recent tooth-brushing, or canker sores, which can allow the virus to enter the bloodstream.

How is HIV not transmitted?

HIV is not an easy virus to pass from one person to another. It is not transmitted through food or air (for instance, by coughing or sneezing). There has never been a case where a person was infected by a household member, relative, co-worker, or friend through casual or everyday contact such as sharing eating utensils or bathroom facilities, or through hugging or kissing. (Most scientists agree that while HIV transmission through deep or prolonged "French" kissing may be possible, it would be extremely unlikely.) Here in the U.S., screening the blood supply for HIV has virtually eliminated the risk of infection through blood transfusions (and you cannot get HIV from giving blood at a blood bank or other established blood collection center). Sweat, tears, vomit, feces, and urine do contain HIV, but have not been reported to transmit the disease (apart from two cases involving transmission from fecal matter via cut skin). Mosquitoes, fleas, and other insects do not transmit HIV.

How can I reduce my risk of becoming infected with HIV through sexual contact?

If you are sexually active, protect yourself against HIV by practicing safer sex. Whenever you have sex, use a condom or "dental dam" (a square of latex recommended for use during oral-genital and oral-anal sex). When used properly and consistently, condoms are extremely effective. But remember:

- Use only latex condoms (or dental dams). Lambskin products provide little protection against HIV.
- Use only water-based lubricants. Latex condoms are virtually useless when combined with oil- or petroleum-based lubricants such as Vaseline or hand lotion. (People with latex allergies can use polyethylene condoms with oil-based lubricants).

- Use protection each and every time you have sex.
- If necessary, consult a nurse, doctor, or health educator for guidance on the proper use of latex barriers.

Are there other ways to avoid getting HIV through sex?

The male condom is the only widely available barrier against sexual transmission of HIV. Female condoms are fairly unpopular in the U.S. and still relatively expensive, but they are gaining acceptance in some developing countries. Efforts are also under way to develop topical creams or gels called "microbicides," which could be applied prior to sexual intercourse to kill HIV and prevent other STIs that facilitate HIV infection.

Is there a link between HIV and other sexually transmitted infections?

Having a sexually transmitted infection (STI) can increase your risk of acquiring and transmitting HIV. This is true whether you have open sores or breaks in the skin (as with syphilis, herpes, and chancroid) or not (as with chlamydia and gonorrhea). Where there are breaks in the skin, HIV can enter and exit the bloodstream more easily. But even when there are no breaks in the skin, STIs can cause biological changes, such as swelling of tissue, which may make HIV transmission more likely. Studies show that HIV-positive individuals who are infected with another STI are three to five times more likely to contract or transmit the virus through sexual contact.

How can I avoid acquiring HIV from a contaminated syringe?

If you are injecting drugs of any type, including steroids, do not share syringes or other injection equipment with anyone else. (Disinfecting previously used needles and syringes with bleach can reduce the risk of HIV transmission.) If you are planning to have any part of your body pierced or to get a tattoo, be sure to see a qualified professional who uses sterile equipment. Detailed HIV prevention information for drug users who continue to inject is available from the CDC's National Prevention Information Network at 1-800-458-5231 or online at www.cdc.gov/idu.

Are some people at greater risk of HIV infection than others?

HIV does not discriminate. It is not who you are but what you do that determines whether you can become infected with HIV. In the U.S., roughly half of all new HIV infections are related directly or indirectly to injection drug use, i.e., using HIV-contaminated needles or having sexual contact with an HIV-infected drug user. With 56,300 Americans contracting HIV in 2006, there are clearly many people who are still engaging in high-risk behaviors, and infection rates remain alarmingly high among young people, women, African Americans, and Hispanics. The fastest rising infection rates are now found among men who have sex with men, who comprised 53 percent of those newly infected with HIV in 2006; a third of those men were under 30 years of age.

Are women especially vulnerable to HIV?

Women are at least twice as likely to contract HIV through vaginal sex with infected males than vice versa. This biological vulnerability is worsened by social and cultural factors that often undermine women's ability to avoid sex with partners who are HIV-infected or to insist on condom use. In the U.S., the proportion of HIV/AIDS cases among women more than tripled, from 8 percent in 1985 to 26 percent in 2005. African-American and Hispanic women represent less than one-quarter of U.S. women, but account for 80 percent of new infections among American women each year. In 2005, HIV/AIDS was the fourth leading cause of death for African-American men aged 25-44, and the third for African-American women.

Are young people at significant risk of HIV infection?

Many of the 1.1 million people now living with HIV in the U.S. became infected when they were teenagers. The CDC's 2007 statistics show that about 48 percent of American high school students had been sexually active. Young people aged 13–29 accounted for 34 percent of HIV infections in 2006. Many young people also use drugs and alcohol, which can increase the likelihood that they will engage in high-risk sexual behavior.

Are there treatments for HIV/AIDS?

For many years, there were no effective treatments for AIDS. Today, a number of drugs are available to treat HIV infection. Some others are designed to treat the opportunistic infections and illnesses that affect people with AIDS.

The former group of drugs prevents HIV itself from reproducing and destroying the body's immune system:

- Nucleoside/nucleotide reverse transcriptase inhibitors are incorporated into the virus's DNA and prevent reverse transcriptase from adding nucleotides to form functional viral DNA. They include abacavir, didanosine (ddl), emtricitabine (FTC), lamivudine (3TC), stavudine (d4T), tenofovir, and zidovudine (AZT);
- Non-nucleoside reverse transcriptase inhibitors attach themselves to reverse transcriptase to prevent HIV from converting RNA into DNA, thus preventing the cell from producing new virus. "Non-nukes" include delavirdine, efavirinz, etravirine, and nevirapine;
- Protease inhibitors attack the HIV enzyme protease and include amprenavir, atazanavir, darunavir, fosamprenavir, indinavir, lopinavir, nelfinavir, ritonavir, and tipranavir;
- An entry inhibitor prevents HIV from entering healthy CD4 cells by targeting the CCR5 protein. Maraviroc is the only FDA-approved entry inhibitor;
- A fusion inhibitor stops the virus from entering cells by targeting the gp41 protein on HIV's surface. Enfuvirtide is the only FDA-approved fusion inhibitor; and
- An integrase inhibitor blocks the action of an enzyme produced by HIV that allows it to integrate into the DNA. It is effective against HIV that has become resistant to other antiretroviral drugs. Raltegravir is the only FDA-approved integrase inhibitor.

HIV patients take these drugs in combination—a regimen known as highly active antiretroviral therapy (HAART). When taken as directed, anti-HIV treatment can reduce the amount of HIV in the bloodstream to very low levels and often enables the body's immune cells to rebound to normal levels.

In addition to antiretroviral therapy, several drugs can be taken to help prevent a number of opportunistic infections including *Pneumocystis carinii* pneumonia, toxoplasmosis, cryptococcus, and cytomegalovirus infection. Once opportunistic infections occur, the same drugs can be used at higher doses to treat these infections, and chemotherapy drugs are available to treat the cancers that commonly occur in AIDS.

Researchers are continuing to develop new drugs that act at critical steps in the virus's life cycle. Efforts are under way to identify new targets for anti-HIV medications and to discover ways of restoring the ability of damaged immune systems to defend against HIV and the many illnesses that affect people with HIV. Ultimately, advances in rebuilding the immune systems of HIV patients will benefit people with a number of serious illnesses, including cancer, Alzheimer's disease, multiple sclerosis, and immune deficiencies associated with aging and premature birth.

Is there a cure for AIDS?

There is still no cure for AIDS. And while new drugs are helping some people who have HIV live longer, healthier lives, there are many problems associated with them:

- Anti-HIV drugs are highly toxic and can cause serious side effects, including heart damage, kidney failure, and osteoporosis. Many (perhaps even most) patients cannot tolerate long-term treatment with HAART.
- HIV mutates quickly. Even among those who do well on HAART, roughly half of patients experience treatment failure within a year or two, often because the virus develops resistance to existing drugs. In fact, as many as 10 to 20 percent of newly infected Americans are acquiring viral strains that may already be resistant to current drugs.
- Because treatment regimens are unpleasant and complex, many patients miss doses of their medication. Failure to take anti-HIV drugs on schedule and in the prescribed dosage encourages the development of new drug-resistant viral strains.
- Even when patients respond well to treatment, HAART does not eradicate HIV. The virus continues to replicate at low levels and often remains hidden in "reservoirs" in the body, such as in the lymph nodes and brain.

In the U.S., the number of AIDS-related deaths has decreased dramatically because of widely available, potent treatments. But more than 95 percent of all people with HIV/AIDS live in the developing world, and many have little or no access to treatment.

Is there a vaccine to prevent HIV infection?

Despite continued intensive research, experts believe it will be at least a decade before we have a safe, effective, and affordable AIDS vaccine. And even after a vaccine is developed, it will take many years before the millions of people at risk of HIV infection worldwide can be immunized. Until then, other HIV prevention methods, such as practicing safer sex and using sterile syringes, will remain critical.

Can you tell whether someone has HIV or AIDS?

You cannot tell by looking at someone whether he or she is infected with HIV or has AIDS. An infected person can appear completely healthy. But anyone infected with HIV can infect other people, even if they have no symptoms.

How can I know if I'm infected?

Immediately after infection, some people may develop mild, temporary flu-like symptoms or persistently swollen glands. Even if you look and feel healthy, you may be infected. The only way to know your HIV status for sure is to be tested for HIV antibodies—proteins the body produces in an effort to fight off infection. This usually requires a blood sample. If a person's blood has HIV antibodies that means the person is infected.

Should I get tested?

If you think you might have been exposed to HIV, you should get tested as soon as possible. Here's why:

- Even in the early stages of infection, you can take concrete steps to protect your long-term health. Regular check-ups with a doctor who has experience with HIV/AIDS will enable you (and your family members or loved ones) to make the best decisions about whether and when to begin anti-HIV treatment, without waiting until you get sick.
- Taking an active approach to managing HIV may give you many more years of healthy life than you would otherwise have.
- If you are HIV positive, you will be able to take the precautions necessary to protect others from becoming infected.
- If you are HIV positive and pregnant, you can take medications and other precautions to significantly reduce the risk of infecting your infant, including not breast-feeding.

How can I get tested?

Most people are tested by private physicians, at local health department facilities, or in hospitals. In addition, many states offer anonymous HIV testing. It is important to seek testing at a place that also provides counseling about HIV and AIDS. Counselors can answer questions about high-risk behavior and suggest ways you can protect yourself and others in the future. They can also help you understand the meaning of the test results and refer you to local AIDS-related resources.

Though less readily available, there is also a viral load test that can reveal the presence of HIV in the blood within three to five days of initial exposure, as well as highly accurate saliva tests that are nearly equivalent to blood tests in determining HIV antibody status. In many clinics you can now get a test called OraQuick, which gives a preliminary result in 20 minutes. You can also purchase a kit that allows you to collect your own blood sample, send it to a lab for testing, and receive the results anonymously. Only the Home Access brand kit is approved by the Food and Drug Administration. It can be found at most drugstores.

Keep in mind that while most blood tests are able to detect HIV infection within four weeks of initial exposure, it can sometimes take as long as three to six months for HIV antibodies to reach detectable levels. The CDC currently recommends testing six months after the last possible exposure to HIV.

The CDC's National AIDS Hotline can answer questions about HIV testing and refer you to testing sites in your area. Operators are available toll-free, 24 hours a day, seven days a week, at:

- 1-800-CDC-INFO (800-232-4636)
- 101-515-8000 (TTY/deaf access)

How can I help fight HIV/AIDS?

Everyone can play a role in confronting the HIV/AIDS epidemic. Here are just a few suggestions for how you can make a difference:

- Volunteer with your local AIDS service organization.
- Talk with the young people you know about HIV/AIDS.
- Sponsor an AIDS education event or fund raiser with your local school, community group, or religious organization.
- Speak out against AIDS-related discrimination.
- Urge government officials to provide adequate funding for AIDS research, prevention education, medical care, and support services.
- Support continued research to develop better treatments, a safe and effective AIDS vaccine, and a cure by making a donation to amfAR.