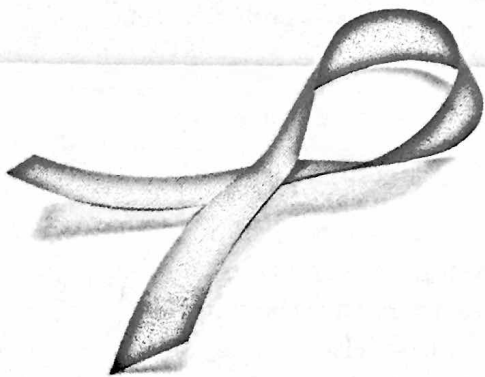


HIV Infection

Of all STDs, none has received more attention—and deservedly so—than AIDS. The costs of this deadly affliction—in both monetary cost and the loss of human potential—have been enormous. AIDS is now the leading cause of death in people between the ages of 25 and 44.



hot link

immune system For more information on the immune system and how it protects the body from infection, see Chapter 28, page 624.

HEALTH TERMS

acquired immune deficiency syndrome (AIDS)

human immunodeficiency virus (HIV)

intravenous (IV) drugs

HEALTH CONCEPTS

- AIDS is a disorder that interferes with the body's ability to fight off infections.
- Viruses are the simplest form of life.
- HIV plays a central role in the AIDS epidemic.
- The human immunodeficiency virus (HIV) is transmitted mainly through semen, secretions from the female's vagina, blood, and breast milk, sharing needles, and transfusions.



AIDS and HIV

Acquired immune deficiency syndrome (AIDS)—defined formally as *HIV infection combined with severe immune deficiency*—is the final stage of infection with HIV. Short for **human immunodeficiency** (im-myuh-noh-duh-FIH-shuhn-see) **virus**, HIV is a virus that attacks the body's immune system. This lesson will look at how people become infected with HIV—and how they do not.

HIV and the Human Body

In order to understand how HIV attacks the body's **immune system**, it is necessary to review the function of lymphocytes—white blood cells made in bone marrow. The human body contains billions of lymphocytes, found in the blood, spleen, lymph nodes, appendix, tonsils, and adenoids.

Lymphocytes help your body fight disease-causing organisms, or pathogens. There are two major types of lymphocytes: B cells, which mature in bone marrow, and T cells, which mature in the thymus gland. T-helper cells, a type of T cell, stimulate B cells to produce antibodies. Antibodies are proteins that help destroy pathogens that enter the body.

When HIV enters the bloodstream, it enters certain cells, including T-helper cells. Here HIV reproduces its genetic material. More T-helper cells become infected and are destroyed. This decrease in the number of T-helper cells reduces the ability of the immune system to fight pathogens, making the body vulnerable to certain illnesses.

HIV can be present anywhere in the body—the bloodstream, lymph nodes, even brain cells.

How HIV Is Transmitted

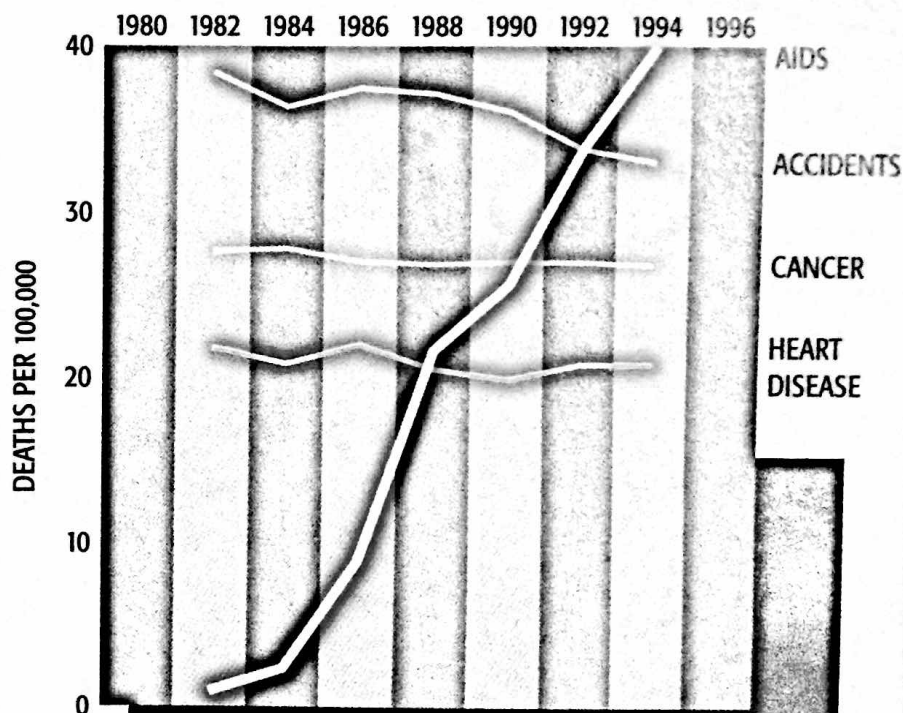
There are many myths about how HIV is or is not spread. The fact is, HIV must enter a person's bloodstream in order to infect the person. HIV has been found in body fluids such as blood, semen, and vaginal secretions of infected persons. Small concentrations have also been found in saliva, sweat, tears, feces, urine, and breast milk. To date, HIV is known to be transmitted only through semen, blood, vaginal secretions, and breast milk. Certain behaviors and situations are known to transmit HIV from an infected person to an uninfected person because the exchange of body fluids is involved.

Risk Behaviors Known to Transmit HIV

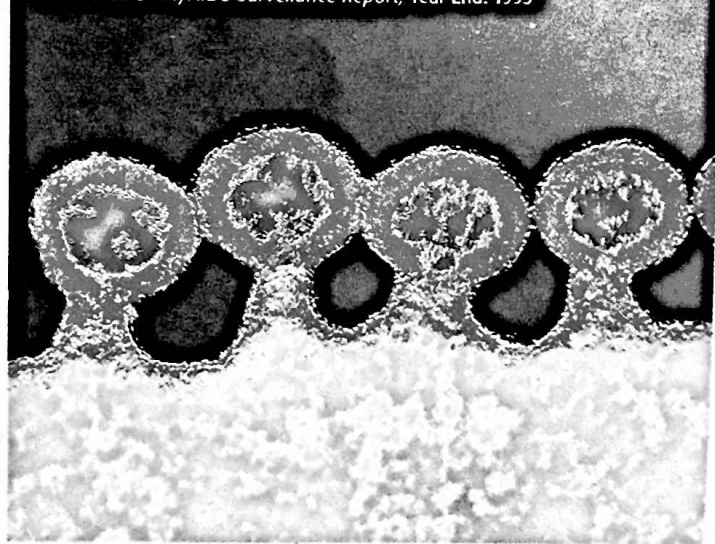
About 93 percent of adults and teenagers revealed through testing to be infected with HIV have acquired the virus through sexual intercourse or the use of **intravenous (IV) drugs**—*drugs that are injected into the veins*. These two actions are high-risk behaviors for HIV infection.

- **Sexual Intercourse.** HIV can be transmitted during any form of sexual intercourse. During intercourse, secretions containing HIV can enter a partner's blood through tiny cuts in the body. The risks of HIV infection increase with the number of sexual partners a person has or by having sexual contact with someone

Leading Cause of Death—Ages 25–44



SOURCE: CDC HIV/AIDS Surveillance Report, Year End: 1995



▲ This microscopic photograph shows HIV reproducing from a host cell.

ACTIVITY Describe the process by which HIV invades the immune system.

who has had many sexual partners. Having an STD that results in sores and bleeding or discharge also increases the risk of HIV entering the blood.

- **Sharing Needles.** If a person who is infected with HIV injects drugs into his or her veins with a syringe, drops of that person's blood are left on the needle. If another person uses the same needle, it is very likely that the infected blood will be passed to this person's blood. Sharing any needle, including one used to inject steroids, make tattoos, or pierce ears, puts a person at risk of becoming infected with HIV.

MYTHS ABOUT HIV TRANSMISSION



MYTH

You can get HIV from a mosquito bite if that mosquito has bitten an HIV-infected person.

FACT

Although mosquitoes can spread diseases such as malaria and yellow fever, HIV is not spread through a mosquito's salivary glands.

MYTH

You can get HIV by touching a glass from which a person infected with HIV has drunk.

FACT

HIV is spread primarily through blood, semen, and vaginal secretions.

MYTH

You can get HIV from swimming in a pool with someone who is infected.

FACT

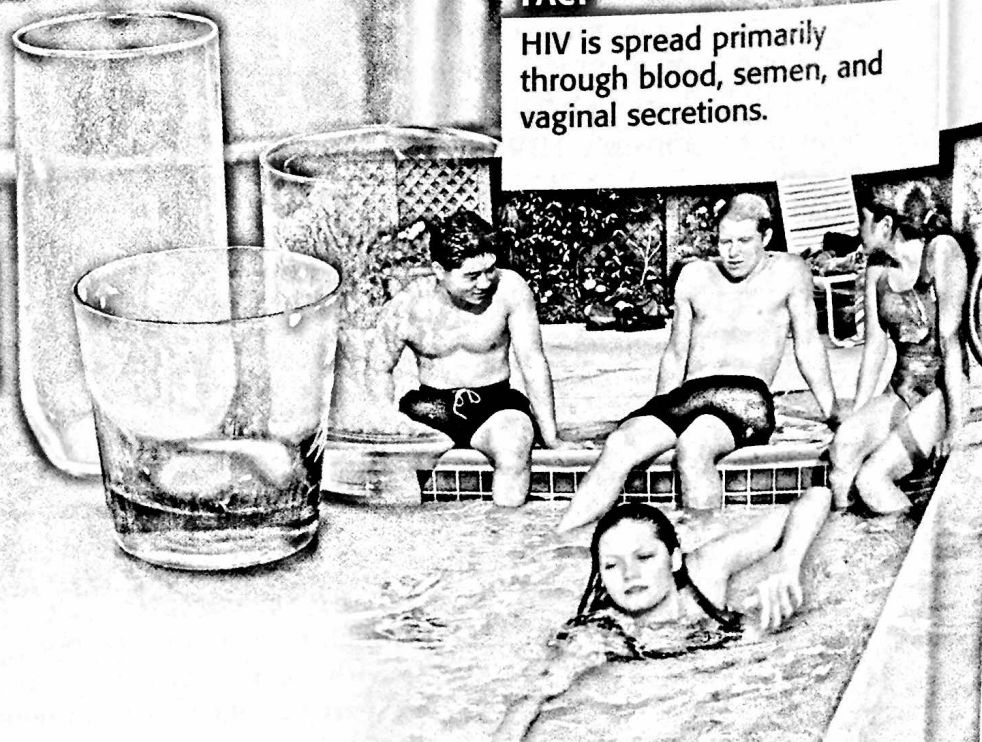
Even if an HIV-infected person bled into a swimming pool, the blood would be so diluted it would be harmless.

MYTH

You can get HIV from being sneezed on by someone who is infected.

FACT

HIV is not spread through airborne droplets.



OTHER MODES OF TRANSMISSION

Two other modes of HIV transmissions are blood transfusions and mother-to-child transfer during birth. Combined, however, these modes account ultimately for less than 3 percent of all cases of AIDS. Since March of 1985, all blood donated in the United States has been tested for the presence of HIV antibodies. This testing has greatly reduced—although not eliminated—the risk of receiving contaminated blood or blood products from a transfusion. There is no risk when donating blood because disposable needles are used. These needles are used only one time.

A pregnant female who is infected with HIV can pass the virus to the fetus in blood exchanged through the umbilical cord. This occurs between 20 and 35 percent of the time when the mother is infected with HIV. There is a treatment available that can reduce the risk of HIV being transmitted from an infected woman to her unborn child. Therefore, it is important for all pregnant women to get early prenatal care to protect their infants. A baby also could be infected with HIV during birth if the virus enters through a cut on the baby's body. A nursing baby could receive HIV while breast-feeding.

Teenagers at Risk

Unlike other STDs whose rates are decreasing among adolescents, the incidence of HIV infection among teenagers is on the rise, especially among African Americans, Hispanic Americans, and

females. The Centers for Disease Control and Prevention (CDC) reports the following:

- AIDS is now the leading cause of death in the 25- to 44-year-old age group. Many of those in their 20s probably became infected with HIV as teenagers.
- As of June 1997, the CDC reported 3,359 cases of HIV infection among people 13–19 years old. Considering that many cases go unreported, the numbers may be substantially higher.
- AIDS is now the leading cause of death for women in 15 of the largest cities in the United States.

HIV infection can be prevented, as will be seen in the lesson that follows. A teen who chooses to abstain from sexual intercourse and who does not use IV drugs greatly reduces the risk of HIV infection. In addition, abstaining from the use of alcohol and other drugs, which can impair a person's judgment in regard to sexual activity and drug use, can also reduce the risk of HIV infection. Making responsible decisions about your own activities and behaviors is your most valuable tool for protecting yourself against HIV infection. As scientists continue to search for a cure for this disease, you have a responsibility to yourself and to others to avoid any behaviors that could put you at risk of infection.