Reducing the Risk of STDs and HIV

- I will choose behaviors to reduce my risk of infection with sexually transmitted diseases.
- I will choose behaviors to reduce my risk of HIV infection.

People your age who are abstinent from sexual activity will not become infected with a sexually transmitted disease (STD), a disease caused by pathogens that are transmitted from an infected person to an uninfected person during intimate sexual contact. Sexually transmitted diseases are also known as sexually transmitted infections (STIs).

What You’ll Learn

1. Discuss the causes and methods of transmission of common STDs. (p. 499)
2. Discuss the symptoms, diagnoses, and treatments of common STDs. (p. 499)
3. Analyze the complications of common STDs. (p. 499)
4. Analyze ways to prevent infection from STDs. (p. 502)
5. Discuss the progression of HIV infection to AIDS. (p. 504)
6. Identify treatment and prevention strategies for HIV and AIDS. (p. 508)
7. List tests used to determine the presence of HIV. (p. 512)

Why It’s Important

You can avoid becoming infected with an STD or HIV. The information in this lesson will help reduce your risk of being infected.

Key Terms

- sexually transmitted disease (STD)
- chlamydia
- gonorrhea
- herpes
- genital warts
- pubic lice
- thrush
- Kaposi’s sarcoma (KS)
- Western blot
- HIV negative

Write ABOUT IT!

Writing About AIDS The AIDS quilt above represents people who have died of AIDS. After reading about AIDS on page 504, write an entry in your health journal about the ways HIV is spread, and the ways it is not spread. Then make an HIV awareness brochure, using what you wrote in your journal.
Some STDs are caused by types of bacteria. These STDs can be cured through the use of antibiotics. However, antibiotics will not provide lifelong protection against reexposure, and a person can be reinfected with the disease. In this section, you will learn the causes, methods of transmission, symptoms, and treatments of these types of STDs.

What to Know About Bacterial STDs

**Chlamydia**

**Cause** The most common bacterial STD in the U.S. is chlamydia (kluh MIH dee uh), an STD that is caused by the bacterium *Chlamydia trachomatis* that produces inflammation of the reproductive organs.

**Methods of transmission** Chlamydia is spread by sexual contact with an infected partner. A pregnant female may pass the infection to her newborn baby during delivery. During delivery, the chlamydia bacteria can enter the baby’s eyes or lungs. If not treated, the baby can become blind or develop pneumonia.

**Symptoms** Symptoms usually appear one to three weeks after exposure. One-half of infected males have no symptoms, but still can infect a sexual partner. Chlamydia bacteria can continue to multiply in a male who does not know he is infected. Males with symptoms may have painful urination, a discharge from the penis, and pain or swelling in the scrotum.

Roughly three-quarters of infected females have no symptoms. A female may not know she has chlamydia until complications develop. Symptoms include a burning sensation during urination and an unusual discharge from the vagina.

**Diagnosis and treatment** A physician uses a cotton swab to collect a sample of the discharge, which is examined in a laboratory for the presence of the chlamydia bacteria. Antibiotics are used to treat chlamydia. Infected persons must take all the prescribed antibiotics, even after the symptoms disappear. A follow-up visit with a physician is necessary to be sure that the infection is cured. All sex partners of persons infected with chlamydia should be checked and treated.

**Complications** A serious infection of the internal female reproductive organs is called pelvic inflammatory disease (PID). Many cases occur in females infected with chlamydia who had no symptoms. PID can cause a scarring of the Fallopian tubes, or oviducts, which can block the tubes and cause sterility. To be sterile means that a person is unable to produce children. If left untreated, chlamydia also can cause sterility in males.

Ectopic pregnancy also is linked to PID. An *ectopic pregnancy*, or *tubal pregnancy*, occurs when a fertilized egg implants in a Fallopian tube instead of in the uterus. This condition results in the death of the fetus and can be fatal for the pregnant female. Early and continuous prenatal care are important in the detection and treatment of any disease.
**Did You Know?**

**Terminology** In this textbook, the term sexually transmitted diseases (STDs) is used. In some health resources, the term sexually transmitted infections (STIs) is used. These terms can be used interchangeably.

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**Syphilis**

**Cause** An STD caused by the bacterium *Treponema pallidum* is syphilis. The bacterium enters the body through tiny breaks in the mucous membranes and then burrows its way into the bloodstream.

**Methods of transmission** Syphilis is spread by intimate sexual contact with an infected person. The bacteria also can be transmitted from a pregnant female to her fetus.

**Symptoms** The first stage of syphilis is primary syphilis. The first symptom of syphilis is a chancre. A chancre (SHAN ker) is a painless, open sore that appears at the site where the bacteria entered the body, such as the genitals or the mouth. Chancres appear within ten days to three months after exposure to syphilis, but may go unnoticed if inside the body. Though painless, chancres are contagious. The chancre will disappear within a few weeks whether or not an infected person is treated; however, the pathogens for syphilis remain in the body and the disease progresses to secondary syphilis.

**Secondary syphilis** is characterized by a skin rash and begins anywhere from weeks to months after the chancre appears. Other symptoms, such as fever, tiredness, headache, sore throat, swollen lymph glands, and loss of weight and hair, may occur. The symptoms will disappear without treatment and may come and go during the next few years. People are still contagious during secondary syphilis.

**Diagnosis and treatment** People with a suspicious skin rash or sore in the genital area should be checked by a physician. A blood test will detect the presence of the bacteria that cause syphilis in any stage of the disease. Syphilis is treated with antibiotic drugs, though treatment in the later stages cannot reverse the damage done to body organs in earlier stages.

**Complications** If secondary syphilis is not treated, it may become latent syphilis. *Latent syphilis* is a stage of syphilis in which there are no symptoms, but the bacteria are still present. Latent syphilis can last for years and even for decades. Eventually, people who are infected will develop late syphilis. *Late syphilis,* or tertiary syphilis, is the final stage of syphilis in which bacteria irreversibly damage body organs. Mental incapacity, blindness, paralysis, heart disease, liver damage, and death may occur.

If a pregnant female has syphilis, the fetus is at risk. The pregnancy may result in a miscarriage, stillbirth, or fetal death. If a baby is born to a mother with syphilis, it has a high risk of becoming infected with syphilis. Babies with syphilis may have birth defects, skin sores, rashes, fever, a swollen liver and spleen, yellowish skin, anemia, and are at high risk for developing mental retardation.
**Gonorrhea**

**Cause** A highly contagious STD caused by the bacterium *Neisseria gonorrhoeae* is gonorrhea. Gonorrhea infects the linings of the genital and urinary tracts of males and females.

**Methods of transmission** Gonorrhea is spread by sexual contact with an infected person. A baby born to an infected female can become infected during childbirth if the bacteria enter the baby’s eyes.

**Symptoms** Males usually have a white, milky discharge from the penis and a burning sensation during urination. They usually experience pain and increased urination within two to five days after infection, or they may not have any symptoms. Whether or not symptoms are present, an infected person may still be contagious.

Many infected females have no symptoms. If symptoms appear, they include a burning sensation during urination and a yellow discharge from the vagina that usually appear within ten days after sexual contact with an infected partner.

Severe symptoms, such as abdominal pain, bleeding between menstrual periods, vomiting, or fever, can occur if gonorrhea is not treated.

**Diagnosis and treatment** Diagnosis of gonorrhea is made by a microscopic examination of the discharge or analysis of the urine. The gram stain is a test that involves placing a smear of the discharge on a slide stained with a dye. The test is accurate for males but not for females. The preferred method for females is the culture test, which involves placing a sample of the discharge on a culture plate and letting it grow for 24–72 hours.

Another type of test, a nucleic acid amplification test, can be done on urine or discharge. This test is highly accurate, but not all health-care providers offer it.

Antibiotics are used to treat gonorrhea. Some strains are resistant to certain antibiotics, making treatment difficult. People with gonorrhea should take the full course of prescribed medication. A follow-up visit to a physician is necessary. All sex partners of infected people should be tested even if they have no symptoms.

Most states require that the eyes of newborn babies be treated with antibiotics or silver nitrate immediately after birth to prevent gonococcal infection of the eyes in case the mother was infected.

**Complications** The *Neisseria gonorrhoeae* bacteria can spread into the bloodstream and infect the joints, heart valves, and the brain. Gonorrhea in both males and females can cause permanent sterility, and is a major cause of pelvic inflammatory disease (PID) in females.

In newborns, gonococcal infection can lead to blindness.
Several STDs are caused by viruses. Treatment for symptoms of these STDs is available, but there are no cures for them. In this section, you will learn about the causes, methods of transmission, symptoms, and treatments of viral STDs.

What to Know About Viral STDs

**Herpes**

**Cause and complications** An STD caused by the herpes simplex virus (HSV) that produces cold sores or fever blisters in the genital area or mouth is herpes. A virus that causes cold sores or fever blisters in the mouth or on the lips is herpes simplex virus type 1 (HSV-1). HSV-1 also may cause genital sores. Herpes simplex virus type 2 (HSV-2) is a virus that causes genital sores, but also may cause sores in the mouth. Both viruses remain in the body for life. People with genital herpes fear recurrences and are at greater risk of HIV infection.

**Methods of transmission** Genital herpes is spread by sexual contact with an infected person. An infected pregnant female can infect her baby during vaginal delivery.

**Symptoms** Symptoms of genital herpes occur within two weeks after contact with an infected partner. Symptoms can include an itching or burning sensation; pain in the legs, buttocks, or genital area; vaginal discharge; or a feeling of pressure in the abdominal area. Clusters of small, painful blisters that may develop into open sores appear in the genital area. The symptoms disappear after a few weeks. Outbreaks may recur throughout an infected person’s life.

**Diagnosis and treatment** Diagnosis is made by growing the virus from a swab taken from the ulcers. Blood tests can be given to detect the presence of antibodies to HSV in the blood. Antiviral drugs have been approved to relieve symptoms and prevent recurrences, but they do not cure genital herpes.

**HPV**

**Cause and complications** The most common type of viral STD in the United States is HPV, or human papillomavirus. There are more than 70 known types of HPV. Some of these types of HPV cause genital warts, or wartlike growths on the genitals. Other types of HPV have been linked to cervical cancer.

**Methods of transmission** Genital warts are contagious and are spread during sexual contact. They also can be spread from a pregnant female to her baby during vaginal delivery of the baby.

**Symptoms** Genital warts may appear after a few weeks or even years after infection. They can be soft or hard, are usually flesh-colored or white, and resemble a cauliflower. These warts are usually painless.

**Diagnosis and treatment** A physician inspects the warts to make a diagnosis.
A Pap smear is used to collect cells from the cervix to be tested for cervical cancer. No treatment completely eradicates the virus causing genital warts. Though warts can be frozen, burned, or cut off, they may reappear.

**Viral Hepatitis**

**Cause and complications** A viral infection of the liver is *viral hepatitis*. Several different viruses cause hepatitis, including hepatitis A (HAV), hepatitis B (HBV), hepatitis C (HCV), delta hepatitis (HDV), and hepatitis E (HEV). Many cases of hepatitis are not a serious threat to health. Others are long-lasting and can lead to liver failure, liver cancer, and death.

**Methods of transmission** Viral hepatitis, except infection by HEV, is known to be spread through sexual contact. HBV, HCV, and HDV also are spread through sharing contaminated needles. HAV is most commonly spread fecal-oral by contaminated food and water. HEV is spread mainly through contaminated water. HBV and HCV can be spread from a pregnant female to her baby.

**Symptoms** Many infected people have no symptoms. The most common early symptoms are flu-like. Later symptoms may include dark urine, abdominal pain, and jaundice. *Jaundice* is yellowing of the skin and whites of the eyes.

**Diagnosis and treatment** Blood tests confirm viral hepatitis. Treatment consists of bed rest, a healthful diet, and avoidance of alcoholic beverages. Drugs may be prescribed to improve liver function. Vaccines are now available for lifelong immunity to hepatitis A and hepatitis B.

**Other STDs**

Parasitic STDs are caused by organisms that feed off a person’s body. Pediculosis and trichomoniasis are STDs that are caused by parasites and spread through sexual contact.

**Pediculosis** An infestation of crab lice, or *pubic lice*, is called pediculosis. The lice pierce the skin to feed on human blood. The bites and waste matter cause itching. These parasites can contaminate bedding, towels, and toilet seats because they can live for about 24 hours without feeding.

To diagnose an infestation of lice, a physician examines the body to find the lice and their nits, or eggs, which are visible by the naked eye or through a magnifying glass. Prescription or OTC medicated creams or shampoos are used to kill the lice.

**Trichomoniasis** A parasite, *Trichomonas vaginalis*, causes the STD *trichomoniasis* (trih kuh muh NI uh suhs). The parasite is spread through intimate sexual contact.

Although most males do not experience any symptoms, symptoms can include a thin, whitish discharge from the penis and painful or difficult urination. About half of all infected females have no symptoms. There may be a yellow-green or gray vaginal discharge that has an unpleasant odor, painful urination, or irritation and itching in the genital area.

To diagnose trichomoniasis, a smear of the discharge is examined under a microscope. Drug treatment is used to treat both infected partners.
You may have heard, at some time or another, someone say “You can catch AIDS.” This statement is false. AIDS (acquired immunodeficiency syndrome) is a condition that results after a person becomes infected with HIV. You cannot “catch” AIDS, but you can develop AIDS after HIV has inflicted enough destruction of the body cells. The information in this lesson will describe what happens when HIV enters the body and develops into AIDS.

The Body’s Response to HIV

Recall that **lymphocytes** are white blood cells that help the body fight pathogens. When a pathogen enters the body, lymphocytes multiply in lymph tissue to fight infection. A **B cell** is a white blood cell that produces antibodies. A **helper T cell** is a white blood cell that signals B cells to produce antibodies. An **antibody** is a special protein that helps fight infection.

**HIV** A pathogen that destroys infection-fighting T cells in the body is the **human immunodeficiency virus (HIV)**. When HIV enters the body, it attaches to a molecule called CD4 on helper T cells. HIV then takes control of the helper T cells and reproduces more HIV. As HIV reproduces, it attacks the other helper T cells and takes control of them.

Some signs of HIV infection may include flu-like symptoms, such as fever, sore throat, skin rash, diarrhea, swollen glands, loss of appetite, and night sweats. These signs may come and go as the helper T cell count fluctuates. Many people will not develop severe symptoms for years. As their helper T cell count drops, however, they become more susceptible to many opportunistic infections when they are infected with HIV.

**Opportunistic infections** An infection that develops in a person with a weak immune system is an **opportunistic infection**. The pathogens that cause opportunistic infections already are present in the bodies of most people, but usually are harmless unless a person has HIV or another disease that weakens the immune system.

There are many types of opportunistic infections. **Thrush** is a fungal infection of the mucous membranes of the tongue and mouth. White spots and ulcers cover the infected area. Infections of the skin and mucous membranes also appear. There may be sores around the anus, genital area, and mouth.

**Oral hairy leukoplakia** is an infection causing fuzzy white patches on the tongue. **Pneumocystis carinii pneumonia (PCP)** is a form...
According to the Centers for Disease Control and Prevention, a person infected with HIV has AIDS if they have 200 or fewer helper T cells per microliter of blood or an opportunistic infection.

People who are infected with HIV also are at risk for developing rare types of cancers. *Kaposi's sarcoma (KC)* is a type of cancer that affects people who are infected with HIV. KS causes purplish lesions and tumors on the skin and in the linings of the internal organs. These lesions spread to most of the linings of the body.

HIV also destroys brain and nerve cells. *AIDS dementia complex* is a loss of brain function caused by HIV infection. There is gradual loss of a person’s ability to think and move, a personality change, and a loss of coordination. As AIDS dementia complex progresses, confusion increases and memory loss becomes severe.

People who have AIDS may develop HIV wasting syndrome. *HIV wasting syndrome* is a substantial loss in body weight that is accompanied by high fevers, sweating, and diarrhea.

Roughly 40,000 people in the United States become infected with HIV each year, though one-quarter to one-third do not know they are infected. People with or without symptoms can pass the virus to others.

Many people do not show symptoms for many years after infection, so they may pass the disease onto others unknowingly. According to the Centers for Disease Control and Prevention (CDC), a person infected with HIV who has 200 or fewer helper T cells per microliter of blood or an opportunistic infection is diagnosed with AIDS.

**When HIV Enters the Body**

1. HIV enters the body.
2. HIV attaches to and takes control of helper T cells.
3. HIV reproduces itself and destroys helper T cells.
4. HIV continues to attack, reproduce, and destroy other helper T cells. This weakens the body’s ability to fight infection.

According to the Centers for Disease Control and Prevention, a person infected with HIV has AIDS if they have 200 or fewer helper T cells per microliter of blood or an opportunistic infection.
People who are infected with HIV may have HIV in most of their bodily fluids. HIV is spread from infected persons to others by contact with certain bodily fluids. These bodily fluids are blood, semen, vaginal secretions, and in a few cases, breast milk.

Minute traces of HIV have been found in saliva and tears. To date, there have been no documented cases of HIV transmission through saliva and tears. However, if these bodily fluids contain infected blood, the virus could be transmitted through these fluids. HIV is transmitted when a person engages in specific risk behaviors or is involved in risk situations.

What to Know About HIV Transmission

**Sexual contact** During sexual contact, HIV from an infected person may enter the body of an uninfected partner through exposed blood vessels in small cuts or tiny cracks in mucous membranes. HIV transmission can occur if the male ejaculates or if he withdraws before ejaculation. This is because HIV is present in the pre-ejaculatory fluid. A person that comes in contact with this fluid can become infected with HIV.

Increased risks from sexual contact include having multiple sex partners, having sex with someone involved in risky behaviors, such as prostitution or injection drug use, or having other sexually transmitted diseases. The greater the number of sex partners people have, the more likely they will have sex with someone who is infected with HIV. STDs that produce sores or lead to bleeding or discharge provide ways for HIV to spread more easily. Genital sores provide an exit point for infected people and an entry point for uninfected people for transmission of HIV in blood, semen, and vaginal secretions.

**Open-mouth kissing** The Centers for Disease Control and Prevention warns against open-mouth kissing with a person infected with HIV because of the possibility of contact with infected blood. However, the risk of transmission of HIV in this manner is low.

**Sharing needles or syringes for injectable drugs** An intravenous drug user is a person who injects illegal drugs into the body with syringes, needles, and other injection equipment. When an infected person injects drugs, droplets of HIV-infected blood remain on the needle, syringe, or other injection equipment. If another person uses a needle, syringe, or other drug equipment that is contaminated with blood from an HIV-infected person, that person may become infected with HIV.

**Sharing needles for tattoos or piercings** Droplets of HIV-infected blood remain on the needle when an infected person uses a needle to make a tattoo or to pierce ears or other body parts. A second person who shares the needle could become infected with HIV.
Ways HIV Is Not Transmitted

• closed-mouth kissing;
• hugging;
• touching, holding, or shaking hands;
• coughing or sneezing;
• sharing food or eating utensils, such as soda or silverware;
• having casual contact with friends;
• sharing bathroom facilities or water fountains;
• sharing a pen or pencil;
• being bitten by insects;
• sharing towels or combs;
• eating food prepared or served by someone else;
• attending school;
• using a telephone or computer used by someone else;
• swimming in a pool;
• using sports and gym equipment.

To date, there have been no documented cases of HIV transmission through saliva or tears. According to the Centers for Disease Control and Prevention, HIV is not spread through casual contact, such as

Contact with the blood, other bodily fluids, or mucous membranes

People who handle the body fluids of a person who is infected with HIV risk having HIV enter the body through small cuts or tears on the skin or through a splash in the eyes. Touching the mucous membranes or broken skin of an HIV-infected person may result in contact with exposed blood vessels. Sharing a personal item, such as the razor of an infected person, increases the risk of having HIV enter the body.

Having a blood transfusion with infected blood or blood products

In the United States, the FDA controls blood donations, blood donor centers, and blood labs. All donors are screened. After donation, blood is tested for HIV, hepatitis B, syphilis, and other diseases, so the risk of HIV infection is extremely rare. People traveling to countries other than the United States should inquire about the safety of the blood supply, so that if they become injured and in need of a blood transfusion, they will know if a blood transfusion in that country will be safe. You cannot become infected with HIV from donating blood or receiving a blood transfusion within the United States.

Having a tissue transplant (organ donation)

In the United States, screening and testing procedures have reduced the risk of being infected as a result of human tissue transplants. Potential donors for all human tissues must be tested for HIV, hepatitis B, hepatitis C and other diseases. They also must be screened for risk behaviors and symptoms of AIDS and hepatitis. Imported tissues must be accompanied by records showing that the tissues were screened and tested. If no records are available, tissues are shipped under quarantine to the United States. People having tissue transplants outside the United States should check screening and testing procedures.

Being born to a mother infected with HIV

A pregnant female infected with HIV can transmit HIV through the umbilical cord to her developing embryo or fetus. A baby also can be infected while passing through the mother’s vagina at birth. Although not as common, a nursing baby can become infected with HIV through the breast milk of an infected mother. From 15 to 30 percent of all pregnant females infected with HIV infect their babies with HIV through perinatal transmission. Perinatal transmission is the transfer of an infection to a baby during pregnancy, during delivery, or after birth through breast milk.

When people donate blood in the United States, it is screened for HIV and other diseases.
A person’s use of self-control to act on responsible values is character. If you value your health and that of others, your relationships, and your family’s guidelines, you must use self-control to prevent the spread of STDs. The following section gives you guidelines on how to protect yourself and others from STDs.

What to Know About Avoiding STDs and HIV

Abstain from sex until you are married. The only method that is 100 percent effective in preventing the spread of STDs and HIV is abstinence. No form of contraception or barrier protection is 100 percent effective in preventing the spread of STDs. When you practice abstinence from sex, you avoid risk behaviors in which STDs are transmitted.

Change your behavior and be tested for STDs and HIV if you have been sexually active. People who are sexually active now can begin to practice abstinence, and should see a physician or go to a clinic to be tested for STDs. If a person is infected, he or she needs prompt treatment. Remember, it is possible to be infected and not have symptoms. If a person plans to marry in the future, he or she must tell a potential partner that he or she is infected with HIV, genital herpes, or genital warts because there is no cure. Discuss your past behavior with your parents, guardian, or other responsible adult and ask for their help and support.

Have a monogamous marriage if you choose to marry in the future. A monogamous marriage is a marriage in which partners have sex only with each other. It provides security and protects partners from infection with STDs and HIV.

Choose a drug-free lifestyle. Drugs dull your reasoning. You might not think clearly and thus violate your decision to practice abstinence until marriage. You might become infected with STDs.

Avoid use of injectable drugs. Sharing injection equipment for drug use, including steroids, is a risk behavior for STDs and HIV.

Change your behavior if you use drugs. If a person misuses or abuses drugs, he or she should talk to a parent or guardian, and see a physician or be tested for STDs at a clinic.
According to the U.S. Centers for Disease Control and Prevention, teenagers are at high risk for getting most STDs. Approximately one out of every four new STD infections occurs in a teenager every year. Why? Teenagers are more likely than adults to have more than one sex partner and to have unprotected sex. Young women also are biologically more susceptible to chlamydia, gonorrhea, and HIV than are young men. In fact, it is estimated that 5 percent of young men and 5–10 percent of young women are infected with chlamydia.

Viral STDs, such as genital herpes and hepatitis B, cannot be cured. The herpes virus remains in your body for life, and open sores may reappear from time to time. Also, bacterial STDs, such as chlamydia, can have no symptoms, especially in women. They can go untreated and can be spread unknowingly. You also can be re-infected with STDs. Women experience more severe health problems because of STDs than men, including pelvic inflammatory disease (PID) and cervical cancer.

If a person has sex with one partner, he or she is essentially having sex with every person who has had sex with that partner, plus every person who has had sex with the partner’s former partners. A person is at risk of getting any STD that these people have, as well as HIV. It can be difficult and often impossible to tell if a person has an STD by just observing the person. In fact, many people who have STDs do not know it. They may find out, eventually, when the symptoms finally appear. For HIV, this can mean years from the time they are infected. About 5 million people worldwide became infected with HIV in 2002. They include 2 million women and 800,000 children under the age of 15.

If he or she is infected, he or she needs prompt treatment. If you are dependent on drugs, you need treatment in order to stop. Ask your parents, guardian, or other responsible adult for their help and support.

Avoid sharing a needle to make tattoos or to pierce ears and other body parts. Sharing a needle to make a tattoo or pierce ears and other body parts is a risk behavior.

Follow universal precautions. Universal precautions are steps taken to prevent the spread of disease by treating all human blood and certain bodily fluids as if they contained HIV, HBV, and other pathogens. Always follow universal precautions when you have contact with a person’s blood and other bodily fluids. Wear disposable latex or vinyl gloves and wash your hands with soap and water or waterless antiseptic hand cleanser after removing the gloves. Use a face mask or shield with a one-way valve if you perform first aid for breathing emergencies. Avoid touching objects that have had contact with a person’s blood. Do not eat or drink anything or touch your mouth, eyes, or nose while performing first aid.

Take other precautions to prevent STDs. Do not engage in open-mouth kissing with someone who has blisters, lesions, ulcers, or chancrecs in his or her mouth. Avoid contact with an infected person’s objects, linens, clothing, and damp towels.
There is no cure for HIV infection or AIDS. Treatment focuses on slowing the progression of the virus by taking drugs and practicing healthful habits. Early treatment is critical in slowing the rate at which HIV multiplies. This, in turn, delays the progression of HIV to AIDS. Though the rate of progression of HIV to AIDS varies greatly from person to person, it is estimated that the average time between HIV infection and AIDS related symptom onset is typically 8–11 years.

**What to Know About HIV Treatments**

HIV treatments are complex issues. Many critical elements must be taken into consideration before beginning any treatment regimen. A comprehensive medical evaluation must be performed, including a physical examination and blood work. Blood work is done to look at the baseline of the patient’s viral load, or the amount of HIV particles that are in the blood, and CD4 counts. Both of these numbers help physicians track the progression of the disease.

Drugs are used to treat HIV infection to slow the progression of the disease. However, there are serious side effects to some of these drugs. The drug regimen to slow HIV progression can be difficult to adhere to. Patients can also develop a tolerance to the drug regimen.

**Antiretroviral drugs** Protease inhibitors, or drugs that decrease the amount of HIV in the blood and increase helper T cell counts, and strong combination therapies were first introduced in 1995. More and more antiretroviral drugs, or drugs that suppress the action of HIV, are being approved each year, including reverse transcriptase inhibitors, which decrease the amount of HIV in the blood by interfering with enzymes HIV uses to replicate itself. Currently, there are 19 approved antiretroviral drugs to use for designing regimens, which involve three or more drug combinations.

In addition, there are therapies available to help prevent and fight the many opportunistic infections. Opportunistic infections lead to the death of most people with HIV.

**Side effects of antiretroviral drugs**

People who are infected with HIV may take several combinations of drugs per day. They may forget to take their medication, or may forget which drugs must be taken with food. Some people have difficulty adhering to the food restrictions and drug regimens. Antiretroviral drugs can have some dangerous side effects. These drugs can cause metabolic changes, such as changing cholesterol levels or glucose...
levels. Damage to mitochondria also may occur with antiretroviral drug use. This can lead to muscle wasting, heart failure, or swelling.

People who are infected with HIV must work closely with their doctor to discover the best combination of medications to slow the progress of HIV, but produce the least severe symptoms. The best combination of medications will vary from person to person.

**Other ways to stay healthy** People who are infected with HIV or who have developed AIDS should practice healthful habits. They should eat healthful foods, get enough rest and sleep, exercise, and avoid alcohol, tobacco, and other drugs. Their weakened immune systems leave them vulnerable to illnesses that are spread through contaminated food. They should avoid eating nonpasteurized dairy products, raw eggs, and raw seafood. Food should be cooked thoroughly. They should wash their hands and eating utensils well with soap and water.

Scientists have made progress in the treatment of HIV and AIDS. They continue to test vaccines and research ways to keep people with HIV and AIDS healthy for as long as possible. Some people may import unapproved, but promising, drugs for HIV and life-threatening AIDS-related diseases. Because there are many scams, the FDA initiated an AIDS Health Fraud Task Force to explain how to identify phony health products and to distribute general information about HIV infection.

Global Health Initiative

At the end of 2002, an estimated 42 million people worldwide were living with HIV/AIDS, and during 2002, approximately 5 million new HIV infections occurred worldwide. In the face of such staggering statistics, the Global Health Initiative (GHI) is working to coordinate resources to reduce these numbers.

The GHI is a collaboration between companies that are members of the World Economic Forum, the World Health Organization (WHO), and the Joint United Nations Programme for HIV/AIDS (UNAIDS). One of the goals of the GHI is to increase the awareness and involvement of businesses in the health of their employees.

To date, the GHI has founded the Global Fund to Fight AIDS, tuberculosis, and malaria and has taken other actions. According to the World Economic Forum, the overall goal of the GHI is to “help reduce the disease burden . . . of HIV by 25 percent [by the year] 2010.”

Visit [www.glencoe.com](http://www.glencoe.com) for more information on HIV.

### HIV Incidence and Prevalence Around the World

**Source:** Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization

#### Analyzing Graphs

Study the graph above and answer these questions:

1. Which area has the most people living with HIV/AIDS?
2. Are more people newly infected with HIV in Africa or in Europe and Asia combined?
You may not be able to tell if a person is infected with HIV by the way he or she looks. He or she may look and feel healthy and not have symptoms but still spread the virus to others. Therefore, anyone who has engaged in a risk behavior or been in a risk situation for HIV transmission should be tested for HIV.

What to Know About HIV Tests

**Antibody tests** Tests that detect the presence of antibodies are *antibody tests*. An HIV-antibody test is the only way to tell whether or not a person is infected with HIV. When HIV enters the body, the immune system responds by making antibodies. The HIV-antibody test detects HIV antibodies in the blood. HIV antibodies usually show up in the blood within three months after infection, but could take up to six months to appear in some people. The test will detect antibodies in most people within six months from infection. It does not indicate if people have AIDS or if and when they will develop AIDS. HIV antibodies do not protect someone from disease or prevent someone from infecting others with HIV.

EIA, or ELISA, is a blood test used to check for antibodies for HIV. If an EIA test is positive, it is repeated to confirm the result. If two or more EIA tests are positive, a Western blot test is given. **Western blot** is a blood test used to confirm an EIA test. It is more specific and takes longer to perform. Used together, EIA and Western blot are correct more than 99.9 percent of the time.

**Home testing** The FDA has approved use of a home collection kit for HIV antibody testing. This allows a person to take a blood sample at home, place drops of blood on a test card, mail the card to a lab, and call a toll-free number to get the results. The blood sample contains a personal identification number that the caller gives when using the toll-free number for the test results. The test results usually are available within a week. If the test is positive, the call usually is transferred to a counselor.

There are alternatives to having blood drawn. One newly approved rapid test uses a small amount of blood from a fingerstick or oral fluids. Results from these rapid tests can be available in as little as 20 minutes. It is recommended that these rapid tests be confirmed, but they are usually accurate. The use of these rapid tests will help people begin to take precautions earlier and seek treatment quickly.

A positive test result means a person is HIV positive. **HIV positive** is used to describe a person who has antibodies for HIV present in his or her blood. **HIV negative** is used to describe a person who does not have antibodies for HIV present in his or her blood.
Key Terms Review
Complete these fill-in-the-blank statements with the lesson Key Terms on the left. Do not write in this book.

1. A disease caused by pathogens transmitted during sexual contact is _____.
2. HPV causes _____.
3. A type of cancer associated with HIV is _____.
4. The most common STD in the United States is _____.
5. A white, milky discharge from the penis is a sign of _____.
6. To confirm an EIA, a lab may use the _____ test.
7. _____ survive by feeding on human blood.
8. A person who does not have HIV antibodies in the blood is said to be _____.
9. The herpes simplex virus (HSV) causes _____.
10. A fungal infection of the tongue and mouth is called _____.

Recalling the Facts
11. How is chlamydia harmful to a baby?
12. Why might a person who has genital herpes have sores that occur throughout their life?
13. How can a person contract pubic lice without having physical contact with an infected person?
14. Why would having one STD possibly increase the risk of a person contracting HIV?
15. Why should a person who may have had sexual contact with an HIV-infected person seek medical help promptly?
16. What is the difference between viral and bacterial STDs?
17. Analyze the effectiveness and ineffectiveness of methods to prevent infection from STDs.
18. Why should a person who has symptoms of syphilis seek medical attention?

Critical Thinking
19. How are antibodies affected if there is a drop in the number of B cells?
20. Discuss abstinence from sex as the only method that is 100 percent effective in preventing STDs and HIV.
21. How can having genital herpes increase the risk of infection with HIV?
22. Which viral infections initially produce flu-like symptoms?

Real-Life Applications
23. Why do some health-care providers routinely test at-risk patients for STDs?
24. What do you think are some benefits and drawbacks to home testing?
25. Why is it important that a person refrain from risky behaviors for at least three months prior to an HIV test?
26. Why do you think the term "opportunistic" is used to describe infections that occur after someone is infected with HIV?

Activities

Responsible Decision Making
27. Explain A friend confides in you that he or she has symptoms that indicate the presence of an STD. Your friend has no plans to do anything about this. Write a response to this situation in your health journal. Refer to the Responsible Decision-Making Model on page 61 for help.

Sharpen Your Life Skills
28. Access Health Information There are new treatments being developed to fight HIV infection and AIDS. Visit www.glencoe.com to research information about new treatments for HIV and AIDS and write a report about these treatments.