Which of the statements below are true, and which are false? Check your answers on p. 642.

1. Even young and healthy people are at risk of becoming infected with HIV.

2. You cannot tell if a person is infected with HIV just by looking at him or her.

3. You can get HIV after shaking hands with a person infected with HIV.

4. If you drink from a water fountain after a person infected with HIV has, you are at risk of becoming infected with HIV.

5. You cannot become infected with HIV by using a toilet after a person infected with HIV has used it.

6. You are not at risk of becoming infected with HIV by kissing the cheek of a person infected with HIV.

7. If you donate blood at the blood bank, you are at risk of becoming infected with HIV.

8. Most people who are infected with HIV know they are infected and will warn others that they are infected.
SECTION 1
HIV and AIDS Today

SECTION 2
Understanding HIV and AIDS

SECTION 3
Protecting Yourself from HIV and AIDS

Visit these Web sites for the latest health information:

go.hrw.com

www.scilinks.org/health

www.cnnstudentnews.com

Check out articles related to this chapter by visiting go.hrw.com. Just type in the keyword HH4 CH21.
Every day, about 110 Americans are infected with HIV. Three million people died from AIDS in 2000. Currently, there is no cure for AIDS. Do you know how to help fight against the spread of HIV and AIDS?

What Are HIV and AIDS?

HIV and AIDS are different. **Human immunodeficiency virus (HIV)** is the virus that primarily infects cells of the immune system and that causes AIDS. **Acquired immune deficiency syndrome (AIDS)** is the disease that is caused by HIV infection, which weakens the immune system.

**HIV infection** is an infection in which HIV has entered the blood and is multiplying in a person’s body cells. HIV specifically infects cells of the immune system. HIV eventually destroys the body’s ability to fight off infection. After someone is infected with HIV, the virus...
starts making new copies of itself inside the immune system cells. The new copies of the virus destroy the cells they infect. The copies of the virus are then released into the bloodstream and enter other immune system cells. The destructive cycle then continues.

**Getting AIDS**  Being infected with HIV doesn’t mean the person has AIDS. A person is said to have AIDS when the virus has destroyed many immune system cells and has badly damaged the immune system. It usually takes 5 to 10 years for a person who is infected with HIV to develop AIDS if the person has not received treatment. People with AIDS cannot fight off illnesses that a healthy person’s immune system could easily defeat. AIDS patients suffer from and often die from these illnesses.

There is still no cure for AIDS. Once the virus infects a person’s body, there is no way to remove the virus. Most people with HIV infection eventually develop AIDS. So, learning about HIV and AIDS and protecting yourself from being infected are very important.

**HIV Around the World**

AIDS is a pandemic, a disease that spreads quickly through human populations all over the world. More than 20 million people throughout the world have died from AIDS in the last 20 years.

HIV was first discovered in the United States in the early 1980s. Most scientists think that HIV came from central Africa. The virus spread very quickly from Africa to other regions and countries. HIV is still spreading rapidly in many parts of the world, including Asia and Eastern Europe (especially in the Russian Federation). However, the hardest hit area is Africa. AIDS is now the leading cause of death in sub-Saharan Africa. To get an idea of how widespread HIV and AIDS are in the world, look at the statistics in **Figure 1**.

**Figure 1**

These statistics show that AIDS has spread through populations around the world.

**ACTIVITY**  If the population size of North America is 316 million, what percentage of the population is infected with HIV/AIDS?

![Estimated Number of People Living with HIV/AIDS](image-url)
In some African countries, more than 30 percent of adults are infected with HIV. Nearly all infected people will die because treatment is not readily available or affordable. Many children are left without parents. The loss of human life will also affect the economies of these countries. Many important jobs in fields such as teaching and farming will be left without anyone to fill them.

The AIDS epidemic is also very serious in the United States. An estimated 850,000 to 900,000 people are currently living with HIV infection. Of those infected with HIV in the United States, over 300,000 people are living with AIDS. Each year, another 40,000 people are infected with HIV.

**Teens and HIV**

AIDS is most common among young adults, but many of these adults became HIV-infected as teens. Many teens do not know they are infected and may be passing the virus to others. Teenagers are one of the fastest-growing groups to become infected with HIV. More than 10,000 teens between 13 and 19 years of age have been diagnosed with HIV in the United States. More than 4,000 of these kids have developed AIDS. Furthermore, these numbers may underestimate the real numbers, because not all cases are reported.

**Analyzing DATA**

**U.S. Teens with AIDS**

1. The horizontal (x) axis shows the independent variable, *Year*.
2. The vertical (y) axis shows the dependent variable, *Number of teens*.
3. Each bar represents the number of teens with AIDS at each of the four time intervals.

**Your Turn**

1. How many teens were diagnosed with AIDS between bars *b* and *c*?
2. What is the percentage increase in the number of teens with AIDS between bars *a* and *b*?
3. **CRITICAL THINKING** Why do you think that the number of AIDS cases in teens has increased steadily since 1981?
4. **CRITICAL THINKING** Why do you think that the current number of teens with HIV is likely to be greater than the number of teens with AIDS?
HIV Is Rising in Teens  HIV cases are rising in teens because many do not take the risks of HIV and AIDS seriously, and thus, engage in high-risk behaviors. Many believe common myths. For example, some teens believe that one can tell by looking at someone if that person is infected. However, many HIV-infected people look “normal” and healthy, especially in the early stages of infection.

Another myth teens have is that HIV/AIDS is a problem only for homosexual males. However, HIV can happen in anyone who engages in high-risk behavior, regardless of sexual orientation, gender, or age. In fact, heterosexual females represent a growing number of new cases. The face of the HIV epidemic is changing, and individuals from all populations are being infected. So, you not only need to know the facts about HIV/AIDS but also need to take the risks seriously.

SECTION 1  ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE PIECE OF PAPER

Using Key Terms

1. Identify the term for “the virus that causes AIDS.”
2. Define the term acquired immune deficiency syndrome.

Understanding Key Ideas

3. Describe the relationship between an HIV infection and AIDS.
4. Identify which of the following geographic areas has the highest number of people infected with HIV/AIDS.
   a. Latin America  b. Western Europe  c. sub-Saharan Africa  d. North America

5. Compare the number of people in the United States living with HIV infection to the number of people in the United States living with AIDS.
6. Summarize why the number of new cases of HIV infection is increasing in teens each year.

Critical Thinking

7. **LIFE SKILL** Practicing Wellness State three ways you can help other teens take the risks of HIV and AIDS seriously.
8. Your friend tells you, “My boyfriend is a star athlete. He couldn’t be infected with HIV.” What could you tell your friend?
9. Your friend tells you that she heard on the radio that HIV infection is not the cause of AIDS. What could you tell your friend?
H ave you ever been near someone with a contagious infection, such as a cold, but you didn’t get sick? One possible reason you didn’t get sick is that your body’s immune system was able to fight the infection. Now, imagine what life would be like if your immune system did not work properly. This is what happens after HIV infects the body.

HIV Infects the Body

HIV is found in the body fluids, including blood, of an infected person. After HIV enters the bloodstream, the virus attaches to specific white blood cells. The white blood cells are an important part of the body’s immune system, which fights infection and protects us from disease.

**HIV Infects Helper T Cells**

*Helper T cells (CD4+ cells)* are the white blood cells that activate the immune response and that are the primary target cells of HIV infection. Healthy people carry about 500 to 1,500 helper T cells in a milliliter of blood (about 20 drops).

After HIV attaches to a helper T cell, the virus’s genetic material enters the cell. The virus then forces the T cell to make many copies of HIV in a process called *replication*. After viral replication, the new viruses are released from the T cell and attach to other new helper T cells. The process of viral attachment, entrance, replication, and release is then repeated.

At first, the immune system fights the HIV infection. However, HIV infection isn’t like a cold in which the immune system completely kills the virus in time. The immune system of a person infected with HIV cannot defeat all the viruses. Eventually, HIV destroys enough helper T cells to cripple the body’s immune system.
**Helper T Cell Counts Drop** In most HIV-infected people, the virus takes years to destroy the immune system. As more helper T cells are lost, the immune system is less able to fight off other infections and certain cancers. The number of new viruses made and the number of immune cells destroyed determine how quickly a person develops AIDS. Figure 2 shows how the number of T cells drops as an HIV infection progresses.

AIDS is diagnosed when the number of helper T cells falls below 200 per milliliter of blood or when at least one AIDS-defining condition is present. AIDS-defining conditions include opportunistic infections and other diseases, such as cervical cancer. An **opportunistic infection (OI)** is an illness due to an organism that causes disease in people with weakened immune systems. OIs are commonly found in people with AIDS. One example of an OI is a special kind of pneumonia.

**Phases and Symptoms of HIV Infection**

HIV infection doesn’t progress to AIDS on a specific timetable, but people tend to go through three phases of infection.

**Phase I** Phase I of HIV infection is called the asymptomatic phase. The **asymptomatic stage** is a stage of an infection in which the infectious agent, such as HIV, is present but there are few or no symptoms of the infection. Phase I can last from the initial infection for as long as 10 years or more. Some infected individuals will briefly develop a short flu-like illness, swollen glands, fatigue, diarrhea, weight loss, or fevers. These mild symptoms may be ignored because they are common to many diseases. However, although infected people may feel well, they can still transmit the virus to others.

---

**Figure 2**

The graph shows that the number of helper T cells in the bloodstream of a person with AIDS decreases gradually over time.

**ACTIVITY** How many years after infection does the onset of AIDS occur in this AIDS patient?
Phase II  The beginning or worsening of symptoms marks the start of the second phase of HIV infection. As the immune system fails, lymph glands become swollen, and fatigue, weight loss, fever, or diarrhea develop or worsen. Some infected people may notice mental changes, such as forgetfulness and abnormal thinking patterns.

Phase III  The third phase of HIV infection marks the beginning of AIDS. This phase is characterized by a helper T cell count of 200 or less and the development of AIDS-defining conditions such as opportunistic infections.

Opportunistic infections are caused by organisms that survive and flourish in an HIV-infected person. These organisms usually do not cause problems in people with a healthy immune system. Opportunistic infections include pneumocystis pneumonia, tuberculosis, and a rare infection of the brain called toxoplasmosis. Kaposi’s sarcoma is an example of a cancer found in AIDS patients that causes purple-red blotches on the skin.

Gradually, an AIDS patient may appear chronically ill and show weight loss, malnutrition, and little movement. Drug therapy can slow the progress from HIV infection to AIDS. However, AIDS is fatal. Many people with AIDS die from opportunistic infections.

Ways That HIV Is Spread

The body fluids that carry enough of the HIV virus to infect other people are blood, vaginal fluid, semen, and breast milk. HIV infection can occur when the virus from these infected body fluids enters the bloodstream of another person. On the contrary, saliva, sweat, tears, vomit, feces, and urine do not contain enough of the virus to spread HIV to another person.

Beliefs Vs. Reality

<table>
<thead>
<tr>
<th>Belief</th>
<th>Reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>“HIV is spread by coughing or sneezing.”</td>
<td>HIV is not spread through the air. The amount of HIV in mucus or saliva is not enough to spread HIV.</td>
</tr>
<tr>
<td>“A person can’t get an HIV infection from sharing needles or other injection equipment.”</td>
<td>People who share injection equipment used for legal and illegal drugs, tattooing, and body piercing are at risk of becoming infected.</td>
</tr>
<tr>
<td>“HIV is spread by mosquito and tick bites.”</td>
<td>Mosquitoes and other biting animals such as ticks, bed bugs, and fleas do not spread HIV.</td>
</tr>
<tr>
<td>“Sharing toilet seats can spread HIV.”</td>
<td>HIV is not spread by sharing bathroom facilities because HIV does not live long outside the body.</td>
</tr>
<tr>
<td>“Teenagers seldom get HIV infection.”</td>
<td>HIV does not discriminate by age. Teens who practice risky behaviors are at risk of becoming infected.</td>
</tr>
</tbody>
</table>
Transmission of HIV There are three main ways to spread HIV. Each is a high-risk behavior for getting HIV infection. Remember, HIV must enter a person's bloodstream for an infection to occur. The way that the virus enters the bloodstream depends on the way it is transmitted.

1. **HIV is spread during sexual activity, which includes vaginal, oral, and anal sex, with an infected person.** Infected fluids may enter the bloodstream of an uninfected person through tiny cuts, open sores, or tears in the lining of the mouth, vagina, rectum, or opening of the penis. If either the HIV-infected person or the uninfected person has another sexually transmitted disease (STD), the risk of contracting or spreading HIV increases. This is because helper T cells are more abundant in cervical mucus of women and semen of men who have an STD.

2. **HIV is spread through sharing needles or other intravenous injection equipment with an infected person.** This includes needles used to inject drugs as well as needles for body piercing and tattoos. When an HIV-infected person uses injection equipment, small amounts of infected blood may remain on the equipment. If an uninfected person uses the same equipment, the infected blood may be injected directly into his or her bloodstream.

3. **HIV is spread from an infected mother to her infant before or during the birth process or by breast-feeding.** During the birth process, an HIV-infected mother can spread HIV to her baby through one of the baby’s body openings or through a small break in the skin. Infected mothers who breast-feed can also pass the virus to their infant through breast milk. However, mother-to-infant transmission has been reduced to just a few cases each year in the United States because pregnant women are tested for HIV.

Risks to Healthcare Workers Healthcare workers are also at risk for HIV infection if they come in contact with body fluids from an infected person. This may occur if they are accidentally stuck with an infected needle. This may also happen if infected body fluids enter their bloodstream through open cuts or sores. Although such events are rare, the risk for people with these jobs is real.

Behaviors That Are Safe Getting a blood transfusion from an infected person used to be a common way to get an HIV infection. Early in the HIV/AIDS epidemic, many patients received blood or blood products that contained HIV. However, screening the blood supply for HIV in the United States has practically eliminated the risk of infection through blood transfusion. Also, potential high-risk blood donors are discouraged from donating blood. Furthermore, you will not get an HIV infection if you donate blood at a blood bank or any established blood collection center. This is because sterile, single-use needles are used by medical professionals in the United States.

Ways HIV Is Spread

1. Sexual activity with an infected person
2. Sharing needles, syringes, or any other injection equipment with an infected person
3. Contact with body fluids from an HIV-infected mother to her infant before or during birth or by breast-feeding
Casual contact does not result in significant HIV exposure or HIV infection. Casual contact includes shaking hands, holding hands, kissing, hugging, or playing sports with friends.

HIV is not spread by sharing bathroom facilities or utensils. You will not get an HIV infection by using the same toilet seat as an infected person. You will also not contract an HIV infection by sharing a water glass or spoon, using the same water fountain, or drinking from the same can of soda. Furthermore, you will not get an HIV infection by eating in the same restaurant or by working alongside an infected person.

**Teens at Risk for HIV**

Teens are at risk of getting an HIV infection. Almost a third of the 40 million people living with HIV/AIDS are teens and young adults. HIV remains the eighth leading cause of death in the United States for teens between the ages of 15 and 24. The situation is worse for teens in Africa.

How do you know if you are at risk for HIV? Most teens that are infected acquire the virus through high-risk behavior. If you engage in behaviors known to spread HIV, you are putting yourself at high risk of being infected. You are not at risk if you do not engage in any behaviors known to transmit HIV.

How does a person know if someone he or she knows is at risk for HIV? If a person has engaged in behaviors known to spread HIV, he or she is at risk of being infected with the virus. If someone you know has participated in risky behaviors before, the only way to know if he or she is infected is an HIV test. Encourage this person to be tested for HIV and other STDs. You will read more about HIV testing later in the chapter.

**Using Key Terms**

1. **Identify** the term for “the white blood cell that activates the immune response and is the primary target cell of HIV infection.”

2. **Define** the term *opportunistic infection*.

**Understanding Key Ideas**

3. **List** the events that occur when HIV infects a helper T cell.

4. **Classify** each of the following symptoms or illnesses as part of Phase I, Phase II, or Phase III of HIV infection:
   - a. AIDS
   - b. mental changes
   - c. opportunistic infections
   - d. flu-like symptoms

5. **Name** the body fluids of an HIV-infected person that can spread HIV to another person.

6. **Compare** the ways that HIV can and cannot be transmitted.

7. **Identify** which behavior does not put a teen at risk for HIV.
   - a. sexual activity
   - b. oral sex
   - c. holding hands
   - d. sharing needles

**Critical Thinking**

8. Your friend tells you that she could not possibly have been infected by HIV because she feels healthy. What do you tell her?
Protecting Yourself from HIV and AIDS

OBJECTIVES
List four ways to protect yourself from HIV and AIDS.
Describe the process of getting tested for HIV.
Summarize the treatment for HIV infection and AIDS.
State three ways a person living with HIV infection can delay the progression from HIV infection to AIDS.
Identify four ways you can help an HIV/AIDS program in your community.

S
ince AIDS first appeared in the 1980s, doctors have learned a lot about treating HIV infection. New drugs can keep HIV under control for years. However, even with treatment, AIDS is still fatal because there is no vaccine or a cure. The only defense against HIV and AIDS is to prevent infection.

Preventing HIV and AIDS
The most important thing to know about HIV infection is that it is preventable. You can avoid HIV infection by learning about how HIV is spread and by avoiding those behaviors and situations that put you at risk for HIV infection. You have the responsibility to take care of yourself. If you don’t take care of yourself, who else will?

Get Educated
The first thing to do to prevent HIV infection is to educate yourself. There are many good sources of information about HIV infection. For example, many health professionals have information about HIV and AIDS. The Centers for Disease Control and Prevention (CDC) also provides reliable information about HIV and AIDS. In addition, many communities have education and service organizations devoted to HIV and AIDS education and care.

Eliminate the Risks
The only way to eliminate the risks of HIV infection is to avoid risky behaviors. Don’t take a chance with your life!
1. Practice abstinence. Make the decision now to practice abstinence until marriage. Abstinence is the only method that is 100 percent effective in preventing the sexual transmission of HIV. Try to avoid all situations in which you may be pressured to engage in sexual activity. For example, avoid being alone with someone you do not know very well. Instead, go out in groups of friends.
Procedures of universal precautions

2. Avoid multiple partners. To prevent the risk of spreading diseases such as HIV to each other, neither partner should be sexually intimate with anyone else. When a couple is ready for marriage, both partners should maintain a monogamous relationship.

3. Don’t share needles, syringes, drug injection equipment, or any items that may put a person in contact with blood. If an HIV-infected person uses these devices, infected blood may remain on or in the equipment and can infect another person. If a person gets a tattoo or body piercing, he or she should choose a professional who uses single-use needles. Single-use needles are sterile and are disposed of properly after one use.

4. Avoid drinking alcohol and taking illegal drugs. Remember that alcohol and other drugs can influence your ability to think clearly and to make good decisions. If a person is under the influence of alcohol or other drugs, he or she is more likely to engage in a high-risk behavior. Unless a doctor is supervising you for a medical problem that requires medications to be injected, never inject yourself with drugs of any kind.

Practice Universal Precautions

Universal precautions are the set of procedures used to avoid contact with body fluids and to reduce the risk of spreading HIV and other diseases. Health professionals regularly practice this prevention method to protect both the health professional and the patient. Each person examined or cared for in any way by a healthcare professional is assumed to be possibly infected with a pathogen that can be spread through body fluids. This assumption allows the provider to take the necessary actions to prevent the spread of disease. Table 1 shows examples of universal precautions.

<table>
<thead>
<tr>
<th>Table 1 Universal Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procedures of universal precautions</strong></td>
</tr>
<tr>
<td>▶ Wear latex or vinyl gloves when touching the patient or handling potentially infected fluids.</td>
</tr>
<tr>
<td>▶ Wear protective clothing such as laboratory coats, goggles, face masks, and hats during activities that may cause exposure to the patient’s body fluids.</td>
</tr>
<tr>
<td>▶ Handle and dispose of all bodily fluids or tissues in a safe manner.</td>
</tr>
<tr>
<td>▶ Handle safely and dispose of properly all supplies and equipment that have been contaminated with body fluids.</td>
</tr>
<tr>
<td>▶ Use single-use supplies or equipment when practical.</td>
</tr>
<tr>
<td>▶ Clean and sterilize equipment that will be used on more than one patient.</td>
</tr>
</tbody>
</table>
Testing for HIV

People infected with HIV may have few or no symptoms for many years after infection. Without symptoms to indicate infection, the only way to know if one is infected is to get tested. If you have engaged in any high-risk behaviors, get tested. When you are ready for marriage and a sexual relationship, make sure you and your partner get tested.

HIV-Antibody Tests  
HIV tests are readily available at doctors’ offices, clinics, hospitals, and specific AIDS-testing places. All HIV tests are confidential. First, call for an appointment. Once you arrive, you will meet with a counselor. The counselor will ask you to fill out a questionnaire and ask you questions about risk behaviors. It is important to answer those questions honestly.

Next, the counselor will prepare you for the HIV test. A test that detects antibodies to determine if a person has been infected with HIV is known as an **HIV-antibody test**. Antibodies are proteins that are made when the immune system prepares to attack an infectious agent in the body. If the initial test is positive for HIV antibodies, a different test is done to confirm the result. A person who tests positive in two different HIV tests is **HIV positive**, and thus, HIV-infected.

HIV-antibody tests require a blood sample. Newer HIV tests use urine, saliva, and other body fluids instead of blood, but the blood test is the most accurate and reliable test. While the current HIV-antibody tests require a laboratory, some of the newer tests can be performed at home. However, the FDA has not approved these newer tests. Furthermore, counseling by a healthcare professional that precedes and follows a lab test is important for answering a person’s questions.

A Retest for HIV Is Best  
HIV antibodies may be found within 6 to 12 weeks after infection with HIV. However, antibodies may not be present until 6 to 12 months after infection. An initial negative test can be misleading if the test is done too soon after infection. If a person thinks he or she has had a recent exposure to HIV, then this person should avoid all high-risk behaviors and be tested. After 6 months, this person should be retested. If the test is negative again and the person has not been exposed to additional risks, he or she is probably not infected.

Lab Tests for HIV-Infected People  
Two lab tests can help doctors monitor the health of their patients who are HIV positive. One test measures the number of helper T cells in the blood, a value called a **T cell count** or CD4+ count. The result of this test can show the strength of the patient’s immune system. This test can also tell whether a person has developed AIDS.

Another lab test measures viral load. **Viral load** is a measure of the number of viruses in the blood. The higher the viral load, the more infectious the person’s body fluids are likely to be and the closer that person is to having AIDS.
Treating HIV and AIDS

When a person first discovers that he or she is HIV positive, that person should see a doctor as soon as possible. Like almost all other chronic viral infections, no cure exists for HIV infection and AIDS. However, new drugs developed in the 1990s can keep the virus under control for years.

Importance of Treatment All HIV-infected people whose immune system shows signs of impairment or who have developed AIDS should consider a drug treatment plan. Today, many drugs are used to treat HIV infection and AIDS. The key decision is when to start the drugs. Once the decision has been made to start the medications, the doctor will help select a drug regimen and a treatment plan.

The availability of these new HIV and AIDS drugs has caused the average survival time of AIDS patients to increase and the AIDS death rate to drop. New drugs can decrease the viral load, maintain the person’s helper T cell counts, and even treat some opportunistic infections. In some rare cases, treatment can reverse the disease and allow the body’s immune system to repair itself. However, HIV and AIDS drugs can cause serious side effects, the drugs do not work for every patient, and no drug can cure AIDS.

Drug Combination Treatment Drug combination therapy is an AIDS treatment program in which patients regularly take more than one drug. Researchers have learned that three or more drugs given at the same time are more effective than one drug by itself. These different drugs stop HIV from multiplying at different steps in the virus's replication process.

A common drug used in drug combination therapy is called azidothymidine (AZT). Another group of powerful drugs are called protease inhibitors. AZT and protease inhibitors prevent HIV from making copies of itself inside a T cell. However, even combination drugs cannot completely eliminate the virus from the body.

HIV and AIDS drug treatment plans may require taking many pills each day. This is the medicine cabinet of a person who has been living with HIV since 1980.
Limits of HIV/AIDS Drugs After drugs for HIV infection have been started, the patient is checked for side effects. Drugs are continued until side effects become serious or the HIV infection worsens. Side effects can include kidney and liver damage. About 30 percent of the people who start taking some of these drugs become so sick that they have to stop taking them. Because of these side effects, doctors wait to prescribe drugs until the virus has caused noticeable damage to the patient’s immune system.

In addition to side effects of the drugs, taking HIV/AIDS drugs can be difficult for the following reasons:
- These drugs can lose their effectiveness over time because the virus can develop resistance to the drugs.
- The cost of these drugs and of treatment is very high.
- The drug treatment plans are very complicated and require taking many pills per day on a strict schedule.
- The lab tests that monitor treatment progress require that patients be motivated, committed, and involved in their progress.

Drugs may slow the development of the disease and extend the quality of life for AIDS patients. However, drugs do not cure the disease.

Drugs to treat one person with AIDS cost between $10,000 and $15,000 per year.

---

HIV and the Community

You may be saying to yourself, “I want to do my part to help stop the HIV/AIDS epidemic. But what can I do?” Here are some ways to get started:

1. Make a commitment to yourself to tell one other person that you won’t put yourself at risk of becoming infected. Write down a plan about how you will avoid behaviors that put you at risk for infection.
2. Educate your friends about preventing HIV infection. Encourage them to avoid risky behavior.
3. Make a commitment to participate in preventing HIV/AIDS in your community. Write down three community organizations that support HIV/AIDS education and prevention. Find out if there is an AIDS hot line. If so, find out how you can help.
4. Find out if an organization in your community sponsors an AIDS walk and when the walk is scheduled. Find out if the AIDS walk provides opportunities for walkers to raise funds for local AIDS organizations or patients. Sign up for the walk, and encourage your friends to participate.

5. One way people honor those who have died of AIDS is by making an AIDS quilt. Find out other ways to honor people who have died of AIDS in your community.

LIFE SKILL Using Community Resources

1. What can you do to support HIV/AIDS education and prevention programs in your community?
2. How might you help raise funds for an AIDS education program?
Living with HIV Infection

Maintaining good health through treatment, diet, exercise, and rest is important for delaying the progression from HIV infection to AIDS. Counselors at clinics and in health facilities can provide information about keeping healthy. Counselors can also help people deal with the emotional aspects of finding out that they are infected. Support groups and outreach programs for HIV and AIDS patients and their families are available in most large communities.

Most HIV-infected people continue doing almost everything they did before they got infected. Infected people continue to work, go to school, participate in sports and other activities, and be around others. However, all HIV-infected people should remember that they can transmit this deadly virus to others. To avoid infecting others, HIV-infected people must avoid participating in activities that may expose others to infected body fluids.

Some HIV-infected people become activists and spokespeople for HIV/AIDS prevention. Ervin “Magic” Johnson is a former basketball star who is HIV positive. He speaks to many people every year about preventing HIV infection. Johnson often talks about how he denied being at risk for HIV. He encourages others to realize the risk of HIV infection. He stresses that HIV infection can happen to anyone, even a famous athlete. We can all make a difference in small ways and in big ways in the fight to stop the spread of HIV and AIDS.

Many people infected with HIV, such as “Magic” Johnson, become AIDS activists and speak to groups about HIV and AIDS prevention.

SECTION 3

Using Key Terms

1. Define the term universal precautions.
2. Identify the term for “describes a person who tests positive for two different HIV tests.”

Understanding Key Ideas

3. List four things a person can do to prevent HIV infection and AIDS.
4. Identify which of the following is not a universal precaution procedure.
   a. wearing gloves when handling blood
   b. disposing of blood-contaminated supplies
   c. avoiding single-use equipment
   d. sterilizing supplies
5. Describe the relationship between the HIV-antibody test and being HIV positive.

6. Propose which of the following responses a person should have if he or she may have been exposed to HIV but tested negative for HIV. He or she should
   a. take the test again in 6 months.
   b. repeat the test next week.
   c. take an at-home HIV test.
   d. none of the above
7. Name one advantage and one disadvantage of drug combination therapy.
8. Propose four things an HIV-infected person can do to delay the development of AIDS.
9. **LIFE SKILL** Using Community Resources State four things you can do to contribute to a community HIV and AIDS program.

Critical Thinking

10. You and your friend find a syringe in the school parking lot. Your friend thinks it’s OK to pick it up. What would you do?
Key Terms

**SECTION 1**

- human immunodeficiency virus (HIV) (496)
- acquired immune deficiency syndrome (AIDS) (496)
- pandemic (497)

**SECTION 2**

- helper T cell (CD4+ cell) (500)
- opportunistic infection (OI) (501)
- asymptomatic stage (501)

**SECTION 3**

- universal precautions (506)
- HIV-antibody test (507)
- HIV positive (507)
- drug combination therapy (508)

The Big Picture

- Human immunodeficiency virus (HIV) is a virus that primarily infects cells of the immune system and that causes AIDS.
- Acquired immune deficiency syndrome (AIDS) is a fatal disease that results from HIV infection.
- AIDS is a worldwide epidemic that continues to spread.
- An estimated 850,000 to 900,000 Americans are living with HIV infection.
- Teenagers are one of the fastest-growing groups with HIV and AIDS because they engage in high-risk behaviors.

- HIV primarily infects important immune cells called helper T cells. The number of helper T cells decreases as HIV increases in the body.
- There are three phases of HIV infection. In the early stages of HIV-infection, people often do not know they are infected because they have few or no symptoms.
- The most common ways HIV is spread is through sexual contact, through shared drug injection equipment, and through contact with body fluids from a mother to her baby before or during birth or by breast-feeding.
- HIV is not spread by casual contact.
- Teens are at risk for HIV infection if they engage in high-risk behavior.

- HIV can be prevented by abstinence and avoiding the high-risk behaviors known to transmit HIV.
- If a person has engaged in any behaviors that put him or her at risk for an HIV infection, he or she should get an HIV-antibody test.
- Although drug combination treatment can slow down the replication of HIV in the body, drugs cannot cure AIDS.
- People living with HIV can delay the progression from HIV infection to AIDS by getting treated, eating well, and getting support from the community.
- You can contribute to a community AIDS program by volunteering for an AIDS hot line, joining an AIDS walk, or just talking to your friends about what you know about preventing HIV infection.
CHAPTER 21 Review

Using Key Terms

acquired immune deficiency syndrome (AIDS) (496)
asymptomatic stage (501)
drug combination therapy (508)
helper T cell (CD4+ cell) (500)
HIV-antibody test (507)
HIV positive (507)
human immunodeficiency virus (HIV) (496)
opportunistic infection (OI) (501)
pandemic (497)
universal precautions (506)

1. For each definition below, choose the key term that best matches the definition.
   a. an AIDS treatment program in which patients regularly take more than one drug
   b. a stage of an infection in which the infectious agent is present but there are few or no symptoms
   c. the white blood cell that is the primary target of HIV infection
   d. the virus that causes AIDS
   e. a disease that spreads quickly through human populations all over the world

2. Explain the relationship between the key terms in each of the following pairs.
   a. HIV-antibody test and HIV positive
   b. HIV and universal precautions

Understanding Key Ideas

Section 1

3. How does HIV cause AIDS?

4. Which geographic area has the greatest number of people with HIV/AIDS?

5. About how many people in the United States are infected with HIV?
   a. 100–200
   b. 10,000–12,000
   c. 850,000–900,000
   d. 3,000,000

6. Why is HIV infection on the rise in teens?

7. CRITICAL THINKING Propose possible ways that teens can help reduce the rate of HIV infection among teenage populations.

Section 2

8. What happens when HIV infects helper T cells?

9. What can happen during Phase III of HIV infection?
   a. opportunistic infection
   b. few symptoms
   c. low T cell count
   d. both (a) and (c)

10. Name three ways that HIV is spread.

11. Which of the following behaviors has the highest risk for spreading HIV?
   a. shaking hands with an infected person
   b. sexual intercourse with an infected person
   c. using a glass used by an infected person
   d. kissing an infected person

12. State five behaviors that do not put someone at risk for an HIV infection.

13. How would a teen know if he or she is at risk for HIV infection?

Section 3

14. Which of the following is one way you can eliminate the risks of HIV and AIDS?
   a. drug use
   b. abstinence
   c. sexual activity
   d. sharing needles

15. What is the relationship between alcohol and other drugs and the risk of HIV infection?

16. How does the HIV-antibody test work?

17. Which of the following statements is true about drug combination therapy?
   a. It is not costly.
   b. It is a cure for AIDS.
   c. It can prolong life.
   d. It has few side effects.

18. How can people living with HIV infection delay the progression of HIV to AIDS?

19. Propose how you can contribute to an AIDS program in your community.

20. CRITICAL THINKING Which of the following do you think shows that drug combination therapy is working?
   a. increased T cell count
   b. increased viral load
   c. reduced T cell count
   d. pneumonia
Interpreting Graphics

Study the figure below to answer the questions that follow.

Reported Cases of HIV in the U.S.

Source: Centers for Disease Control and Prevention.

21. How many reported cases of HIV infection occurred in the United States in 1999?

22. What is the percentage increase in the reported number of people with HIV infection from 1999 to 2000?

Activities

23. Health and You Write a short report about the benefits of abstaining from sexual activity and other high-risk behaviors for contracting HIV.

24. Health and You Research one of the following AIDS-related illnesses: Kaposi’s sarcoma, “thrush,” or pneumocystis pneumonia. Write a short report describing the infection. Include information on the causes, symptoms, and treatment of the infection.

25. Health and Your Community Research one local HIV/AIDS community program, and write down some ways the program can help reduce the number of new cases of HIV infection.

26. Health and Your Community Research HIV infection rates in your state, and compare that number to the national figure.

Action Plan

27. Life Skill Practicing Wellness Discuss at least four things you can do to contribute to HIV and AIDS education and prevention.

28. In this passage, the word *livid* means
   A. feeling very cold.
   B. feeling very angry.
   C. feeling very sick.
   D. feeling very happy.

29. What can you infer from reading this passage?
   E. Mario had cancer.
   F. Mario had AIDS.
   G. Mario had an alcohol problem.
   H. Mario survived to tell us his story.

30. Write a paragraph describing some of the things Lena can do to protect herself from HIV and AIDS.

31. Write a paragraph describing some of the things Lena can do to help stop the spread of HIV and AIDS in her community.

Standardized Test Prep

Read the passage below, and then answer the questions that follow.

My name is Lena. At the age of 18, I was on my way to college. The year was 2002. I needed to find housing, learn my way around the campus, and sign up for the right classes. I was not thinking about HIV. I never thought anyone around my age would get HIV. I thought we were invincible and that nothing would happen to us. I now know about HIV, and I am *livid* that it took my brother Mario away from me. Why didn’t someone tell Mario about HIV?