

# Sexually Transmitted Infections and HIV/AIDS

- Lesson 1** The Risks of STIs
- Lesson 2** Common STIs
- Lesson 3** HIV and AIDS
- Lesson 4** Treatment for HIV and AIDS



## Mock Radio Call-in Program

Radio call-in programs provide listeners with the opportunity to ask an expert questions. These programs also give listeners the chance to express their opinions. Radio call-in programs can

- ▶ convey new information.
- ▶ analyze issues.

Visit the Eye on the Media section at [health.glencoe.com](http://health.glencoe.com) to learn more about how radio call-in programs can be useful in health advocacy.

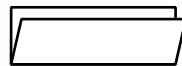
### FOLDABLES™ Study Organizer

#### Before You Read

Make this Foldable to help you organize what you learn about the risks of sexually transmitted infections. Begin with a sheet of 8½" x 11" paper.

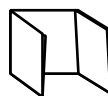
#### ▶ Step 1

Fold a sheet of paper along the long axis so the bottom edge lies 2" from the top edge.



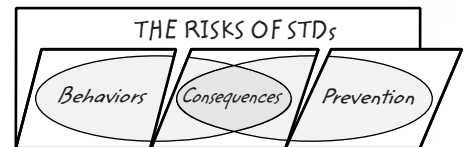
#### ▶ Step 2

Fold into thirds.



#### ▶ Step 3

Unfold and cut along the inside fold lines. Label as shown.



#### As You Read

As you read and discuss the material in the chapter, use your Foldable to define terms and record what you learn.

### SPOTLIGHT ON HEALTH

Using Visuals. What can you do to raise funds for research for HIV/AIDS?

# The Risks of STIs

## Guide to Reading

### Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ sexually transmitted diseases (STDs) (p. 648)
- ▶ sexually transmitted infections (STIs) (p. 648)
- ▶ epidemics (p. 648)
- ▶ abstinence (p. 651)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Examine** the role alcohol and other drugs play in relation to HIV/AIDS and STDs.
- ▶ **Discuss** the benefits of abstinence as it relates to the prevention of STDs.
- ▶ **Develop** strategies to help prevent communicable diseases such as STDs.

### Reading Strategy

**Predict**

- ▶ Before reading, write a brief essay describing ways that you can prevent the transmission of HIV/AIDS.

### Quick Write

Your health is affected by the decisions you make. Write a short paragraph about the strategies you use to avoid risk behaviors.



STDs are the most common communicable diseases in the United States. *Why do you think this has been called the hidden epidemic?*

Some communicable diseases, such as the cold or flu, can be transmitted through actions as simple as shaking hands. Other communicable diseases are not so easily spread. **Sexually transmitted diseases (STDs)**, also referred to as **sexually transmitted infections (STIs)**, are *infectious diseases spread from person to person through sexual contact*. For an infection to occur, a person must have sexual contact with someone who is infected with an STD. It's also possible that one person will show symptoms of the disease, while the other will not. A person can have an infection, and pass the infection to others, without necessarily having the disease.

## STDs: The Hidden Epidemic

Throughout history people have been faced with **epidemics**, *occurrences of diseases in which many people in the same place at the same time are affected*. Today in the United States, we are now facing another epidemic—an epidemic of STDs. An estimated 65 million people in the United States are living with an incurable STD. Many of these cases go undiagnosed and untreated. Why?



- ▶ Many people with STDs are asymptomatic—without symptoms. They do not seek treatment because they don't know they are infected. Individuals who don't know that they are infected can continue to transmit STDs. Some people who suspect they have an STD may be too embarrassed to seek treatment.
- ▶ Even when STDs are diagnosed, they may not be reported to health departments so that contacts can be notified and treated. These contacts can continue to unknowingly transmit the disease to others.



**Explain** Why are STDs a hidden epidemic?

## High-Risk Behavior and STDs

In the United States teens make up one quarter of the estimated 15 million new cases of STDs each year. That's more than 10,000 young people infected every day. Why are teens at particularly high risk for infection from STDs? Teens who are sexually active are likely to participate in one or more of the following high-risk behaviors:

- ▶ **Being sexually active with more than one person.** This includes having a series of sexual relationships with one person at a time. However, being sexually active with even one partner puts a person at risk. Most teens are unaware of a partner's past behavior and whether he or she already has an STD.
- ▶ **Engaging in unprotected sex.** Even protected sex, or barrier protection, is not 100 percent effective in preventing the transmission of STDs, and it is not effective at all against HPV—the human papillomavirus. Abstinence from sexual activity is the only method that is 100 percent effective in preventing STDs.
- ▶ **Selecting high-risk partners.** Such partners include those with a history of being sexually active with more than one person and those who have injected illegal drugs.
- ▶ **Using alcohol and other drugs.** Alcohol use can lower inhibitions. In a recent survey, more than 25 percent of teens who engaged in sexual activity had been under the influence of alcohol or drug use.

**T** Avoid high-risk behaviors by forming friendships with people who share your commitment to abstinence. *Develop and analyze other strategies related to the prevention of communicable diseases such as STDs.*



To reduce the risk of STDs, teens must understand the causes, consequences, and prevention of major health risk behaviors, including the transmission of HIV/AIDS.

## The Consequences of STDs

Most people, including teens, are not fully aware of the consequences of STDs. These are serious infections that can dramatically change the course of a person's life.

### Reading Check

**Infer** What is the relationship between sexual intercourse and sexually transmitted infection?

- ▶ **Some STDs are incurable.** The pathogens that cause these STDs cannot be eliminated from the body by medical treatment, such as antibiotics. The viruses that cause genital herpes and AIDS (the human immunodeficiency virus, or HIV), for example, remain in the body for life.
- ▶ **Some STDs cause cancer.** The hepatitis B virus can cause cancer of the liver. The human papillomavirus (HPV) can cause cancer of the cervix. These STDs also cannot be cured and may last a lifetime.

## Hands-On Health ACTIVITY

### The Benefits of Abstinence

Practicing abstinence from sexual activity can benefit you in many ways. By encouraging your friends to abstain, you can be a positive influence on their health and well-being.

#### What You'll Need

- paper and pencil
- number cube (one for each group)
- paper cup (one for each group)
- construction paper
- markers

#### What You'll Do

1. Roll the cube from the cup onto your desk five times and record each number. Complete the following steps at your teacher's instruction.
2. Stand if you rolled one 5. Imagine that you have just found out that you have an STD. Tell how this will affect your life now and in the future.

3. Stand if you rolled a 5 more than once. Tell what you think and how you feel about having more than one STD.

4. As a class, brainstorm reasons for practicing abstinence.

5. Work in small groups to cut out a sheet of construction paper as your teacher instructs.

6. Write a different reason to practice abstinence on each of the six sides of the paper. Target the message to teens and be persuasive.

7. Fold and tape the paper to form a cube, then hang the cube from the ceiling.

#### Apply and Conclude

Imagine how you want your life to be in five years. Write it down. Be specific. Add how practicing abstinence now can help you achieve the life you want.

- ▶ **Some STDs can cause complications that affect the ability to reproduce.** Females can develop pelvic inflammatory disease (PID), which damages reproductive organs and can cause sterility.
- ▶ **Some STDs can be passed from an infected female to her child before, during, or after birth.** STDs can damage the bones, nervous system, and brain of a fetus. Premature births can result, and infants infected with STDs at delivery may become blind or develop pneumonia and some may die.

## The Importance and Benefits of Abstinence

A clear cause-and-effect relationship exists between sexual intercourse in any form and sexually transmitted infection. If you have sexual contact with an infected person, you put yourself at risk of being infected with an STD. Sexual activity is the cause—an STD is the effect. An informed individual understands the role of individual responsibility regarding personal risk behaviors.

Prevent exposure to STDs by practicing **abstinence**, *the deliberate decision to avoid harmful behaviors, including sexual activity before marriage and the use of tobacco, alcohol, and other drugs.* Use refusal skills to avoid situations in which you may be at risk. Choose friends who are abstinent and who support your decision to abstain.



### TOPIC Hepatitis B

Go to [health.glencoe.com](http://health.glencoe.com) for Health Updates on hepatitis B.

**ACTIVITY** Using the information found in these articles, find the facts about the rise in hepatitis B infection. Share your findings with the class.

## LESSON

# 1

## REVIEW

### Reviewing Facts and Vocabulary

1. Identify three reasons why teens are at high risk for getting an STD.
2. Explain the relationship between alcohol and other drugs and substances used by adolescents and the role these substances play in unsafe situations such as HIV/STDs.
3. How are refusal skills related to STD prevention?

### Thinking Critically

4. **Analyzing.** Analyze, discuss, and communicate the importance and benefits of abstinence as it relates to the prevention of STDs.
5. **Evaluating.** Explain and discuss why abstinence from sexual activity is the only method that is 100 percent effective in preventing STDs.

### Applying Health Skills

**Advocacy.** Write an article for your school newspaper to inform students about the STD epidemic. Include the negative consequences that can affect a person's life, as well as strategies related to the prevention of STDs that you have developed and analyzed.

### After You Read

**Cause and Effect.** Make a two-column chart. On the left side, list the high-risk behaviors that can lead to infection from STDs. On the right side, list some of the consequences of STDs.



# Common STIs

## Guide to Reading

### Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ human papillomavirus (HPV) (p. 562)
- ▶ chlamydia (p. 654)
- ▶ genital herpes (p. 654)
- ▶ gonorrhea (p. 655)
- ▶ trichomoniasis (p. 655)
- ▶ syphilis (p. 655)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Describe** the symptoms and treatments for some common STDs.
- ▶ **List** community health services that help with the prevention and treatment of STDs.
- ▶ **Examine** public health policies and practices regarding STDs.
- ▶ **Discuss** the harmful effects of STDs on the fetus.

### Reading Strategy

**Predict**

- ▶ Scan the headings, subheadings, and photo captions. Write a short paragraph summarizing what information you believe is in this lesson.



Write a short paragraph listing the STDs you have heard of and what to do to avoid the risk of contracting STDs.

**Learning about STDs can help you avoid the behaviors that lead to infection. In addition to having accurate information, what else should you know or do to avoid infection from STDs?**



You have already learned why STDs are referred to as a hidden epidemic in the United States, which has the highest rates of STDs in the industrialized world. The Centers for Disease Control and Prevention (CDC) reports that STDs account for more than 85 percent of the most common communicable diseases in the United States. The estimated incidence and prevalence of STDs is shown in **Figure 25.1**. The most important fact to remember is this: The primary means of transmission of STDs is sexual activity. Teens who practice abstinence from sexual activity greatly reduce their risk of contracting STDs.

## Human Papillomavirus

The **human papillomavirus**, or **HPV**, is a virus that can cause genital warts or asymptomatic infection. HPV is considered the most common STD in the United States. The CDC estimates that 50 to 75 percent of sexually active males and females acquire HPV infection at some time during their lives. About 30 different types of HPV can infect the genital area.

Most types of HPV infections are asymptomatic. A **Pap test** and other medical examinations may detect changes associated with HPV. There is no treatment. However, most asymptomatic HPV infections appear to be temporary and are probably cleared by the immune system. Almost all cases of cervical cancer are caused by certain types of HPV. HPV also can cause cancers of the penis and anus.



**Identify** How many new cases of genital herpes occur each year (Figure 25.1)?

## Genital Warts

Genital warts are pink or reddish warts with cauliflowerlike tops that appear on the genitals, the vagina, or the cervix one to three months after infection from HPV. Genital warts are highly contagious and are spread by any form of sexual contact with an infected person. It may take up to three months for warts to appear, but they often disappear, even without treatment. Diagnosis is determined by a health care worker by examination of the warts. If a person suspects he or she has been infected, examination and treatment are essential, because once infected, a person has the virus for the rest of his or her life. Treatments can rid the body of the warts but not the virus. Complications of HPV and genital warts can result in cervical cancer and cancer of the penis. Infants born to females infected with HPV may develop warts in their throats, obstructing the breathing passages, which can be life-threatening.

To reduce their risk, teens should understand that a mutually faithful, monogamous heterosexual relationship in the context of marriage is the best lifelong means of avoiding STDs.

FIGURE 25.1

## ESTIMATED INCIDENCE AND PREVALENCE OF STDs IN THE UNITED STATES

STD	Incidence (Estimated number of new cases every year)	Prevalence (Estimated number of people currently infected)
Human Papillomavirus (HPV)	6.2 million	20 million
Chlamydia	3 million	2 million
Genital Herpes	1 million	45 million
Gonorrhea	700,000	Not Available
Trichomoniasis	7.4 million	Not Available
Syphilis	70,000	Not Available
Hepatitis B	120,000	417,000

Source: CDC, Tracking the Hidden Epidemics. Trends in STDs in the United States, 2000. STD Treatment Guidelines, 2002





## Chlamydia

**Chlamydia** is a bacterial infection that affects the reproductive organs of both males and females. Forty percent of cases are reported in teens 15 to 19 years old. Chlamydia is asymptomatic, meaning there are no visible symptoms, in 75 percent of infected females and 50 percent of infected males. When symptoms are present, males may experience a discharge from the penis and burning upon urination. Females may have vaginal discharge, burning upon urination, or abdominal pain. Chlamydia is diagnosed by laboratory examination of secretions from the cervix in females and from the **urethra** in males. It can be treated with antibiotics, but no immunity develops, so a person can become infected again.

Because chlamydia is usually asymptomatic, it often goes undetected until serious complications occur. In females who are untreated, the infection can cause pelvic inflammatory disease (PID) and lead to chronic (long-term) pelvic pain or infertility. Untreated chlamydia also can lead to infertility in males. Chlamydia can cause premature birth, and infants born to infected females may develop eye disease or pneumonia.

## Genital Herpes

**Genital herpes** is an STD caused by the herpes simplex virus (HSV). There are two types of HSV:

- ▶ Type 1 usually causes cold sores.
- ▶ Type 2 usually causes genital sores.

However, both types can infect the mouth and the genitals. Nationwide, about 20 percent of the total adolescent population is infected with the virus. Genital herpes is twice as common in adults from 20 to 29 years old today as it was 20 years ago.

Most individuals who have genital herpes are asymptomatic and are not aware that they are infected. Those who do show symptoms typically have blisterlike sores in the genital area that occur periodically. It is not true that the virus can be spread only when blisters are present; the virus can spread in the absence of symptoms. Diagnosis is made through laboratory tests on the fluid from the blisters. Medication can relieve the symptoms but cannot cure herpes infection—once contracted, the virus remains in the body for life.

The herpes virus is potentially fatal for infants who contract the virus from their mothers at the time of delivery. The virus may also play a major role in the spread of HIV by making people who are infected with herpes more capable of transmitting or acquiring HIV.

**Mothers have a responsibility to protect their infants from exposure to STDs during pregnancy as well as during breast-feeding. Which STDs can be transmitted from a mother to her child during pregnancy and birth?**



## Gonorrhea

**Gonorrhea** is a bacterial STD that usually affects mucous membranes. The highest rates of gonorrhea infection are found in females from 15 to 19 years old and in males from 20 to 24 years old. Symptoms in males include a discharge from the penis and painful urination. Diagnosis in males is made by staining and examining the discharge under a microscope. Approximately 50 percent of females with gonorrhea have no symptoms. Those who do may experience a vaginal discharge and pain or burning upon urination. Diagnosis in females is made by swabbing the cervix and growing the organisms in a laboratory. Gonorrhea can be treated with antibiotics. However, increased resistance to antibiotics can complicate treatment. A person can be reinfected if exposed again to the bacteria. If untreated, gonorrhea can lead to infertility in both males and females. The bacteria can also spread to the bloodstream and cause permanent damage to the joints. Females can pass the infection to their babies during childbirth. Infants born to mothers with gonorrhea can contract eye infections that cause blindness.

## Trichomoniasis

**Trichomoniasis** is an STD caused by a microscopic protozoan that results in infections of the vagina, urethra, and bladder. About 7.4 million new cases of this disease are estimated to occur every year in the United States. Females may have no symptoms; however, the disease may result in **vaginitis**, an inflammation of the vagina characterized by discharge, odor, irritation, and itching. In females trichomoniasis is diagnosed by microscopic examination of the discharge. The organisms can sometimes be seen in a Pap test. Males usually show no symptoms. When symptoms do occur in males, they include mild urethral itching or discharge and burning after urination. Since the disease is difficult to diagnose in males, they are usually treated without laboratory testing if their partners are infected.

## Syphilis

**Syphilis** is an STD that attacks many parts of the body and is caused by a small bacterium called a spirochete. The first sign of infection is a painless reddish sore called a chancre (SHAN-kuhr) at the site of infection. The sore will heal on its own, but if the infection is not treated, it spreads through the blood to other parts of the body. Eventually, the disease can damage internal organs, including the heart, liver, nervous system, and kidneys. If left untreated, the person is at risk of paralysis, convulsions, blindness, and heart disease. Syphilis can be transmitted from a pregnant female to her fetus. An infant infected with syphilis may have a damaged nervous system and can die from the effects.





**Classify** Which common STDs are viruses and which are bacterial?

- T** STDs are caused by bacteria, viruses, and other pathogens. This single-celled protozoan causes trichomoniasis. *Why is it important for people to get tested if they think they may have an STD?*



FIGURE 25.2

## OTHER COMMON STDs

Disease (cause)	Symptoms	Treatment	What Could Happen
Chancroid (bacteria)	Sores or bumps on the genitals	Antibiotics	Infection of lymph glands in groin area, sores
Bacterial vaginosis (bacteria)	 Abnormal vaginal discharge, odor, pain, itching, or burning during urination	Antibiotics	In most cases no complications; can lead to PID and premature birth; risk of HIV and STDs
Hepatitis B (virus)	90% of victims are asymptomatic; nausea, vomiting, jaundice, loss of appetite	Antiviral drugs in some cases, but no cure	Chronic infection, cirrhosis of the liver, cancer of the liver
Hepatitis C (blood-borne infection)	Often asymptomatic	Antiviral drugs, but no cure	Liver damage, liver disease
Pubic lice (small insects)	 Itching, presence of lice and eggs in pubic hair	Medicated soaps; washing all bedding, towels, and clothes	No lasting effects

**Early detection of STDs is important to avoid serious illness and further spread of the disease. Why is it important for people not to treat an STD on their own?**



## Seeking Treatment

Prevention of STDs is every individual's responsibility. Treatment is also an important personal responsibility. **Figure 25.2** above lists other common STDs, along with their symptoms and the treatment that is usually prescribed for each. As you have read, STDs can cause severe, long-term health problems. By law, information about these diseases is kept confidential. Only a health care professional can prescribe the correct treatment, including antibiotics, for some STDs.

Individuals also have a social obligation to prevent the spread of infection. Public health clinics sometimes help with contacting current and past partners to make sure they get any needed treatment. Ultimately, however, it is the responsibility of any person infected with an STD to notify everyone with whom he or she has had sexual contact. Informing someone else about the possibility of having an STD could save the person's life and shows that you understand how public health policies and government regulations influence health conditions.

# Health Skills Activity

## Refusal Skills: Lines of Defense

Juliana has been dating Kyle for several months. She has already explained to Kyle that she wants to remain abstinent, and until now he has respected her decision.

Kyle says, "Hey, Jules, let's skip the movie tonight and check out the party at my buddy's house. His folks are gone, and I hear there's going to be a band!"

Juliana responds, "It sounds like fun, but I don't know your buddy and it's pretty far away."

"No problem, I'll protect you!" Kyle laughs. "In fact, we'll finally have a chance to spend some time alone."

Juliana is worried about what might happen.

## What Would You Do?

Apply the following refusal skills to write a response to Kyle. Use each refusal skill.

1. Say no in a firm voice.
2. Explain why you are refusing.
3. Suggest alternatives to the proposed activity.
4. Back up your words with body language.
5. Leave if necessary.

## LESSON

# 2

## REVIEW

### Reviewing Facts and Vocabulary

1. Which STDs might not present noticeable symptoms?
2. Analyze and explain the harmful effects of two common STDs on fetuses and infants.
3. Where can a person go for treatment of an STD?

### Thinking Critically

4. **Compare and Contrast.** Describe symptoms of gonorrhea and genital herpes for males and females.
5. **Analyzing.** Public policies enable health officials to locate and contact sexual partners of people who have been diagnosed with an STD. How do these policies help with the prevention and treatment of STDs?

### Applying Health Skills

**Refusal Skills.** Construct a table similar to the one on page 656. Use this table to list reasons to say no to pressure to engage in sexual activity.

### After You Read

**Cause and Effect.** Make a two-column chart. On the left side, list the common STDs (cause) and their symptoms. On the right side, list the corresponding treatments and lasting effects.



# HIV and AIDS

## Guide to Reading

### Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ acquired immune deficiency syndrome (AIDS) (p. 658)
- ▶ human immunodeficiency virus (HIV) (p. 658)
- ▶ opportunistic infection (p. 659)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ Describe how HIV affects and destroys the immune system.
- ▶ Identify behaviors known to transmit HIV.
- ▶ Compare the relationships between unsafe behaviors, refusal skills, and the risk of HIV infection.

### Reading Strategy

Predict

- ▶ Write a brief essay describing how HIV and AIDS are transmitted, based on your current knowledge.



Write a short paragraph describing what you know about the way your immune system protects your body from disease.



Health care workers wear goggles and disposable gloves whenever they may come in contact with body fluids. *Why are these precautions taken with all patients, not just those known to be infected with HIV?*



In July 1981 an outbreak of a rare form of skin cancer known as Kaposi's (KAY-puh-seez) sarcoma was reported. About a year later, the CDC labeled the disease **acquired immune deficiency syndrome**, or **AIDS**, a disease in which the immune system of the patient is weakened. That year more than 1,600 cases were reported and almost 700 deaths resulted from the newly identified disease. In 1983 the **human immunodeficiency virus**, or **HIV**, a virus that attacks the immune system, was confirmed as the cause. In 2003, AIDS was the sixth leading cause of death among adults from 25 to 44 years old.

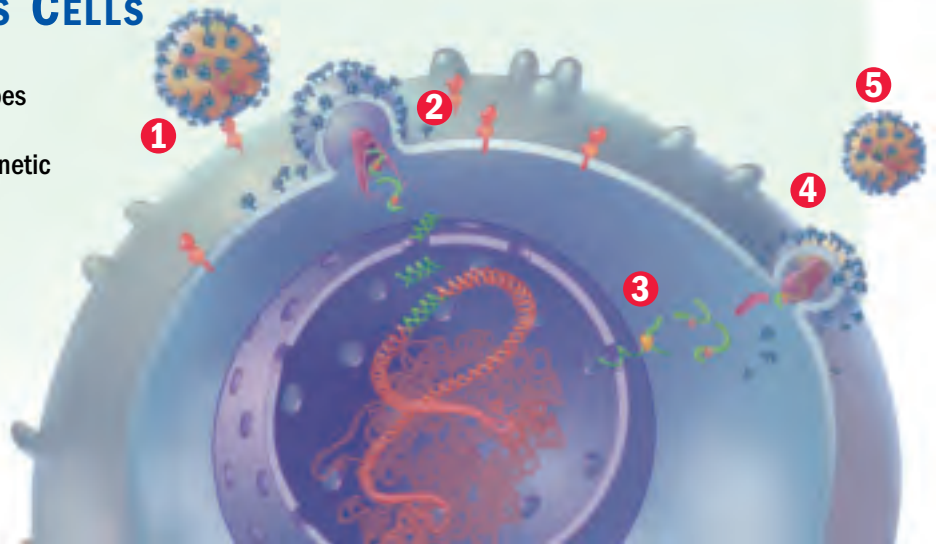
## Teens at Risk

In the United States the overall rate of new cases of HIV infection has fallen slightly since 1985, and new drug therapies help AIDS patients live longer. As a result, some people have a false sense that AIDS is no longer the problem it once was. However, data indicates that although new AIDS cases are declining among the population as a whole, there has been no decline in the number of diagnosed HIV infections among youth from 13 to 24 years old. In fact, teens have one of the fastest growing rates of HIV infection. Many young adults who are currently dying from AIDS were infected in their teens.


FIGURE 25.3

## How HIV ATTACKS CELLS

1. HIV attaches to cell surface.
2. Virus core enters cell and goes to nucleus.
3. Virus makes a copy of its genetic material.
4. New virus assembles at cell surface.
5. New virus breaks away from host cell.



Infection with HIV can be prevented. Teens who choose abstinence from sexual activity and from injecting drugs greatly reduce their risk of HIV infection. Teens who refrain from these activities show that they know strategies when making decisions related to health needs and risks of young adults.

 HIV doesn't survive well outside of the human body. *How does this characteristic of HIV affect its transmission?*

## HIV and the Human Body

You may recall that lymphocytes are white blood cells that help your body fight pathogens. Your body contains billions of lymphocytes, which are produced in bone marrow and found in the blood, lymph nodes, appendix, tonsils, and adenoids. When HIV enters the blood, it invades certain cells of the immune system, including T cells, which help other lymphocytes identify and destroy pathogens. The viruses take over the cells and cause them to produce new copies of themselves. The newly produced viruses break out of the cells, destroying them. The new viruses infect other cells, and then the process repeats itself, as shown in **Figure 25.3**.

As the number of viruses increases and the number of T cells decreases, the immune system becomes less capable of preventing infections and cancer. The body becomes susceptible to common infections and to **opportunistic infections**, *infections that occur in individuals who do not have healthy immune systems*. These infections are difficult to treat. With a weakened immune system, the infected individual suffers one illness after another.

HIV infection is progressive; that is, it destroys the cells of the immune system over many months or years. Being infected with HIV does not necessarily mean that an individual has AIDS. AIDS is the advanced stage of HIV infection.

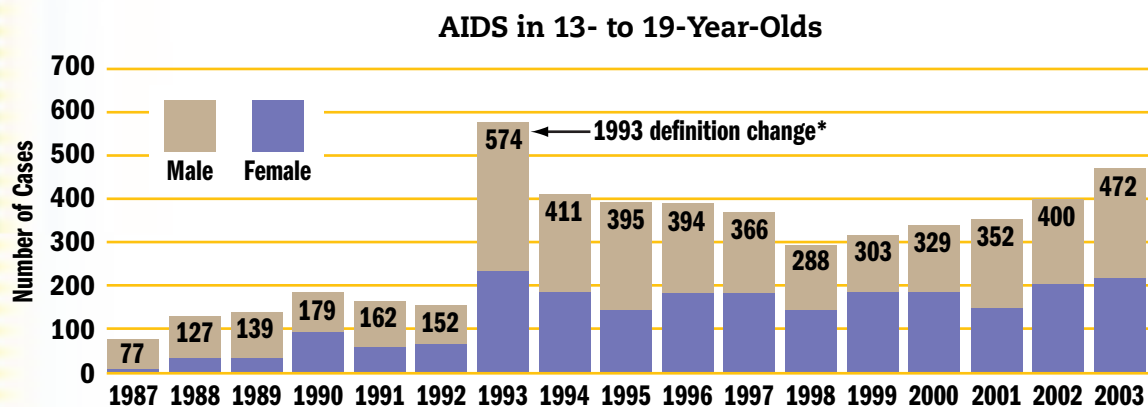


**Explain** What is the difference between AIDS and HIV?

# Real-Life Application

## AIDS in Teens

At least half of all new HIV infections in the United States occur in people under 25 years of age. Although more and more teens are protecting themselves against AIDS by abstaining from sexual activity, this age group still accounts for hundreds of new cases of HIV infection each year.



Source: CDC, HIV/AIDS Surveillance in Adolescents, 2003

\*In 1993 the CDC began using expanded reporting criteria, increasing numbers of reported cases.

### ACTIVITY

Work with a small group. Brainstorm reasons that teens continue to become infected with HIV. For every reason, identify a potential solution. For example, if your group believes that using drugs is one reason, then you might identify more health education classes as a potential solution. Share your ideas with the rest of the class. Make a poster that portrays a health-promoting message drawn from this class discussion. Your poster should persuade teens to practice abstinence and emphasize that abstinence is the best way to prevent HIV infection.

## How HIV Is Transmitted

The HIV organism lives inside cells and body fluids. However, it doesn't survive well in the air or on surfaces such as toilet seats or telephones. It cannot be transmitted through food. A person is not at risk of HIV infection by working next to or being in the same classroom as a person who is infected nor by merely touching an infected person.

HIV can be transmitted from an infected person to an uninfected person only in certain ways—through blood, semen, vaginal

secretions, and breast milk. You can greatly reduce your chances of HIV infection by abstaining from sexual intercourse and avoiding the use of injected drugs.

- ▶ **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 people with whom a person is or has been sexually active. Having an STD that causes sores, including chlamydia, genital herpes, gonorrhea, or syphilis, increases the risk of HIV.
- ▶ **Sharing needles.** People who inject drugs and share needles are at high risk for contracting and spreading HIV. If a person who is infected with HIV injects drugs, the needle or syringe can become contaminated with that person's blood. Anyone who uses that same needle or syringe can inject HIV directly into his or her bloodstream. Injections under the skin or in the muscle also can spread HIV.
- ▶ **Mother to baby.** A pregnant female who is infected with HIV can pass the virus to her baby. HIV in the mother's blood can be transmitted through the umbilical cord and during delivery. Because breast milk can contain HIV, a baby can receive HIV while nursing.

### Did You Know?

The manner in which HIV can be transmitted has been clearly identified through scientific investigations. Yet much false information still exists. HIV has NOT been shown to be spread through

- insect bites.
- sweat.
- sneezing.
- casual physical contact, such as shaking hands and hugging.

## LESSON

# 3

## REVIEW

### Reviewing Facts and Vocabulary

1. Describe the HIV/AIDS epidemic in the teen population.
2. How does HIV attack the immune system?
3. How is HIV transmitted?

### Thinking Critically

4. **Synthesizing.** Teens have a high rate of contracting HIV, yet more adults from 25 to 44 years old die from AIDS. What characteristic of HIV/AIDS causes this discrepancy?
5. **Analyzing.** Analyze the relationship between unsafe behaviors, refusal skills, and the risk of HIV.

### Applying Health Skills

**Advocacy.** Prepare a script for a public service announcement on the epidemic of HIV/AIDS. Include statistics on numbers infected, diagnosis, and treatment. Be sure to include information on how people can protect themselves from getting HIV/AIDS.

### After You Read

**Analyze.** Make a two-column chart. On one side, use Figure 25.3 to list the steps of the process by which HIV attacks cells. On the other side, list the ways that HIV is transmitted from an infected person to an uninfected person.





# Treatment for HIV and AIDS

## Guide to Reading

### Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ asymptomatic stage (p. 662)
- ▶ symptomatic stage (p. 663)
- ▶ EIA (p. 663)
- ▶ Western blot (p. 664)
- ▶ pandemic (p. 665)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Examine** how technology has impacted the health of persons with HIV.
- ▶ **Identify** world and community health services available for people living with HIV/AIDS.
- ▶ **Develop** refusal skills and ways to avoid unsafe situations.

### Reading Strategy

**Organize Information**

- ▶ As you read, take notes on the stages of HIV infection and what tests are available to detect HIV.



Write a short paragraph describing what you might do to help a friend who is afraid he or she might have HIV.

**T** Even though medicines can slow the progress of HIV infection, there is still no vaccine that prevents the disease.



Just as many STDs show no symptoms and many infected individuals don't seek treatment, the same is especially true for HIV. Infection can be ignored or overlooked for several years, during which time the virus can still be transmitted.

## Stages of HIV Infection

The HIV infection develops in stages over the course of several years. A person is considered infectious immediately after contracting the virus. Approximately half of all persons develop symptoms about three to six weeks after becoming infected with HIV. These symptoms may include fever, rash, headache, body aches, and swollen glands. In general, these symptoms disappear within a week to a month and are often mistaken for another viral infection, such as the flu. After the flulike symptoms disappear, the person enters the **asymptomatic stage**, a period of time during which a person infected with HIV has no symptoms. A person may show no signs of illness for 6 months to 10 years or more. However, the viruses continue to grow and the infected person can still transmit the virus to others.


## Symptomatic HIV Infection

During the asymptomatic stage, the immune system keeps pace with HIV infection by producing billions of new cells. Eventually, though, the number of cells in the immune system declines to the point where other infections start to take over. This marks the **symptomatic stage**, the stage in which a person infected with HIV has symptoms as a result of a severe drop in immune cells. The symptoms may include swollen glands, weight loss, and yeast infections.



## AIDS

During the latter stage of HIV infection, more serious symptoms appear until the infection meets the official definition of AIDS. This includes the presence of HIV infection, a severely damaged immune system measured by numbers of helper T cells, and the appearance of one or more opportunistic infections or illnesses. By the time AIDS develops, HIV has often attacked brain cells, causing difficulty in thinking and remembering.

 An EIA test is the first step in determining whether or not an individual is HIV positive. Anyone engaging in risk behaviors should be tested for HIV. *Why is it important for individuals who might be exposed to HIV to be tested even though they aren't experiencing symptoms?*

## Detecting HIV

Individuals who think they may have been exposed to HIV should seek testing from a health care professional immediately. Testing to determine the presence of the virus can be done by a private physician or at a hospital, a health clinic, or a local health department. Most states have laws to protect the confidentiality of test results.

## EIA Test

The first test usually performed is an ELISA, or **EIA**—a test that screens for the presence of HIV antibodies in the blood. The EIA reacts to even small numbers of HIV antibodies. However, the EIA may give inaccurate results. There are two reasons for this.

- ▶ **Developing antibodies takes time**—weeks or even months after initial infection. Before antibodies develop, the EIA may give a false negative result. This means the test is negative, but the person is positive; there aren't enough antibodies for the test to detect. Most infected people will test positive in three to four weeks, but some take up to six months to test positive.
- ▶ **Certain health conditions**, such as hemophilia, hepatitis, and pregnancy, can cause the EIA to give a false positive reading. This means that although the test was positive, the person actually does not have the infection.



### How do opportunistic illnesses attack?

When the immune system is weakened by the HIV infection, diseases find an *opportunity* to attack the damaged system. There are over 30 common opportunistic illnesses, including Kaposi's sarcoma and pneumocystis carinii pneumonia (PCP)—a rare form of pneumonia.

## Reading Check

### Compare and Contrast

What is the difference between the asymptomatic stage and the symptomatic stage of HIV?

## Western Blot Test

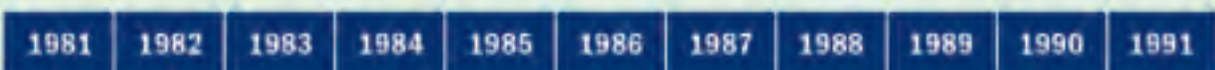
If the EIA test is positive, it can be repeated to make sure the results are accurate. If the repeat test is also positive, other confirmation tests will be done. The **Western blot**, or WB, is *the most common confirmation test for HIV in the United States*. If done properly, this test is 100 percent accurate. If the results of all three of these tests are positive, a person is determined to have HIV. Often these individuals are referred to as HIV-positive.

## The Impact of the Availability of Health Services

When HIV was first identified in the early 1980s, there were no treatments for HIV and few treatments for the opportunistic infections associated with the virus. In the years since then, several medications have been developed to treat HIV and to treat and prevent the complications of opportunistic infections. More drugs and vaccines are being researched. For many people these new treatments have extended and improved the quality of life. None of the drugs, however, cures HIV/AIDS. One reason that a cure is so hard to find is that HIV infects the very cells that regulate the immune response. In addition, several new strains of the virus have emerged since it was first discovered, making it even harder to develop an effective treatment. Many treatments have side effects so severe that some people stop treatment or take medicines only once in a while. This can lead to the development of new, drug-resistant

FIGURE 25.4

## HISTORY OF HIV/AIDS



**1982:** The collection of symptoms is named AIDS; 14 nations report cases of AIDS

**1984:** 7,000 Americans have AIDS

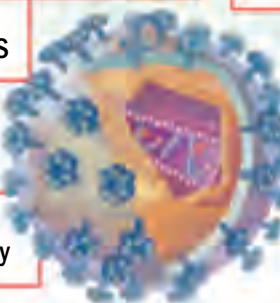
**1986:** AIDS-causing virus is named HIV; first drug treatment for AIDS developed

**1988:** December 1 declared annual World AIDS Day

**1990:** Estimated number of AIDS cases worldwide is 1 million

**1981:** Clusters of previously rare diseases noticed in both Los Angeles and New York City

**1989:** Several new drugs available to treat opportunistic diseases; FDA approves first drug treatments for more than trial use



strains of the virus. Also, treatment can be costly, exceeding \$1,000 a month. Worldwide, many infected individuals do not have access to treatment because of high costs and lack of availability. The time line shown in **Figure 25.4** summarizes some of the developments in HIV/AIDS research and treatment.

## HIV/AIDS—A Continuing Problem

The number of newly reported AIDS cases in the industrialized world is decreasing. Much of this decrease in AIDS cases results from the success of drug cocktails—combinations of drugs—that slow the progression of HIV infection. However, research has identified new, drug-resistant strains of HIV. These strains do not respond to the drug cocktails currently used in the fight against AIDS. The combination of drug resistance and high-risk behaviors could result in HIV strains that are transmitted and spread even more widely. Despite the progress that has been made in the development of treatment options, HIV/AIDS is still a fatal disease for which there is no cure.

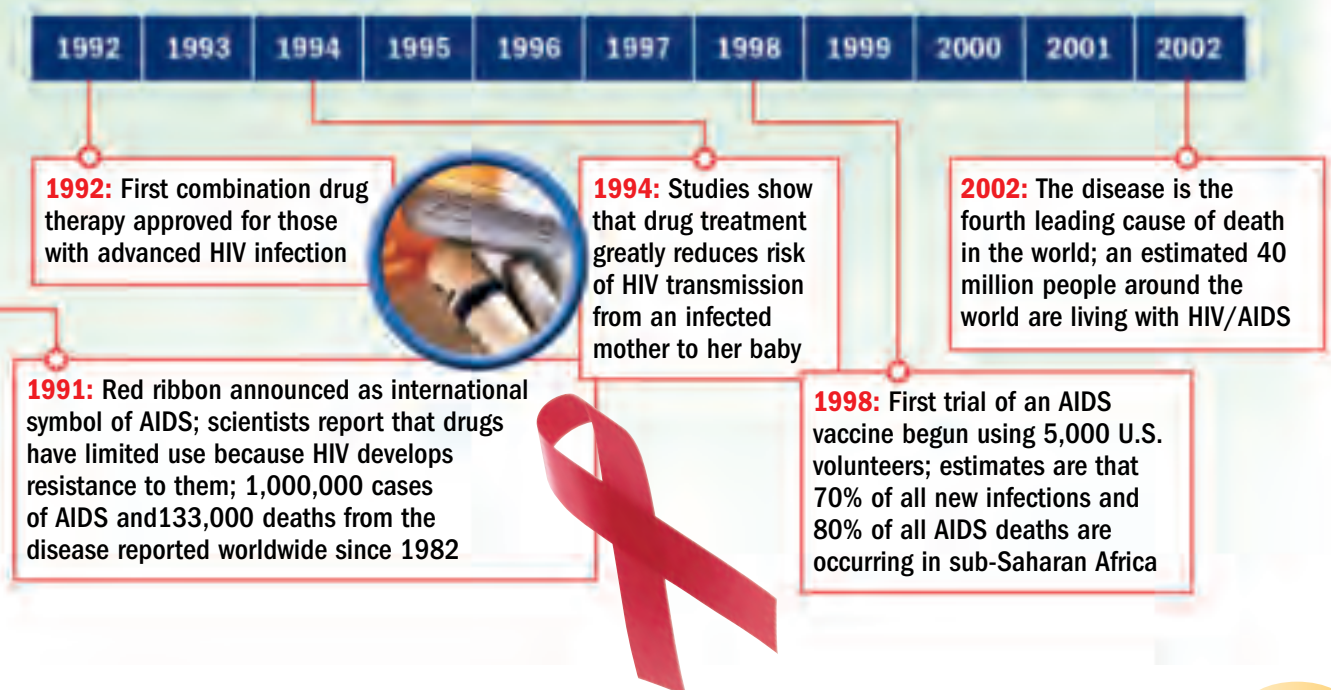
### HIV/AIDS: THE GLOBAL PICTURE

At the end of 2002, an estimated 40 million people worldwide were infected with HIV/AIDS. This statistic means that HIV is now **pandemic**—a global outbreak of infectious disease. The number of people living with HIV is growing and is a health concern that requires collaborative decision making by health authorities worldwide. It is estimated that in 2002 alone, 5 million people became infected with HIV/AIDS worldwide.

### CHARACTER CHECK

**Responsibility.** Each individual can play a role in curbing the spread of HIV by staying informed and spreading the word about this disease.

**Take the time to read articles about HIV/AIDS. Share information with family and friends about recent developments in treatment and research to find a cure.**



# Health Skills Activity

## Helping Others

Mitch's high school class was looking for a service project when he learned that his older brother was HIV positive. He asked what he could do to help. Mitch's brother, Chris, said there was plenty he could do, "My doctor told me there are a lot of people who can't even get out and buy food."

Mitch suggested to his classmates that they consider a local service project. "We can help people closer to home," said Mitch. "We can deliver meals to people who are sick and can't get out of their homes to buy food." He suggested they volunteer for a local Meals on Wheels program. Some of the students were concerned about being in contact with sick people. Others worried about the time commitment. Another group of students mentioned that they didn't drive and wouldn't be able to deliver meals.



## What Would You Do?

*Apply these steps to help Mitch make a health-enhancing decision.*

1. State the situation.
2. Obtain more information.
3. Weigh the possible outcomes.
4. Consider values.
5. Make a decision and act.
6. Evaluate the decision.

## STAYING INFORMED ABOUT HIV/AIDS


Because neither a cure for AIDS nor an effective HIV vaccine is available, knowledge is the first defense against infection. New research can be found in newspapers and magazines and on television, radio, and the Internet. The CDC, state health departments, and community health services are excellent sources of information. While the Internet is a good source of information about HIV/AIDS, health-literate consumers should be wary of any information offering miracle treatments or cures. Products that have not been tested can harm or even kill people. The U.S. Food and Drug Administration sponsors a network of organizations that encourage consumer awareness to prevent fraud. By understanding the impact of high-risk behaviors and staying informed you can protect yourself and others from infection.

## Abstinence and HIV/AIDS

During your teen years, you may feel pressure to experiment with new behaviors, such as engaging in sexual activity or using drugs. Consider that your actions today can change the entire course of your life. Choosing to remain abstinent shows that you are taking an active role in caring for your own health and acting responsibly by not jeopardizing the well-being of others. A person who remains aware of consequences knows various strategies when making decisions related to health needs and risks of young adults. Use of these refusal skills will help you avoid pressure to engage in sexual activity and use drugs:

- ▶ Avoid situations and events where drug use or the pressure to engage in sexual activity is likely to occur.
- ▶ Practice refusal skills. Be firm when you refuse to take part in drug use or sexual activity. Use body language as well as words to get your message across.
- ▶ Choose your relationships carefully. Avoid beginning a dating relationship with someone whom you know is sexually active with another person.



 Each of the more than **44,000** colorful panels in the AIDS Memorial Quilt memorializes the life of a person who died from AIDS. When the entire quilt was in Washington, D.C., it covered the National Mall. *How does the AIDS quilt help educate the public about HIV/AIDS?*

### LESSON

## 4

### REVIEW

#### Reviewing Facts and Vocabulary

1. What is asymptomatic HIV infection?
2. When is a Western blot test performed?
3. Explain how technologies such as new drug treatments have impacted the health status of individuals with HIV infection as well as people's attitudes toward the AIDS epidemic.

#### Thinking Critically

4. **Evaluating.** Why might people in the United States have better access to AIDS treatment than people in developing nations?
5. **Analyzing.** What is the relationship between the avoidance of unsafe situations and the use of refusal skills such as sexual abstinence?

#### Applying Health Skills

**Accessing Information.** Research new vaccines that are being developed for HIV/AIDS. Use several different sources of information in your search, such as Web sites, books, and newspaper and magazine articles. Evaluate the validity of your sources to make sure they are reliable and accurate. Then prepare a presentation analyzing the impact of the availability of these health services in the community and the world.

#### After You Read

**Problems and Solutions.** Fold your paper in half. On one side, list the reasons why HIV/AIDS is a continuing problem. On the other side, list current treatments for HIV and AIDS, including ways to detect HIV.



# Changing the World



**Meet one teen who knows he can make a difference.**

**M**et Nile Sandeen, 17. Nile's mission in life is to educate others about the realities of HIV/AIDS. TIME caught up with Nile in his hometown, Milwaukee, to find out more about this wonder teen:

**TIME:** When did you learn that you had AIDS, and how do you educate people about HIV?

**NILE:** I was born with HIV and diagnosed with AIDS when I was five. I'm a counselor at Camp Heartland, a summer camp for kids with HIV/AIDS. I also speak at schools nationwide about what it's like to live with the disease.

**TIME:** Did other kids treat you differently in school?

**NILE:** In kindergarten, word got out that I had AIDS. People freaked. It was very upsetting. Parents didn't want their kids to even sit near me.

**TIME:** What made you realize that you weren't alone?

**NILE:** Neil Willenson, a 22-year-old activist, heard about how badly I and other kids were being treated, so he started Camp Heartland in Willow River, Minnesota. I went there for 10 years, and it serves as a support group. We all

have days where we think, "I don't even know how much more of life there will be."

**TIME:** Besides educating others about HIV, what do you do?

**NILE:** I'm more than the disease that I've got. At school I'm on the chess team, the debate team, I pitch for the baseball team and, yes, I frequently go on dates.

**TIME:** How will you change the world?

**NILE:** I know the more people I talk to, the less that others will be hurt by this disease. People will see we aren't so different. We may not see a cure in our lifetime, but as we continue to teach people to stay safe, we'll see less AIDS. ■

**TIME**  
to **THINK...**

**About HIV**

Nile was born with HIV. Brainstorm with the class all the ways that people have thought it possible to contract HIV. List them on the board. Then determine whether each is based on fact or fiction. Use your school's media center to research those you're unsure about.

## Health Skills Application



**1. Advocacy.** Research groups that advocate teen abstinence from sexual activity. Find out what services these groups offer and how you can volunteer to help them. (LESSON 1)



**2. Accessing Information.** Identify community health services that help with prevention and treatment of STDs. Discover the types of educational materials they have for educating teens about the risks of STDs. Share your findings with the class. (LESSON 2)



**3. Advocacy.** Develop an HIV prevention program aimed at teens entering high school. Emphasize the relationship between unsafe behaviors, such as sexual contact and drug use, and the risk of HIV infection. (LESSON 3)



**4. Refusal Skills.** List two suggestions for practicing abstinence when pressured to engage in sexual activity or to use drugs. (LESSON 4)

## CAREER Corner

### Health Advocate

Do you like working with people? Can you synthesize information from a variety of sources to come up with innovative solutions to complex problems? If so, you may be interested in a career as a health advocate.



Health advocates work in a wide range of settings, but all health advocates work toward one goal: finding innovative ways to improve the delivery of health services.

Health advocates have several levels of certification. Two-year courses are available at some community colleges. Others become advocates through a Master of Arts program following college graduation. Find out more about this and other health careers by clicking on Career Corner at [health.glencoe.com](http://health.glencoe.com).

## BEYOND the Classroom

### Parent Involvement

**Advocacy.** With your parents, research ways that parents can help their children avoid risky behaviors that might lead to STDs. Work together with your parent or guardian to organize your research, and create guidelines for other parents. If you have access to the Internet, post the guidelines on a Web site.



### School and Community

**Finding Resources.** Learn the names of organizations in your community that help people infected with HIV/AIDS. Make a list of these organizations, and describe the services each provides. Create a pamphlet containing the information you have gathered. Make the pamphlet available through the school health office.



**After You Read**

Use the notes you have taken in your Foldable to review what you have learned. Use the Internet or your school's media center to look for current research and statistics regarding teens and STDs. Report your findings on the back of your Foldable.



► **EXPLORING HEALTH TERMS** Answer the following questions on a sheet of paper.

**Lesson 1** Fill in the blanks with the correct term.

**abstinence**      **sexually transmitted disease (STD)**  
**epidemic**      **sexually transmitted infection (STI)**

1. An infection that spreads from person to person through sexual contact is called a(n) \_\_\_\_\_ or a(n) \_\_\_\_\_.
2. When a community has a larger number of cases of an infectious disease than would be generally expected, the community is experiencing a(n) \_\_\_\_\_.
3. The only 100 percent effective way to avoid STDs is to practice \_\_\_\_\_.

**Lesson 2** Replace the underlined words with the correct term.

**chlamydia**      **syphilis**  
**genital herpes**      **trichomoniasis**  
**gonorrhea**      **human papillomavirus (HPV)**

4. Gonorrhea can lead to pelvic pain and infertility.
5. HPV is an STD caused by the herpes simplex virus.
6. A bacterial STD that usually affects mucous membranes is chlamydia.
7. The first sign of trichomoniasis infection is a chancre at the site of infection.

**Lesson 3** Identify each statement as True or False. If false, replace the underlined term with the correct term.

**HIV**      **AIDS**  
**opportunistic infections**

8. AIDS is the virus that attacks the immune system.
9. Being infected with AIDS does not necessarily mean a person has HIV.
10. Opportunistic infections are rare in a person with a normal immune system, but they easily invade the body of a person with a weakened immune system.

**Lesson 4** Match each definition with the correct term.

**EIA**      **asymptomatic stage**  
**Western blot**      **symptomatic stage**  
**pandemic**

11. A period of time during which a person infected with HIV has no symptoms.
12. The first test usually performed to screen for HIV antibodies in the blood.
13. The most common confirmation test for HIV in the United States.

► **RECALLING THE FACTS** Use complete sentences to answer the following questions.

1. Why are STDs in the United States considered a hidden epidemic?
2. Explain the relationship between alcohol and other drugs used by adolescents and the role these substances play in STDs.
3. What is the only method that is 100 percent effective in preventing STDs?
4. Which STDs stay in the body for life?
5. Why is early treatment of STDs important?



6. Explain why an individual diagnosed with an STD should notify contacts.
7. Why is the risk of HIV infection low for a person whose coworker has tested positive for HIV?
8. Why does having multiple sexual contacts increase the risk of HIV infection?
9. List and describe the stages of HIV infection.
10. Relate the importance of tests to detect HIV and why early detection is important.

**▶ WRITING CRITICALLY**

1. **Persuasive.** Write an article for a health-related newsletter persuading teens to abstain from sexual

activity. In your article, describe activities that place people at high risk for contracting a sexually transmitted disease (STD), and explain the consequences of STDs. Use supporting evidence giving logical reasons, examples, and quotes from experts.

2. **Descriptive.** Conduct research on a third world country that faces an HIV/AIDS epidemic but lacks the money and education to treat and prevent the disease. Write a descriptive article that could be published in a newspaper describing the AIDS epidemic in that particular country and how it affects its people. Make suggestions about possible solutions to the AIDS problem.

**Standardized Test Practice**



Read the paragraph below, look at the table, and then answer the questions.

According to the Centers for Disease Control, the number of reported AIDS cases was over 900,000 people as of December 2003. The statistics provided by the center are shown in several different forms.

Cases can be grouped by age, location, race or ethnicity, or source of exposure. This table shows the ten states or territories that reported the highest total number of AIDS cases according to all figures received by December 2003.

State/ Territory	Total Number of AIDS Cases
New York	162,446
California	133,292
Florida	94,725
Texas	62,983
New Jersey	46,703
Illinois	30,139
Pennsylvania	29,988
Puerto Rico	28,301
Georgia	27,915
Maryland	26,918

1. What is the mean of the numerical data in the table?

- A about 27,000
- B 38,421
- C 64,341
- D 135,528

2. What is the median value of the numerical data in the table?

- F 26,918
- G 38,421
- H 64,341
- I 135,528

3. Does the fact that these nine states and one territory have the highest number of AIDS cases necessarily mean that they have the highest percentage of AIDS cases, based on the population of the state or territory? Explain your answer.

