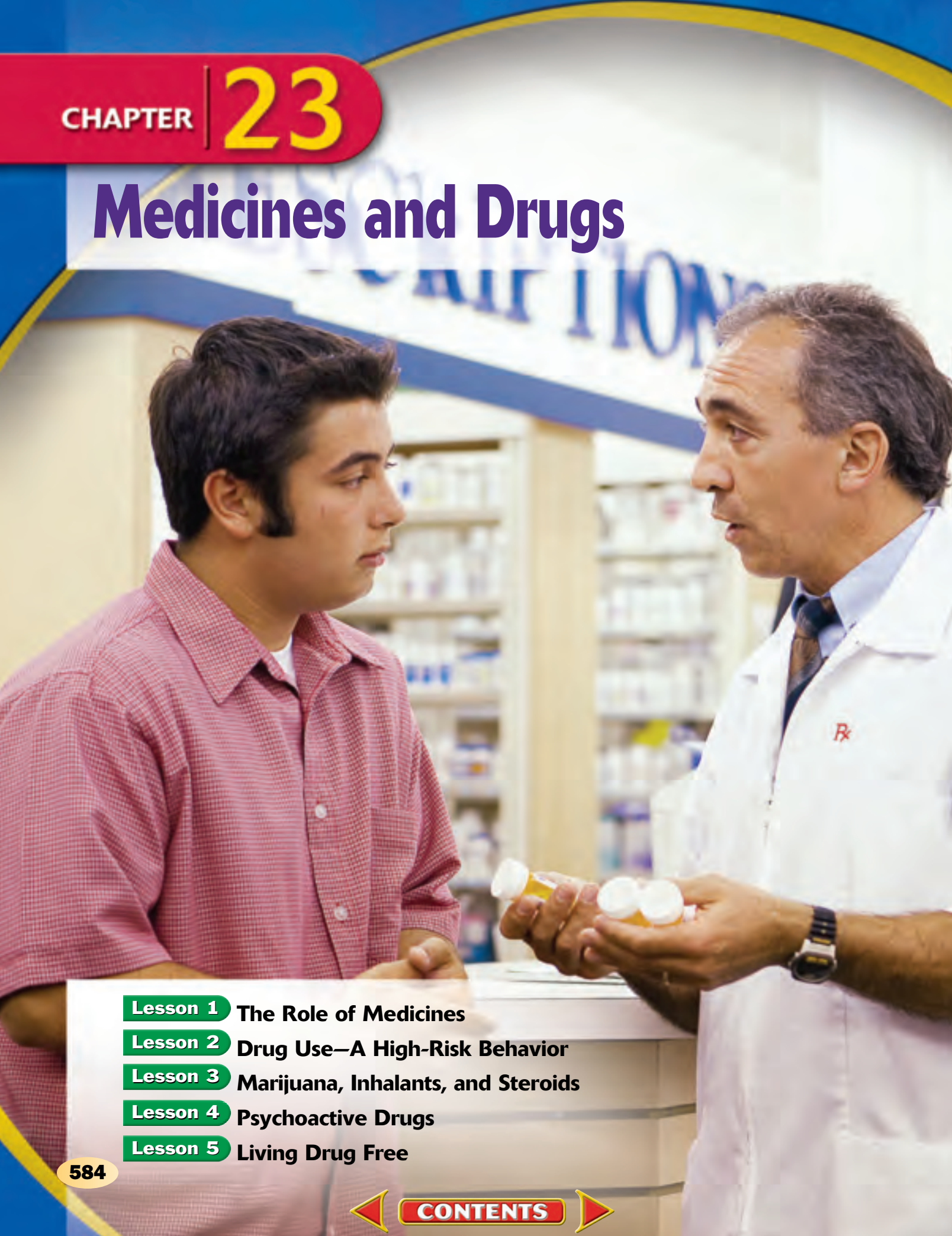


# Medicines and Drugs

- 
- Lesson 1** The Role of Medicines
  - Lesson 2** Drug Use—A High-Risk Behavior
  - Lesson 3** Marijuana, Inhalants, and Steroids
  - Lesson 4** Psychoactive Drugs
  - Lesson 5** Living Drug Free

# Eye ON THE Media

## Interview About Steroid Use

News stories describing steroid use among amateur and professional athletes have grabbed the headlines in recent years. Steroid use can result in negative consequences, including an increased risk of

- ▶ cancer, heart disease, stroke, or kidney failure.
- ▶ emotional problems, such as “roid rages.”
- ▶ alteration of sexual characteristics.

Visit the Eye on the Media section at [health.glencoe.com](http://health.glencoe.com) to learn more about this topic.

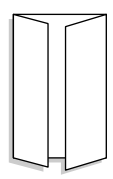
### FOLDABLES™ Study Organizer

#### Before You Read

Make this Foldable to help you organize what you learn about the role of medicines. Begin with a plain sheet of 11" x 17" paper.

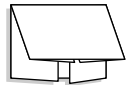
#### ▶ Step 1

Fold the short sides of a sheet of paper into the middle to form a shutterfold.



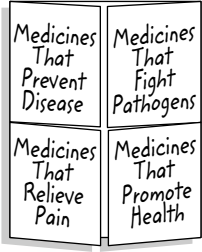
#### ▶ Step 2

Fold the shutterfold in half.



#### ▶ Step 3

Unfold. Cut along the inside fold lines on both sides to form four tabs. Label as shown.



#### As You Read

As you read and discuss the material in the chapter, use your Foldable to take notes and to list examples under the appropriate tabs.

### SPOTLIGHT ON HEALTH

**Using Visuals.** Illegal drugs can seriously damage a person's physical, mental/emotional, and social health. In what specific ways can drugs affect an athlete's life?

# The Role of Medicines

## Guide to Reading

### Building Vocabulary

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

- ▶ medicines (p. 586)
- ▶ drugs (p. 586)
- ▶ vaccine (p. 587)
- ▶ analgesics (p. 588)
- ▶ side effects (p. 589)
- ▶ additive interaction (p. 589)
- ▶ synergistic effect (p. 589)
- ▶ antagonistic interaction (p. 589)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Compare** the relationships between medicines, health promotion, and disease prevention.
- ▶ **Discuss** the differences between prescription and over-the-counter medicines.
- ▶ **List** laws, policies, and practices that relate to the safe use of medicine.

### Reading Strategy

Classify

- ▶ **Fold your paper into four parts. Label the parts for medicines that Prevent Disease, Fight Pathogens, Relieve Pain, and Promote Health. As you read, list facts in the appropriate sections.**

### Quick Write

Write a short paragraph describing some of the ways medicine can promote good health.



**M**edicines are taken to fight illness, promote health, prevent disease, and reduce pain. *When was the last time you needed to use some type of medication?*

Medicines are taken for many different reasons. A person may sustain a painful injury while playing a sport or perhaps develop a chest cold accompanied by a hacking cough. To help promote health and to help prevent or treat disease, people often take medicines.

## Classification of Medicines

There are countless medicines that treat a wide range of health problems. **Medicines** are drugs that are used to treat or prevent disease or other conditions. **Drugs** are substances other than food that change the structure or function of the body or mind. All medicines are drugs, but not all drugs are medicines. Medicines can be sorted into four broad categories: medicines that

- ▶ help prevent disease.
- ▶ fight pathogens, or infectious agents that cause disease.
- ▶ relieve pain.
- ▶ help maintain or restore health and regulate the body's systems.



## Medicines That Prevent Disease

One main purpose of medicines is to promote health by preventing diseases before they occur. There are two main types of preventive medicines:

- ▶ **Vaccines.** A **vaccine** is a preparation introduced into the body to stimulate an immune response. These medicines contain weakened or dead pathogens that stimulate your body to produce specific **antibodies** against those pathogens. Once the antibodies are produced, they give your body long-lasting protection against those specific pathogens in the future.
- ▶ **Antitoxins.** These extracts of blood fluids contain antibodies and act more quickly than vaccines. They are produced by inoculating animals, such as sheep, horses, or rabbits, with specific toxins that stimulate the animal's immune system to produce antibodies. In humans the injection of antitoxins neutralizes the effect of toxins such as those that cause tetanus and diphtheria.



### Compare and Contrast

What are the differences between medicines and drugs?

## Medicines That Fight Pathogens

Antibiotics are a class of chemical agents that destroy disease-causing microorganisms while leaving the patient unharmed. Antibiotics work either by killing harmful bacteria in the body or by preventing bacteria from reproducing. The chemical composition of each antibiotic is effective against a particular range of bacteria.

In recent years strains of bacteria have emerged that are resistant to penicillin and other antibiotics. This drug resistance occurs when a bacterial strain undergoes a change in genetic structure as a result of overexposure to an antibiotic, making the bacterium “immune” to the medicine. For example, a bacteria called *pneumococcus* that causes ear and sinus infections and pneumonia is now resistant to penicillin. The overuse of antibiotics and failure to finish a prescription medication are two reasons why bacteria develop resistance. A new generation of broad-spectrum antibiotics has been developed that kill a wide variety of bacteria, including some penicillin-resistant strains.

### ANTIVIRALS AND ANTIFUNGALS

Antibiotics have no effect on viruses. However, a new group of drugs called antivirals has been developed to treat some viral illnesses. Antiviral medicines often only suppress the virus; they don't kill it. Antifungals can cure or suppress infections such as athlete's foot and ringworm.

- ▶ **Athlete's foot can be controlled with antifungal medicines. Why is it important to use the correct medicine for a particular treatment?**






## Medicines That Relieve Pain

Probably the most common medicines are **analgesics**, or *pain relievers*. Analgesics range from comparatively mild medicines such as aspirin to strong narcotics such as the opium-based morphine and codeine. Aspirin contains acetylsalicylic (uh-SEE-tuhl-sal-uh-SIL-ik) acid. Aspirin is used to relieve pain, to reduce fever, and to treat arthritis.

Because of its widespread use, many people don't realize that aspirin can be dangerous. Even small amounts can irritate the stomach, especially when it's empty. Aspirin can cause dizziness and ringing in the ears. Children who take aspirin are at risk of developing Reye's syndrome, a potentially life-threatening illness of the brain and liver. Aspirin, therefore, should not be given to anyone under the age of 20 unless a health care professional directs otherwise. Some people who are sensitive to aspirin take acetaminophen (uh-see-tuh-MIH-nuh-fuhn) or ibuprofen (eye-byoo-PRO-fuhn) instead. Acetaminophen is the recommended analgesic for children.

## Medicines That Promote Health

Medicines that maintain or restore health enable many people with chronic disease to function at an increased level of wellness. Such medicines include:

 Medicines help many people with conditions such as asthma and diabetes live active, normal lives. *How are these diseases kept under control?*

- ▶ **Allergy medicines.** Many people rely on antihistamines and other medications to reduce the sneezing, itchy or watery eyes, and runny nose that often accompany allergies.
- ▶ **Body-regulating medicines.** Some medicines maintain health by regulating body chemistry. Insulin is used to treat diabetes. Asthma sufferers use inhalers to relieve the swelling of bronchial tubes. Cardiovascular medicines are taken to regulate blood pressure, normalize irregular heartbeats, or regulate other functions of the cardiovascular system.
- ▶ **Antidepressant and antipsychotic medicines.** These medicines help regulate brain chemistry. For example, mood stabilizers are often used in the treatment of mood disorders, depression, and schizophrenia. Proper medication can help people with these disorders live healthy, productive lives.
- ▶ **Cancer treatment medicines.** These medicines reduce rapid cell growth and help stop the spread of cancer cells. For instance, chemotherapy is used to kill fast-growing cancer cells. This medication, either applied to the skin or injected, results in serious side effects that usually disappear after treatment stops.

## Medicines and the Body

**M**edicines can have a variety of effects on individuals, or can cause different reactions. A person's reaction to a given medicine depends on how that medicine mixes with the chemicals in his or her body. Most medicines cause **side effects**, *reactions to medicine other than the one intended*. It's important to be aware of your reactions to medicines and report them to your health care provider. Patients should always tell their doctors about any medicines they are already taking when a new medicine is prescribed.

When medicines are taken together or when a medication is taken in combination with certain foods, the combination may produce different effects. In some cases, physicians make use of interactions to increase the effectiveness of a treatment. Other interactions may be harmful.


- ▶ **Additive interaction** occurs when *medicines work together in a positive way*. For example, both an anti-inflammatory and a muscle relaxant may be prescribed to treat joint pain.
- ▶ **Synergistic effect** is an *interaction of two or more medicines that results in a greater effect than when the medicines are taken alone*—one medicine increases the strength of the other. One medicine may boost the rate of digestion, for example, enabling a second medicine to be absorbed faster.
- ▶ **Antagonistic interaction** occurs when *the effect of one medicine is canceled or reduced when taken with another medicine*. For example, someone who receives an organ transplant must take antirejection medicines. If the person is diabetic and takes insulin, the antirejection medicine may decrease the effectiveness of the insulin.

### Other Problems

A person may experience other problems when taking medicines:

- ▶ **Tolerance** is a condition in which the body becomes used to the effect of a medicine. The body then requires increasingly larger doses of the medicine to produce the same effect. Sometimes a person will experience “reverse tolerance.” In this condition, the body requires less of the substance to produce the desired effect.
- ▶ **Withdrawal** occurs when a person stops using a medicine on which he or she has a chemical dependence. For example, medicines containing codeine can lead to dependence. Symptoms of withdrawal, which include nervousness, insomnia, severe headaches, vomiting, chills, and cramps, gradually ease over time. Withdrawal sometimes requires medical intervention.



 In addition to your health care provider, your local pharmacist is a person who can answer questions about medications. **What questions should you ask your pharmacist before taking a new medication?**



**Describe** What are the side effects or other problems a person may experience when taking medicine?

# Health Minute

## Safe Medicine Use

Reduce the risk of inappropriate use of medications by following these tips.

### Guidelines for safe medicine use:

- ▶ Keep medicine in the container in which it was originally packaged.
- ▶ Store medicines in a safe place that is out of the reach of children.
- ▶ Never disable or replace the child-resistant cap on a medicine container.
- ▶ Flush down the toilet any medicines that have passed their expiration date.

## Medicine Safety

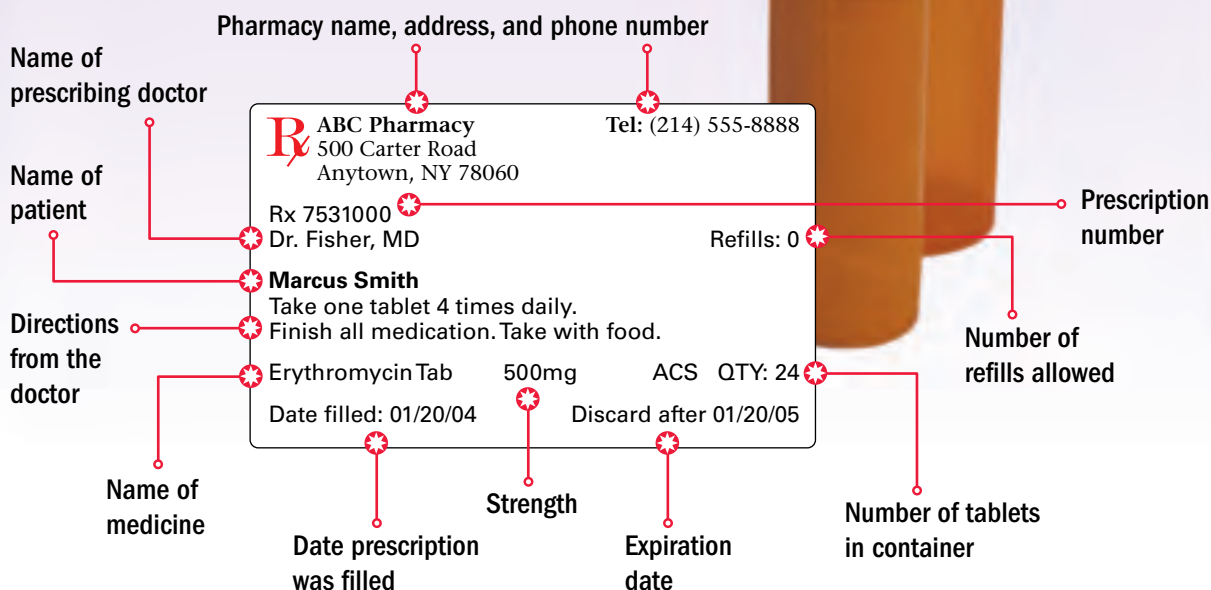
To minimize risks to the public, the federal government has established laws and policies for testing and approving new medicines. In the United States all medicines must meet standards set by the Food and Drug Administration (FDA) before being approved and made available for sale. The FDA requires manufacturers to supply information about a medicine's chemical composition, intended use, effects, and possible side effects. An informed consumer understands how public health policies and government regulations influence health conditions. One practice of the FDA is to determine how medicine should be released to the public.

- ▶ **Prescription medicines.** Some medicines, called prescription medicines, are available only by means of a doctor's written instructions and can be dispensed only by a licensed pharmacist. **Figure 23.1** shows the information that must appear on every prescription medicine label.
- ▶ **Over-the-counter (OTC) medicines.** This group includes a wide variety of medicines that you can buy without a prescription. Although the FDA considers it safe to use these

FIGURE 23.1

## PRESCRIPTION MEDICINE LABEL

Prescription labels must carry certain information about the medicine. In order to use a medicine safely, always read the label carefully, and talk to your doctor or pharmacist if you have any questions.



medications without medical supervision, any drugs can be harmful if not used properly.

When the FDA approves a medicine, it is saying that the medicine is safe when used as directed. FDA approval also means that a medicine is effective in treating the condition for which it is prescribed.

## Medicine Misuse

Medicines can promote health and prevent disease, but it is the responsibility of individuals and families to use medicines and supplements as they are prescribed or intended by law, policy, or commonly accepted practice. All medicines are packaged with instructions for use. Failing to follow these instructions can have serious health consequences. Other types of medicine misuse include:

- ▶ giving a prescription medicine to a person for whom it was not prescribed or taking another person's medicine.
- ▶ taking too much or too little of a medicine or taking a medicine for a longer or shorter period than prescribed.
- ▶ discontinuing use of a medicine without informing the health care professional.
- ▶ mixing medicines.

### Did You Know?

Ephedrine and creatine are dietary supplements sometimes misused by athletes to enhance performance. Ingredients in these substances produce druglike effects. Medical professionals report that these compounds may be related to increased numbers of heatstroke deaths since 1995. Ephedrine and creatine can seriously affect the heart and CNS. Side effects raise core body temperature to dangerous levels and reduce the body's ability to dissipate heat, resulting in heatstroke.

## LESSON

# 1

## REVIEW

### Reviewing Facts and Vocabulary

1. What are the four broad categories of medicines?
2. What government organization tests and approves all new medications?
3. List three specific examples of medicine misuse.

### Thinking Critically

4. **Synthesizing.** Analyze the influence of laws, policies, and practices on the public release of medicine in the United States.
5. **Evaluating.** Analyze the relationship and use of medicines that promote health and those that prevent disease. Give two examples.

### Applying Health Skills

**Accessing Information.** Using reliable resources, research the known benefits and risks of aspirin. Integrate the information you have found into a poster about safe aspirin use. Make sure your poster explains why dosages vary for infants, children, adults, and the elderly.

### After You Read

**Analyze a Graph.** After reviewing Figure 23.1, on page 590, write a summary explaining why it is important to review a medicine label before taking a drug.





# Drug Use—A High-Risk Behavior

## Guide to Reading

### Building Vocabulary

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

- ▶ substance abuse (p. 592)
- ▶ illegal drugs (p. 592)
- ▶ illicit drug use (p. 592)
- ▶ overdose (p. 594)
- ▶ psychological dependence (p. 595)
- ▶ physiological dependence (p. 595)
- ▶ addiction (p. 595)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Describe** substance abuse and examine the health risks involved.
- ▶ **Identify** the harmful effects of drugs on the fetus.
- ▶ **Examine** the physical, mental/emotional, social, and legal consequences of drug use.

### Reading Strategy

**Predict**

- ▶ Scan the headings, subheadings, and photo captions. Write three questions that you believe will be answered in this lesson.



Make a list of the dangerous and harmful effects of drugs and their effect on the user, the user's family and friends, and the rest of society.

**Substance abuse harms concentration and coordination. You cannot do your best if your body and mind are not functioning properly. How will you protect your health and avoid substance abuse?**



No one starts using drugs with the intention of causing a drug-related injury or getting addicted to the drug. Health-literate individuals understand the role of individual responsibility regarding personal risk behaviors. It is important that you recognize that drug misuse and substance abuse are life-threatening activities.

## What Is Substance Abuse?

Some people misuse medicines intentionally to achieve a “high.” This is **substance abuse**, *any unnecessary or improper use of chemical substances for nonmedical purposes*. Substance abuse includes overuse or multiple use of a drug, use of an illegal drug, and use of a drug in combination with alcohol or other drugs.

Not all abused substances are medicines. Many are **illegal drugs**, *chemical substances that people of any age may not lawfully manufacture, possess, buy, or sell*. People who use illegal drugs are guilty of a crime called **illicit drug use**, *the use or sale of any substance that is illegal or otherwise not permitted*. This includes the selling of prescription drugs on the street.

## Factors That Influence Decisions About Drugs

All teens are faced with choices about drug abuse. Many factors influence a teen's response to the opportunities to experiment with drugs, including the following:

- ▶ **Peer pressure** is the influence that people your age may have on you. Teens whose friends and acquaintances avoid drug use can say no to drugs more easily than teens whose friends accept and even encourage drug use.

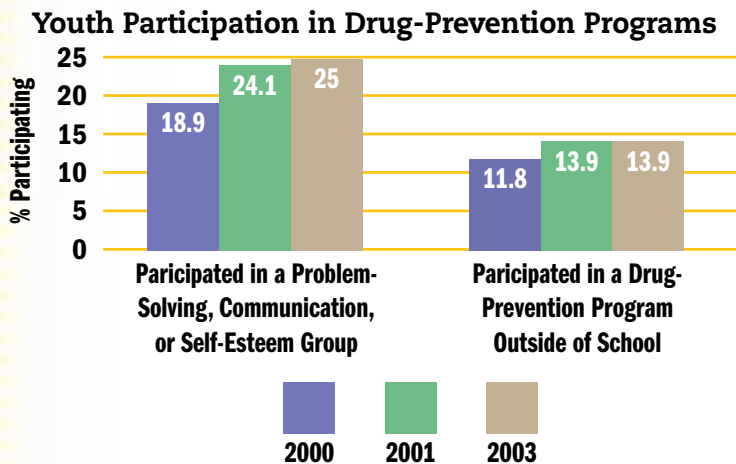


**Define** What is substance abuse?

## Real-Life Application

### Analyzing Trends: Drug-Prevention Programs

According to findings by a National Household Survey on Drug Abuse (NHSDA), more and more teens are getting involved in drug-prevention programs. What effect do you think this has on teens' making the decision to avoid drug use?




Source: Substance Abuse and Mental Health Services Administration: NHSDA Survey, 2003

### ACTIVITY

Write a newspaper article that describes factors that influence teens' choices about whether to use drugs. Include internal and external influences. How can teens benefit from participating in drug-prevention programs and influence others in a positive and healthful way?

- In 2003, 25 percent of youths surveyed participated in a problem-solving, communication, or self-esteem group. The percentage of students who had participated in a drug-prevention program outside of school was 13.9 percent.
- According to the results of this survey, teens reporting an increase in the use of illicit drugs did not participate in such a program. What does this indicate about the influence drug-prevention programs can have on a teen's decision to avoid drugs?
- Survey results also showed 58.9 percent of youths age 12 to 17 indicated that they had talked with a parent in the past year about the dangers of alcohol and drug use. What effect do you think support from parents has on teens' participation in drug-prevention programs?



 **A strong, supportive system of family and friends can help a teen make the healthful decision to avoid drugs.**  
*What other factors help you remain drug free?*

- ▶ **Family members** can help teens resist drugs. Parents and other adults who avoid drug use and who discourage drug experimentation influence their teens to abstain from drugs.
- ▶ **Role models** are people you admire and want to imitate. Teens who look up to coaches, athletes, actors, and professionals who avoid and discourage drug use have an advantage in resisting drugs.
- ▶ **Media messages** can influence your impression of drug use. Messages from TV, digital media, film, and music, for example, may be misleading about the harmful effects of drugs.
- ▶ **Perceptions** of society's drug behavior are often inaccurate. According to the 2003 Youth Risk Behavior Survey, almost 80 percent of 13 year olds had never used drugs.

In order to make the right choice about drug use, it is important that a teen knows how information from peers, family, and the community influences personal health.

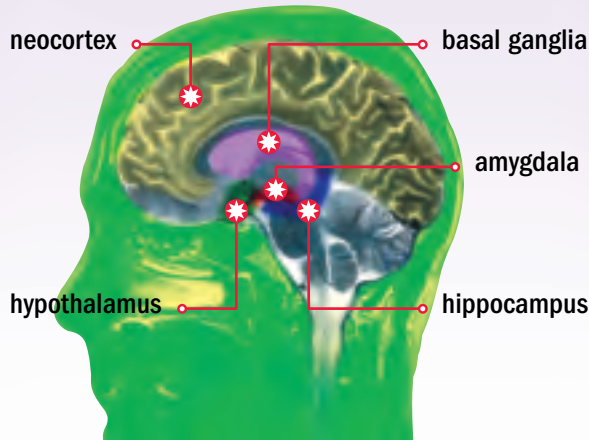
## Health Consequences of Drug Use

**I**llegal drugs have harmful side effects that can range from minor to deadly. Unlike medicines, these substances are not monitored for quality, purity, or strength. The effects of such drugs are unpredictable. Drug abuse affects all sides of the health triangle.

- ▶ **Physical consequences.** Once a drug enters the bloodstream, it can harm a user's brain, heart, lungs, and other vital organs. A serious danger of drug abuse is the risk of overdosing. An **overdose** is a strong, sometimes fatal reaction to taking a large amount of a drug. Some drug use involves injecting substances through a needle, which can increase the risk of contracting diseases such as **hepatitis B** and **HIV**.
- ▶ **Mental/emotional consequences.** Drugs cloud reasoning and thinking, and users lose control of their behavior. As shown in **Figure 23.2** on page 595, the drug ecstasy alters the brain's structure and function. While under the influence of drugs, teens may no longer recall the positive beliefs, values, and ideals they have used to guide their own conduct.
- ▶ **Social consequences.** Substance abuse can have a negative effect on relationships with friends and family members. It can cause teens to be expelled from school or dropped from a school team, and it often has legal consequences. Substance abuse is a major factor in many crimes, suicides, and unintentional injuries.

## DRUG USE AND THE BRAIN

Ecstasy, a stimulant drug that speeds up the nervous system, affects parts of the brain that control thinking, mood, memory, and perception.



### Understanding the Addiction Cycle

Teens who experiment with drugs will experience side effects, or unwanted reactions. The side effects can range from nausea and headaches to a loss of consciousness and even death, and can occur with a teen's first use of a drug. What may begin as a seemingly harmless pastime can result in serious consequences, including:

- ▶ **Tolerance.** The body of the substance abuser needs more and more of the drug to get the same effect.
- ▶ **Psychological dependence.** A condition in which a person believes that a drug is needed in order to feel good or to function normally, **psychological dependence** develops over time. The user has a continuing desire to take the drug for its effect.
- ▶ **Physiological dependence.** A person who experiences the severe effects of withdrawal when he or she stops taking a drug has a **physiological dependence**, a condition in which the user has a chemical need for the drug. Symptoms of withdrawal can include nervousness, insomnia, severe nausea, headaches, vomiting, chills, and cramps. In some cases, death can result.
- ▶ **Addiction.** Anyone who takes drugs risks one of the most frightening side effects: **addiction**, a physiological or psychological dependence on a drug. Addiction causes persistent, compulsive use of a substance known by the user to be harmful. People who are addicted to a substance have great difficulty in stopping without professional intervention.

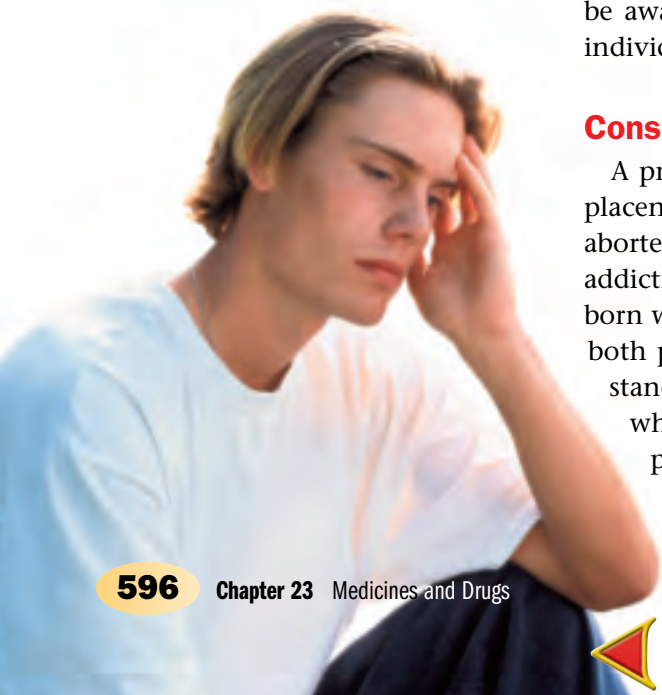


#### Compare and Contrast

What is the difference between psychological dependence and physiological dependence?

**Courage.** When you resist the pressure to use drugs, you demonstrate that you are responsible and that you have the courage to do the right thing. **Join with friends to visit elementary schools. Share with younger students the positive behaviors and actions you use to stay drug free.**

**T** Experimenting even once with a drug can quickly lead to a harmful and damaging addiction. *What consequences of drug use affect family and friends?*



## Other Consequences of Drug Use

The consequences of drug use extend beyond the physical risks to a person's health. Drug use also damages a teen's performance in school and in sports. It can also harm relationships with friends and family. Finally, the teen years are filled with pressure and stress. Using drugs adds to that pressure and stress.

### Consequences for the Individual

Drug use affects all aspects of a person's health. Mental/emotional and physical health suffer as tolerance, dependence, and addiction develop. People who experiment with drugs tend to lose control more readily than those who do not. This tendency can lead to violence. Substance abuse is also a major factor in violent crimes, suicides, and both unintentional and intentional deaths. Drug use can lead to a relaxing of inhibitions. As a result, drug users are at risk for engaging in sexual activity, which can lead to unintended pregnancy and exposure to **STDs**.

### LEGAL CONSEQUENCES

Teens possessing, using, manufacturing, or selling drugs are committing the crime of illicit drug use. Being arrested leads to court fines and legal fees. Some states automatically suspend the driving privileges of minors convicted of a drug offense. Suspension from school, jail time, and probation also are consequences of arrest and conviction.

### Consequences for Family and Friends

Some people believe that their decision about drug use is their business and doesn't involve anyone else. That is not true. When an individual chooses to abuse drugs, the decision affects everyone in the user's life. Teens who become involved with drugs lose their interest in healthy activities and have little time for friends who value a drug-free lifestyle. Family members have a responsibility to be aware of the warning signs of drug use and to encourage the individual to seek professional help.

### Consequences for Babies and Children

A pregnant female who uses drugs passes the drug through the placenta to her unborn child. The baby may be spontaneously aborted or born with birth defects, behavioral problems, or an addiction. If either parent is using injected drugs, the baby may be born with HIV caused by the sharing of infected needles by one or both parents. A nursing mother who uses drugs passes these substances through breast milk to her child. Babies born to mothers who used depressants or other drugs during pregnancy may be physically dependent on drugs and show severe withdrawal symptoms at birth.


Children of drug users are often neglected and abused because their addicted parents cannot properly care for them. These children may suffer a lifetime of physical and emotional problems and may need to seek help from health professionals later in life.

## Costs to Society

Drug abuse has consequences beyond the individual and family. One of the biggest burdens placed on society is a rise in drug-related crime and violence because the use of drugs decreases inhibitions, increases aggressiveness, and clouds judgment. Driving under the influence of an illegal substance can result in vehicle collisions and cause countless injuries and deaths.

Drug abuse also affects the nation's economy. According to a recent study by the Office of National Drug Control Policy, illegal drugs cost the American economy \$160 billion per year. The costs result from lost work hours and productivity caused by drug-related illnesses, jail time, accidents, and deaths; health costs and legal fees resulting from illegal drug use; and law enforcement costs and insurance costs from drug-related damages, injuries, and deaths.

The consequences of drug abuse—physical, mental/emotional, social, and legal—are 100 percent preventable. By choosing a drug-free lifestyle, you avoid these consequences.

 These teens recognize that using illegal drugs results in suspension or expulsion from school as well as legal consequences. *How can these consequences interfere with a teen's goals?*



## LESSON

## 2

## REVIEW

### Reviewing Facts and Vocabulary

1. What are *substance abuse* and *illegal drugs*?
2. What are the factors that influence a teen's decision about substance abuse?
3. Analyze and explain the harmful effects of drugs on the fetus.

### Thinking Critically

4. **Synthesizing.** List three costs of drug use to society, and give examples of how each of these costs might affect you.
5. **Evaluating.** What are some of the reasons that a substance abuser may have difficulties in achieving long-term goals?

### Applying Health Skills

**Advocacy.** With classmates, analyze the physical, mental/emotional, social, and legal consequences of drug use. Put your ideas in the form of a video or public service announcement to advocate a drug-free lifestyle.

### After You Read

**Cause and Effect.** Make a T chart. On the left side, list facts about substance abuse. On the right side, list the consequences of drug use.



# Marijuana, Inhalants, and Steroids

## Guide to Reading

### Building Vocabulary

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

- ▶ marijuana (p. 598)
- ▶ paranoia (p. 600)
- ▶ inhalants (p. 600)
- ▶ anabolic-androgenic steroids (p. 601)



**Marijuana is an illegal drug. It affects your memory, concentration, coordination, and reaction time. What strategies do you have for avoiding marijuana use?**

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Identify** the harmful effects of marijuana, inhalants, steroids, and other substances.
- ▶ **Develop** strategies for avoiding the use of marijuana, inhalants, and steroids.

### Reading Strategy

**Organize Information**

- ▶ **Make a three-column chart.** Label the columns **Marijuana, Inhalants, and Steroids.** As you read, list facts in the appropriate columns.



**Knowing the risk of substance abuse can help you stay drug free. Make a list of reasons for saying no to drugs.**

Suppose that someone dared you to go into your school's chemistry lab and swallow a mixture of unfamiliar chemicals. You'd think the idea was pretty crazy, wouldn't you? Yet this is exactly what people do when they experiment with illegal drugs and other substances. Saying no to illegal drug use is one way that you can show you know various strategies when applying the decision-making process regarding healthy habits.

## Marijuana

**Marijuana**, the common name for the Indian hemp plant *cannabis*, is a plant whose leaves, buds, and flowers are usually smoked for their intoxicating effects. It is one of the most widely used illegal drugs and is also known as grass, weed, and pot. It is often the first drug teens experiment with after alcohol. Hashish, or hash, is a stronger form of marijuana. Studies have shown that an individual who uses marijuana is 17 times more likely to use cocaine than one who has never used marijuana. Contrary to popular opinion, this drug is not harmless. All forms of marijuana are mind altering and can damage the user's health. When combined with other drugs and other substances, such as alcohol, marijuana can be deadly.

## Marijuana and Addiction

As with other mood-altering drugs, marijuana raises levels of a brain chemical called dopamine. This chemical produces a pleasurable feeling. In some users the drug triggers the release of so much dopamine that a feeling of intense well-being or elation is reached. When the drug wears off, however, the pleasure sensation stops, often dramatically. This abrupt letdown is called a crash. Marijuana contains *more* cancer-causing chemicals than tobacco smoke and carries the same health risks as smoking tobacco. Marijuana also interferes with the immune system, so the user becomes more susceptible to infections. Many of the physical effects of marijuana use are summarized in **Figure 23.3**.

### Did You Know?

Marijuana contains 421 different chemicals, including d-alpha-tetrahydrocannabinol (THC), the main psychoactive ingredient in marijuana. THC is stored in body fat, and traces of it can be present in the blood for as long as a month. It has a lasting effect on the brain. This means that a marijuana user can fail a drug test weeks after using the drug.

FIGURE 23.3

## THE HEALTH RISKS OF MARIJUANA

The effects of marijuana use vary from person to person and can be influenced by an individual's mood and surroundings. In all cases, however, marijuana poses serious health risks.




- Hallucinations and paranoia
- Impaired short-term memory, reaction time, concentration, and coordination
- Distorted sense of time, sight, touch, and sound
- Decreased initiative and ambition
- Bloodshot eyes
- Dry mouth
- Lung irritation, coughing
- Heart and lung damage
- Increased risk of lung cancer
- Weakened immunity; increased susceptibility to colds, flu, and viral infections
- Increased appetite, leading to weight gain
- In pregnant females, increased risk of stillbirths and birth defects
- Changed hormone levels, affecting normal body development in teens
- In females, increased testosterone levels and risk of infertility
- In males, lowered sperm count and testosterone levels





**Describe** How do the health risks of marijuana vary from person to person (Figure 23.3)?



 Driving under the influence of marijuana can be dangerous. *What are some effects of marijuana use that could impair a person's ability to drive safely?*

## Mental/Emotional Health Consequences

Marijuana users experience slow mental reflexes and may suffer sudden feelings of anxiety and **paranoia**, *an irrational suspiciousness or distrust of others*. The user may feel dizzy, have trouble walking, and have difficulty remembering events that just happened. Because short-term memory is adversely affected, problems at school and at work may develop. Users often experience distorted perception, loss of coordination, and trouble with thinking and problem solving.

## Physical Consequences

For teens, marijuana poses physical risks to the **reproductive organs**. In males, regular use interferes with sperm production and lowers levels of testosterone. Females experience the opposite effect—an increase in testosterone levels. This may result in unwanted facial hair and can lead to infertility. Avoiding marijuana and other illicit drug use shows that you understand the impact of personal health behaviors on body systems.

## Risks and Consequences of Driving Under the Influence

Driving under the influence of marijuana can be as dangerous as driving under the influence of alcohol because marijuana interferes with depth perception, impairs judgment, and slows reflexes. The penalties and legal consequences of driving under the influence of any drug, including marijuana, are strict. They include suspension of a driver's license, a fine, and possibly a jail term. Insurance premiums are increased when the driver's license is restored. If injury or death results from a drug-related accident, the impaired driver may face serious legal prosecution.

## Inhalants

**I**nhalants are substances whose fumes are sniffed and inhaled to achieve a mind-altering effect. Most inhalants go immediately to the brain, causing damage and actually killing brain cells that will never be replaced. Inhalants include solvents and aerosols such as glues, spray paints, gasoline, and varnishes. They also include nitrates and nitrous oxides, which have medical uses. All inhalants are extremely dangerous, and many are labeled as poisons. These substances were never designed to be taken into the body, and they cause permanent nervous system and brain damage.

Most inhalants depress the central nervous system and produce effects that include a glassy stare, slurred speech, and impaired judgment. Inhalant use or huffing, inhaling the fumes from aerosol cans, can cause sudden death by increasing heart rate, resulting in cardiac arrest, or it can cause death by suffocation.

## Anabolic-Androgenic Steroids

**Anabolic-androgenic steroids** are synthetic substances that are similar to the male sex hormone testosterone. Anabolic refers to muscle building, and androgenic refers to increased male characteristics.

### Reading Check

**Describe** What are some successful refusal strategies for avoiding drugs?

## Resilient TEENS

Angelina Gonzalez was devastated by something her father told her. "He said he didn't know why I was bothering with school," says Angelina. "It's as if he never expected me to amount to anything."

Shy and unsure of herself, she found it hard to make friends. Then, at the age of 12, Angelina was prescribed painkillers following some dental work. The medication eased her physical pain. Emotionally, she felt better too. "It put a wall around me," she says, "so I didn't care what people said."

Angelina continued to take the painkillers until a special teacher entered her life. "Mr. Santos told us we could accomplish anything," says Angelina. For the first time Angelina felt supported and began to make plans for her future. "I plan to become a mentor and share my story with other teenagers," says Angelina. "I want them to know that if I can make it they can too."



**"I want them to know that if I can make it they can too."**

### Reading Check

**Describe** How did having a mentor help Angelina?



**Improving athletic performance through hard work and practice shows that you are a healthy, responsible person.**

*How could use of steroids harm rather than help an athlete's career?*



Steroid use can cause mood swings; impaired judgment resulting from feelings of invincibility; and paranoia.

### Legal and Social Consequences of Steroid Use

All steroid use other than that prescribed by a licensed physician is illegal and dangerous. Although steroids can increase muscle strength, the associated tendons and ligaments don't get stronger. This discrepancy can result in injuries that take a long time to heal and can end an athlete's career. In addition to causing health problems, steroid users often turn to other illegal, addictive drugs to combat the side effects of steroids. Abusers may take anabolic steroids as pills or by injection. If needles are shared or contaminated, steroid users run the risk of exposure to disease-causing bacteria and viruses, including HIV.

Serious health risks are not the only consequences of steroid use. According to the Anabolic Steroids Control Act of 1990, the nonmedical use of steroids is illegal for people of all ages in the United States. As drug testing for athletes becomes more prevalent, athletes who fail a drug test for steroids can face exclusion from an event, expulsion from the team, monetary fines, and jail time.

## REVIEW

### LESSON 3

#### Reviewing Facts and Vocabulary

1. Explain the relationship between marijuana use, alcohol use, and the use of other drugs and substances.
2. How does marijuana interfere with driving ability?
3. Analyze and examine the harmful effects of inhalants and steroids on body systems.

#### Thinking Critically

4. **Analyzing.** Analyze the harmful effects of marijuana and other substances, such as the physical, mental, social, and legal consequences of using marijuana.
5. **Synthesizing.** Why are younger students especially at risk for inhalant use? What can you do to help prevent younger students from trying inhalants?

#### Applying Health Skills

**Practicing Healthful Behaviors.** Write a short story in which a teen is being pressured to use one of the drugs discussed in this lesson. Your story should show how the teen effectively analyzes and applies strategies to avoid the dangers associated with drug use.

#### After You Read

**Explain.** Write an essay explaining why athletes should avoid using steroids. In your essay, include at least two points you learned while reading the lesson.



# Psychoactive Drugs

## Guide to Reading

### Building Vocabulary

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

- ▶ psychoactive drugs (p. 603)
- ▶ stimulants (p. 605)
- ▶ euphoria (p. 605)
- ▶ depressants (p. 606)
- ▶ narcotics (p. 608)
- ▶ hallucinogens (p. 609)
- ▶ designer drugs (p. 610)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Identify** the harmful effects of psychoactive drugs on body systems.
- ▶ **Examine** the role psychoactive drugs and other substances play in unsafe situations.
- ▶ **Discuss** the importance of alternatives to drug and substance use.
- ▶ **Develop** strategies for avoiding drug use.

### Reading Strategy

Classify

- ▶ Fold your paper into four parts. Label the parts Stimulants, Depressants, Narcotics, and Hallucinogens. As you read, list the types of drugs and facts in the appropriate categories.

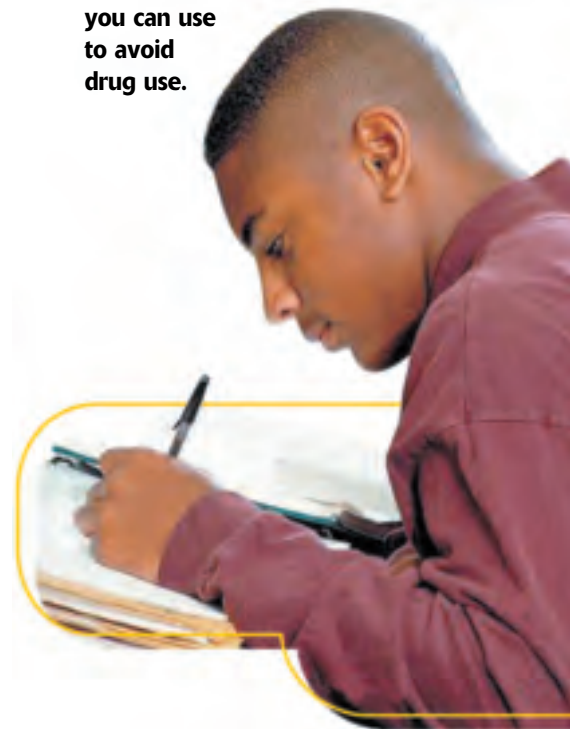
### Quick Write

Make a list of some of the strategies you can use to avoid drug use.

The central nervous system (CNS), which includes the brain and the spinal cord, is an amazingly complex part of the body. Every form of activity, from bending a finger to solving abstract problems, involves the central nervous system. **Psychoactive drugs**, chemicals that affect the central nervous system and alter activity in the brain, change the functioning of the CNS.

## Classification of Psychoactive Drugs

There are four main groups of psychoactive drugs: stimulants, depressants, narcotics, and hallucinogens (huh-LOO-suhn-uh-juhn-z). Some of these drugs have medicinal value when properly used. However, even under a doctor's supervision, they carry risks. When psychoactive drugs are misused or abused, a person's health and the proper function of all body systems are seriously affected. **Figure 23.4** on page 604 shows the health risks of these drugs on body systems. The effects on the developing brain and body of a teen can be especially damaging.




 Your decision to stay healthy and drug free will help you succeed in school.

FIGURE 23.4

## HEALTH RISKS OF PSYCHOACTIVE DRUGS

Types of Drugs	Consequences for Your Health
<b>STIMULANTS</b>	
<b>Cocaine</b>	<ul style="list-style-type: none"> <li>• Nausea, abdominal pain, malnutrition</li> <li>• Chest pain, respiratory failure</li> <li>• Headache, stroke, seizure, heart attack, death</li> <li>• Exposure to HIV through contaminated needles, addiction</li> </ul>
<b>Crack</b>	<ul style="list-style-type: none"> <li>• Extreme addiction, with the same effects as pure cocaine</li> <li>• Rapid increase in heart rate and blood pressure can cause death</li> </ul>
<b>Amphetamines</b>	<ul style="list-style-type: none"> <li>• Decreased appetite, weight loss, malnutrition</li> <li>• High blood pressure, rapid heartbeat, heart failure, death</li> <li>• Loss of muscle coordination, delirium, panic</li> <li>• Aggressiveness, increased tolerance, addiction</li> </ul>
<b>Methamphetamine</b>	<ul style="list-style-type: none"> <li>• Memory loss, heart and nerve damage</li> <li>• Increased tolerance, addiction</li> </ul>
<b>DEPRESSANTS</b>	
<b>Barbiturates</b>	<ul style="list-style-type: none"> <li>• Reduced heart rate and blood pressure</li> <li>• Fatigue, confusion, impaired muscle coordination</li> <li>• Impaired memory, loss of judgment</li> <li>• Reduced respiratory function, respiratory arrest, death</li> </ul>
<b>Tranquilizers</b>	<ul style="list-style-type: none"> <li>• Depression, unusual excitement, fever, irritability</li> <li>• Loss of judgment, dizziness</li> </ul>
<b>Rohypnol</b>	<ul style="list-style-type: none"> <li>• Confusion, inability to remember what happened</li> <li>• Decreased blood pressure, drowsiness, gastrointestinal disturbances</li> </ul>
<b>GHB</b>	<ul style="list-style-type: none"> <li>• Drowsiness, nausea, vomiting, loss of consciousness</li> <li>• Impaired breathing, coma, death</li> </ul>
<b>NARCOTICS</b>	
<b>Opium</b>	<ul style="list-style-type: none"> <li>• Nausea, constipation</li> </ul>
<b>Morphine</b>	<ul style="list-style-type: none"> <li>• Rapid onset of tolerance, addiction</li> </ul>
<b>Heroin</b>	<ul style="list-style-type: none"> <li>• Confusion, sedation, unconsciousness, coma</li> </ul>
<b>Codeine</b>	<ul style="list-style-type: none"> <li>• Reduced respiratory function, respiratory arrest, death</li> <li>• Exposure to HIV through contaminated needles</li> </ul>
<b>HALLUCINOGENS</b>	
<b>PCP</b>	<ul style="list-style-type: none"> <li>• Loss of appetite, depression</li> <li>• Panic, aggression, violent actions</li> <li>• Increased heart and respiratory function</li> </ul>
<b>LSD</b>	<ul style="list-style-type: none"> <li>• Delusions, illusions, hallucinations, flashbacks, convulsions, coma, death</li> </ul>
<b>Ecstasy (MDMA)</b>	<ul style="list-style-type: none"> <li>• Confusion, depression, paranoia, muscle breakdown</li> </ul>
<b>Ketamine</b>	<ul style="list-style-type: none"> <li>• Kidney and cardiovascular system failure, death</li> <li>• Memory loss, numbness, impaired motor function</li> <li>• Nausea, high blood pressure, fatal respiratory reaction</li> </ul>

## Health Risks of Stimulants

**S**timulants are drugs that speed up the central nervous system. Some foods, such as coffee, tea, and cola, contain small amounts of a stimulant called caffeine. The **nicotine** in tobacco products is also a stimulant. Sometimes stimulants are prescribed for specific medical conditions, for example, the medication used to treat hyperactivity. Although some stimulants have medical uses, many of these substances are used illegally. The most dangerous of the illegal stimulants are cocaine, amphetamines (am-FE-tuh-meenz), and methamphetamine (me-tham-FE-tuh-meen).

### Cocaine

Cocaine is a rapid-acting, powerful, highly addictive stimulant that interrupts normal functioning of the central nervous system. The purchase and possession of cocaine is illegal everywhere in the United States. Cocaine is a white powder extracted from the leaves of the coca plant. Cocaine users can experience a surge of self-confidence and **euphoria**, a feeling of intense well-being or elation. Effects of cocaine use can last from 20 minutes to several hours.

The feeling of confidence induced by cocaine use is followed by an emotional letdown. Regular use can lead to depression, fatigue, paranoia, and physiological dependence. Cocaine use can cause malnutrition and, especially among teens, cardiac problems. When cocaine is snorted, it shrinks the tiny blood vessels in the nose. Repeated use can lead to collapse of the nasal septum, the wall dividing the two halves of the nose. When users inject cocaine, they risk contracting HIV or hepatitis B from infected needles. Overdosing can result in cardiac arrest, respiratory failure, seizures, and death.

### Crack

An even more dangerous form of cocaine is crack. Also known as crack cocaine, rock, or freebase rock, crack is one of the most deadly drugs available. It is a very pure form of cocaine that reaches the brain seconds after being smoked or injected. Once in the blood, it causes heart rate and blood pressure to soar to dangerous levels. Death may result from cardiac or respiratory failure. Mixing cocaine and alcohol is extremely dangerous. These substances are combined in the liver, increasing the risk of death from liver failure.



**Define** What are the four main groups of psychoactive drugs?

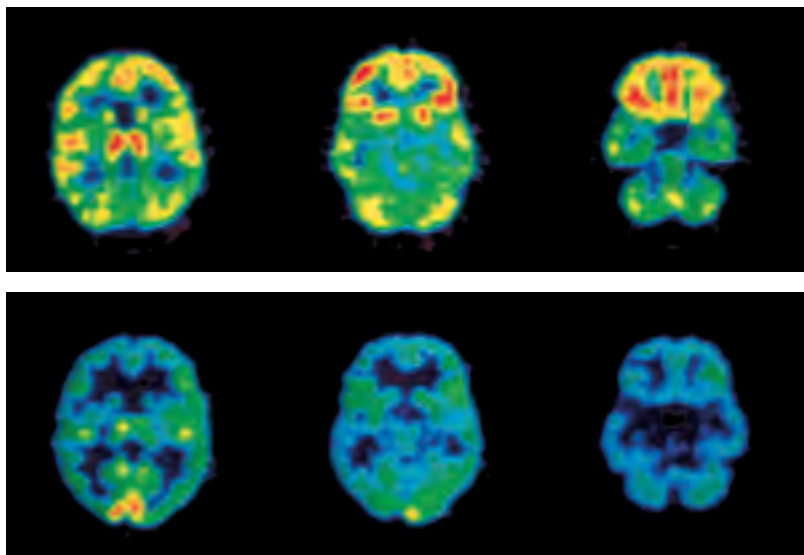
**T** Crack cocaine is a concentrated form of cocaine that can cause death. **What are the dangers of mixing cocaine with other drugs such as alcohol?**

**TOPIC Dangerous Drugs**

Go to [health.glencoe.com](http://health.glencoe.com) for links to more information about the dangers of drug use.

**ACTIVITY** Using the information provided at these links, create a chart listing the drugs identified on those sites and three facts about each drug.

Source: National Institute on Drug Abuse



The red areas in the normal brain scan (top) show memory and motor skill control. The brain scan on the bottom, taken one month after the subject's use of methamphetamine, indicates loss of memory and of motor control.

## Amphetamines

Amphetamines are stimulants used in prescription medicines to reduce fatigue and drowsiness and to suppress the appetite. However, some people use amphetamines illegally to stay awake and alert, to improve athletic performance, and to lose weight. The easily developed tolerance to amphetamines causes a user to ingest more of the substance. Regular use of amphetamines can result in twitching, irregular heartbeat, paranoia, and heart and blood vessel damage.

## Methamphetamine

Methamphetamine, or meth, is a stimulant used in treating certain diseases, including Parkinson's disease and obesity. It is a white, odorless powder that easily dissolves in alcohol or water. Because it is produced in makeshift labs, the drug is readily available, but its quality is uncertain. In recent years, this drug has been identified as one of the many dangerous and illegal substances called club drugs, drugs associated with concerts and all-night parties called

raves. Meth may provide a short-term feeling of euphoria. Often the use of this drug results in depression, paranoia, damage to the central nervous system, increased heart rate and blood pressure, and damage to brain cells. It can also cause death.

Using or misusing illegal drugs and prescription medicines can have devastating effects on your life. You are more likely to become a victim of crime, or engage in criminal activity, are at risk for disease, and your personal relationships may suffer.

## Health Risks of Depressants

**Depressants**, or sedatives, are *drugs that tend to slow down the central nervous system*. Depressant drugs relax muscles, relieve feelings of tension and worry, and cause drowsiness. They can be dangerous because they slow the heart rate, lower blood pressure to dangerous levels, and interrupt the normal rate of breathing. One of the most commonly used depressants is alcohol. Two types of sedative medications are barbiturates (bar-BICH-uh-ruhts) and tranquilizers. Other widely used depressants include Rohypnol and GHB. Combining depressants, even in small amounts, produces a *synergistic* effect. For example, a user combining alcohol and tranquilizers can overdose, causing shallow breathing, weak and rapid pulse, coma, and even death.



## Barbiturates

Barbiturates belong to a family of sedative-hypnotic drugs, or drugs that induce sleepiness. Barbiturate use can result in mood changes, sleeping more than normal, and coma. Barbiturates are rarely used for medical purposes. They are used illegally to produce a feeling of intoxication and to counteract the effects of stimulants. Combining barbiturates with alcohol can be fatal.

## Tranquilizers

Tranquilizers are depressants that reduce muscular activity, coordination, and attention span. Tranquilizers are prescribed to relieve anxiety, muscle spasms, sleeplessness, and nervousness. However, when tranquilizers are overused, physiological and psychological dependence occurs. Withdrawal from tranquilizers causes severe shaking. In extreme cases, coma or death can result.

# Hands-On Health

**ACTIVITY**

## Refusing Drugs

Learning to say no to drugs is an important component in maintaining a drug-free life. By practicing refusal skills, you will find it easier to uphold your commitment to a substance-free lifestyle. In this activity you will practice effective ways to say no to drugs.

### What You'll Need

- pencil and paper
- one classmate

### What You'll Do

1. Divide a sheet of paper into two columns. In the left column, list five pressure lines someone might use to persuade you to use drugs.
2. Trade your paper with a classmate. Read your partner's list. In the right column, write an effective refusal statement responding to each

pressure line. Possibilities include: "No thanks, I don't do drugs"; "I'm on medication"; or "That stuff makes me sick."

3. Working with your partner, review your lists and role-play some of the most realistic scenarios. Take turns practicing refusal skills.
4. Which refusal statements did you find to be most effective? Remember and practice them to be prepared when someone tries to offer you drugs.

### Apply and Conclude

With your partner, plan a public service announcement that emphasizes the importance of refusal skills. Your announcement should demonstrate how to say no to drugs effectively.



## Rohypnol

Rohypnol is a widely available club drug. This depressant, which is ten times as strong as tranquilizers, is better known as the date rape drug, used in crimes of dating violence. Rohypnol comes in tablet form and looks like ordinary aspirin. The drug's harmless appearance has made it a dangerously effective drug in **date-rape crimes**. The victims may be given the tablets without their knowledge. Rohypnol dissolves in carbonated beverages and may easily be slipped into a soft drink. The victim wakes up much later with no recollection of what may have happened during the last several hours. Unplanned pregnancies and exposure to HIV and STDs can result from such unsafe situations.

## GHB

Another club drug is gammahydroxy butyric acid (GHB). Like Rohypnol, it has been used in date-rape crimes. GHB is available as a clear liquid, a white powder, and in a variety of tablets and capsules. A person can easily overdose on GHB. The drug leaves the blood relatively quickly, making it hard for emergency room personnel to determine that an overdose has occurred.

## Narcotics

**Narcotics** are *specific drugs that are obtainable only by prescription and are used to relieve pain*. Morphine, OxyContin, and codeine are examples of narcotics. Morphine is sometimes prescribed by medical professionals, and codeine is an ingredient in some cough medications. These drugs relieve pain by blocking pain messengers in the brain. Narcotic use can cause euphoria, drowsiness, constipation, pinpoint pupils, slow and shallow breathing, convulsions, coma, and death. Abuse of narcotics can cause addiction. Because narcotics are so addictive, pharmacists are required to keep records of all sales of these drugs.

## Heroin

Heroin, a highly addictive narcotic, is a processed form of morphine that is injected, snorted, or smoked. Heroin depresses the central nervous system and slows breathing and pulse rate. Heroin abuse can cause infection of the heart lining and valves, as well as liver disease. Infectious diseases such as pneumonia, HIV, and hepatitis B can result from the use of infected needles. Large doses may result in coma or death. Users easily develop tolerance, prompting increased usage. Withdrawal can be very painful. Fetal death may occur if the user is pregnant.



### What is OxyContin?

OxyContin is a prescription drug that contains oxycodone, a strong narcotic. When used properly under a doctor's supervision, it helps relieve moderate to severe chronic pain. When used illegally and in combination with alcohol or other depressants, however, OxyContin can be deadly. A side effect of this drug is suppression of the respiratory system, which can cause death from respiratory failure.

# Hallucinogens

**H**allucinogens are drugs that alter moods, thoughts, and sense perceptions including vision, hearing, smell, and touch. These drugs have no medical use. Phencyclidine (PCP), lysergic acid diethylamide (LSD), ketamine, and ecstasy are examples of powerful and dangerous hallucinogens. These drugs overload the sensory controls in the brain. The brain then confuses and intensifies sensations and hallucinates. Hallucinogens also impair judgment and reasoning and increase heart and respiratory rates. The altered mental states caused by hallucinogens can last for several hours or several days. The effects are extremely unpredictable, and users sometimes harm themselves physically or demonstrate other violent behaviors.

## PCP


PCP is considered one of the most dangerous of all drugs, and its effects vary greatly from user to user. Users report distorted sense of time and space, increased muscle strength, and inability to feel pain. Overdoses of PCP can cause death, but most PCP-related deaths are caused by the destructive behavior that the drug produces. PCP users have died in fires because they became disoriented and had no sensitivity to the pain of burning. Flashbacks can occur at any time, causing panic, confusion, and lack of control.

## LSD

LSD is an extremely strong hallucinogen. Even a tiny amount can cause hallucinations and severe distorted perceptions of sound and color. Higher doses increase the risk of convulsions, coma, heart and lung failure, and death. Because LSD affects the brain's emotional center and distorts reality, users may experience emotions ranging from extreme euphoria to panic to deep depression. Flashbacks can involve a frightening range of emotions long after actual use of the drug.

## Ketamine

Ketamine is an anesthetic used for medical purposes, mostly in treating animals. Misused as a club drug, ketamine is often sold as a white powder to be snorted, like cocaine, or injected. The drug is also smoked with marijuana or tobacco. Ketamine causes hallucinations and dreamlike states. Its use may result in death by respiratory failure. The misuse of ketamine and the use of all other hallucinogens is illegal.

 **Illegal drugs can affect the human body in unpredictable ways. What are some of the life-threatening effects of hallucinogens?**



### Did You Know?

The use of ecstasy among teens appears to be increasing, probably because teens are being led to think that no significant risks are involved in the use of this drug. However, ecstasy is extremely dangerous. Over 4,500 visits to emergency rooms for ecstasy-related incidents were reported in one year.

Ecstasy can cause dramatic increases in body temperature and may lead to muscle breakdown, kidney failure, and cardiovascular system damage.

## Ecstasy and Other Dangerous Drugs

**Designer drugs** are synthetic substances meant to imitate the effects of hallucinogens and other dangerous drugs. Designer drugs vary greatly in potency and strength and can be several hundred times stronger than the drugs they are meant to imitate. One of the most recognized designer drugs is *ecstasy*, or MDMA. A combination stimulant and hallucinogen, ecstasy may give a short-term feeling of euphoria but often causes confusion, depression, paranoia, psychosis, and even long-term damage to brain cells. Overdoses are common. Use can also result in uncontrollable tremors, paralysis, and irreversible brain damage.

### Consequences of Drug Use

Using illegal drugs and other substances can have negative consequences, including health problems, addiction, and difficulties in school. Furthermore, drug use often leads to poor judgment, which may put teens at risk for unintentional injuries, motor vehicle accidents, violence, STDs, unplanned pregnancies, and suicide. Avoiding places where drugs may be present may be the most effective strategy for dealing with individuals who are exhibiting dangerous behaviors. Choosing a drug-free life is one of the most important decisions you can make to protect your health.

## REVIEW

### LESSON 4

### Reviewing Facts and Vocabulary

1. Examine and identify the body systems most affected by psychoactive and designer drugs.
2. Examine and explain the harmful effects of stimulants and hallucinogens on the central nervous system.
3. What are the health risks of narcotic abuse?

### Thinking Critically

4. **Synthesizing.** Analyze the importance of alternatives to drug and substance use. Develop and explain your strategy for preventing the use of addictive substances and for avoiding psychoactive drugs.
5. **Analyzing.** Explain the role psychoactive drugs and other substances play in unsafe situations, such as HIV, STDs, unplanned pregnancies, and motor vehicle accidents.

### Applying Health Skills

**Accessing Information.** Choose one of the drugs you learned about in this lesson. Research to evaluate its medical uses (if any), possible effects, and damage to body systems. Organize your findings in a chart similar to Figure 23.4. Share the chart with your class.

### After You Read

**Explain.** Write a script showing how to use refusal skills to avoid drug use. Your script should include at least two characters.

# Living Drug Free

## Guide to Reading

### Building Vocabulary

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

- ▶ drug-free school zones (p. 612)
- ▶ drug watches (p. 612)

### Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Develop** strategies to prevent the use of drugs and other addictive substances.
- ▶ **Identify** school and community efforts to curb drug use.
- ▶ **List** community health-related services that relate to drug addiction and abuse.
- ▶ **Discover** alternatives to drug and substance abuse.

### Reading Strategy

**Explain**

- ▶ Based on your current knowledge, write a newsletter article explaining why it's important to live drug free. Include strategies you currently use to avoid drug use.

### Quick Write

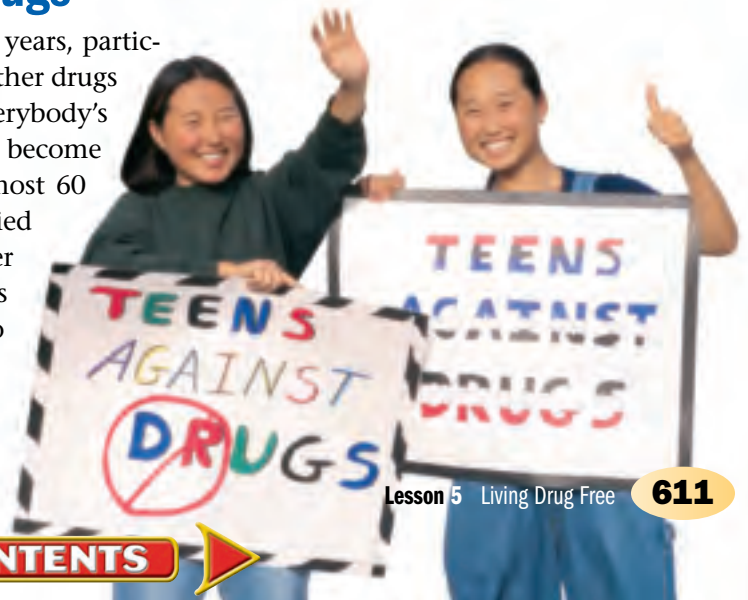
It can be hard to say no to your peers. Make a list of refusal statements you could say to a peer who is pressuring you to use drugs.

Public opinion polls and national surveys clearly show that most Americans—children, teens, and adults—have taken a stand against illegal drugs. By working together, you and your family, peers, and community can stop the effects of drug abuse. Campaigning for a drug-free school and community shows that you know effective techniques for supporting community, state, and federal agencies that advocate for healthier communities.

- ▶ **Let others know your reasons for living drug free. What can you do to share your opinion with others?**

## Resisting Pressure to Use Drugs

Peer pressure can be intense during the teen years, particularly in settings where using alcohol and other drugs may seem the norm. You may be told that “everybody’s doing it,” but the fact is that illegal drugs never become a part of most teens’ lives. In this country, almost 60 percent of high school students have never tried marijuana, and more than 90 percent have never tried cocaine. So the claim that “everybody’s doing it” is simply not true. Resisting pressure to use drugs may be as easy as responding, “Not everybody’s doing it. I’m not.”





### Strategies for Avoiding the Dangers of Substance Abuse

#### If you're offered a drug:

- ▶ Be firm in saying that you're not interested.
- ▶ Keep it simple. Say "No thanks," or "I don't need drugs."
- ▶ If the pressure continues, walk away.

#### Protect yourself against risks:

- ▶ Choose friends who share your commitment to staying drug free.
- ▶ Maintain your self-respect and be confident about your abilities.
- ▶ Take pride in your accomplishments.
- ▶ Use physical activity and relaxation techniques to handle stress.
- ▶ Stay involved in healthy activities and interests.
- ▶ Be aware of your surroundings, know what you are drinking, and cover drinks at parties. Never ride with people who are using drugs.
- ▶ Stay away from parties and places where drugs are present.

## Commitment to Be Drug Free

The first step in staying drug free is to make a firm and deliberate decision. The only way to avoid the pitfalls and dangers of substance abuse is to be fully committed to refusing drugs before they are offered. In many cases it also means steering clear of people who use drugs and of places where drugs are likely to be used or offered.

Making the commitment to abstain from drugs is a life-enhancing decision. It does not mean that you will be deprived of friends or fun. Quite the opposite is true—being drug free means being able to enjoy life and deal with its challenges and problems in healthful ways. It also shows the strength of your values and demonstrates good character and respect for yourself and others.

### REFUSAL SKILLS

To honor your commitment to living drug free, you can practice refusal skills. These are techniques that you can use to say no when others pressure you to use drugs. Consider all the harmful effects of drug use and all the benefits of a drug-free lifestyle. Doing so will help you stand up for what you believe without apologizing for or compromising your convictions.

## Strategies for Preventing Use of Drugs

Individuals are only part of the key to curbing substance abuse. Schools and communities are working together on strategies for preventing use of drugs and other addictive substances.

### School Efforts


All over the United States, **drug-free school zones** have been established. These are *areas within 1,000 feet of schools and designated by signs, within which people caught selling drugs receive especially severe penalties*. Efforts in and around schools to cut down on drug use include drug education classes, zero-tolerance policies, and expulsion of students found using drugs. In some areas police officers are assigned to patrol campuses. Security guards and locker searches also help protect teens from the dangers of drug abuse.

### Community Efforts

Communities across the nation are taking positive action to stop drug abuse. **Drug watches** are *organized community efforts by neighborhood residents to patrol, monitor, report, and otherwise try to stop drug deals and drug abuse*. Becoming involved in antidrug programs in your community is a good way to protect your family and friends from the dangers and violence associated with drug abuse. A health advocate knows methods for working cooperatively with others to advocate for healthy communities.

## The Importance of Alternatives to Drug and Substance Use

There are healthier ways to cope with day-to-day problems than turning to drugs. You can find many ways to feel good about yourself without depending on harmful substances. Getting involved in school or community activities can give teens the focus they need to follow through on a commitment toward a more healthful life.

 Spending time with a parent or trusted adult can reinforce a teen's decision to live drug free.

## Becoming Drug Free

For those teens already in trouble with drugs, it is never too late to get help. Admitting that there is a problem is the first step, and getting help is the essential next step in overcoming that problem. Teens may turn to individual counseling, support groups, or drug treatment centers for help. Support from parents, guardians, school counselors, or family doctors can guide teens to get help. **Figure 23.5** lists some warning signs of drug abuse. If you know someone who shows these signs, encourage him or her to seek help. The following steps can guide you in offering help to a friend or family member who is using alcohol or other drugs.

- ▶ Identify specific sources of help in your community—drug counselors, treatment centers, and support groups.
- ▶ Talk to the person when he or she is sober. Express your affection and concern for the person, and describe his or her behavior without being judgmental.
- ▶ Listen to the person's response. Be prepared for anger and denial.
- ▶ Offer to go with your friend or family member to a counselor or support group.

A drug-free advocate knows positive ways to influence others to make positive choices.



FIGURE 23.5

### WARNING SIGNS OF DRUG USE

Be alert to these signs that a person may have a drug problem.

- Gets drunk or high regularly, is often hung over
- Lies about the drugs he or she is using, constantly talks about drugs
- Stops participating in activities that once were an important part of his or her life
- Changes eating or sleeping habits, shows rapid weight loss
- Takes unnecessary risks, participates in unsafe behaviors
- Gets in trouble with authorities, such as school administrators and police
- Seems withdrawn, depressed, tired, and cares less about personal grooming and appearance
- Has red-rimmed eyes and runny nose not related to cold or allergies
- Has “blackouts” and forgets what he or she did while under the influence
- Has difficulty concentrating

## Getting Help

**D**rug abuse is a treatable condition. Support groups, counseling services, and treatment centers are available in most communities. For teens, the first step in getting help is talking to a parent, teacher, school counselor, health care provider, or another trusted adult. If an adult is unable to recommend a treatment option, teens can call a toll-free hotline or a drug treatment center.

### Treatment Centers

For the most serious addictions, drug users attend treatment centers, facilities that provide medical supervision while a person goes through withdrawal and detoxification, or the removal of drugs from the user's body. Many of these centers provide medications to help with the physical and psychological effects of withdrawal.

### Reading Check

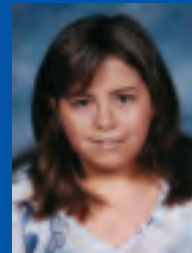
**Explain** What is the first step in staying drug free?

## Resilient TEENS

Loren Saenz didn't have to do drugs to learn that they can have a devastating effect on a person's life. "My brother's closest friend died of a drug and alcohol overdose," she says. Just as disturbing, one of her friends was taking drugs and cutting herself. "I was scared she'd kill herself, so I convinced her talk to a counselor," says Loren.

To help others the way she'd helped her friend, Loren joined Students Against Destructive Decisions (SADD).

So what does the future hold for Loren? "I think I'd like to work with kids someday," she says softly. "I want them to realize what drugs and alcohol can do to their bodies before they try it."



**"I want them to realize what drugs and alcohol can do to their bodies before they try it."**


### Reading Check

**Explain** How is Loren a role model for other teens?

Types of drug treatment centers include these:

- ▶ **Outpatient Drug-Free Treatment.** These programs usually do not include medications and often consist of individual or group counseling.
- ▶ **Short-Term Treatment.** These centers can include residential, medication, and outpatient therapies.
- ▶ **Maintenance Therapy.** Intended for heroin addicts, this treatment usually includes medication therapy.
- ▶ **Therapeutic Communities.** These are residences for people with a long history of drug abuse. The centers include highly structured programs that usually last from 6 to 12 months.



 **Drug counseling and treatment can help a drug user break the cycle of addiction. *Identify health-related services in the community that relate to the prevention and treatment of addiction.***

For people who have less serious addictions, or for those who are released from a treatment center, drug counseling is usually recommended. Drug counselors help people adjust to life without drugs. In conjunction with counseling, many recovering drug users attend support groups. These meetings are gatherings of people who share a common problem and who work together to help one another cope and recover. Support groups are a popular strategy for treating addiction because they provide the long-term moral support that the recovering user needs to remain drug free.

## LESSON

# 5

## REVIEW

### Reviewing Facts and Vocabulary

1. Identify some strategies that schools and communities have used to decrease the availability of drugs.
2. List five signs of substance abuse.
3. How do support groups help substance abusers?

### Thinking Critically

4. **Analyzing.** Analyze the importance of healthy alternatives to drug and substance use.
5. **Synthesizing.** Develop a list of strategies for preventing use of addictive substances in your school. Write these in a formal list, and submit your ideas to the school principal or school board.

### Applying Health Skills

**Refusal Skills.** Analyze and develop strategies for preventing the use of drugs. Prepare an insert on drug-refusal strategies for your school newspaper. Explain the dangers of drug abuse, and include examples of appropriate and effective refusal skills to avoid unsafe situations.

### After You Read

**Problems and Solutions.** Make a T chart. On the problem side, list reasons some teens feel pressure to take drugs and the warning signs of drug use. On the solutions side, list strategies for preventing drug use and ways to become drug free.





# Vaccine: The Battle Within

To create better vaccines, scientists must study the immune system's complex network of cellular guards.

## Searching for the Bad Bugs...

### 1. Spotting the Enemy

Formed in bone marrow, B lymphocytes are the only immune cells that can make antibodies—the first line of immune defense. Antibodies are proteins that detect and bind themselves to pathogens in the blood to neutralize them.

### 2. Exposing the Bad Guys

Often pathogens camouflage themselves against detection by antibodies with proteins called antigens. Antigen-presenting cells (APCs) chop up the proteins. This exposes the pathogens to destruction.

### 3. Sounding the Alarm

Helper T cells recognize and bind to bugs exposed by APCs. Once activated, helper Ts secrete hormones called cytokines. These signal the immune system to send more macrophages, B cells, and T cells to destroy the invaders, as well as more white blood cells containing enzymes that digest antigens.

## ...And Then Destroying Them

### 4. Building the Bombs

After they encounter antigens in the blood, some B cells retreat to the lymph nodes, where they become plasma cells and churn out antibodies that can bind to the antigens.

### 5. Going in for the Kill

Killer T cells must recognize antigens. Then they mature quickly to perform their second function—destroying pathogens. Killer T cells attach to a pathogen and douse it with a lethal toxin. Then they detach and go off to kill again, leaving the infected cell to die.

### 6. Bringing in the Big Guns

Natural killer cells are unspecialized fighters. They flood infected cells with toxins and destructive enzymes, but don't need to have the antigens exposed by APCs. ■



TIME  
to THINK...

About  
Vaccines

Every year nearly 2 million children worldwide die from diseases that vaccination could have prevented. Use the Internet or your school's media center to learn what diseases cause the most deaths among unvaccinated children. Why are these children not being vaccinated? Report your findings to the class.

## Health Skills Application



**1. Accessing Information.** Research and analyze laws regulating the information that is required to be on all over-the-counter (OTC) medicine labels. Why does the FDA require this information to appear? (LESSON 1)



**2. Communication Skills.** Write a skit in which a teen expresses concern for a friend's drug problem. The teen should use effective communication skills to discuss the dangers of drug use and to encourage the friend to seek help. (LESSON 2)



**3. Refusal Skills.** Imagine that you are at a party and someone you know suddenly offers you marijuana. Analyze and explain the refusal strategies you could apply. (LESSON 3)



**4. Stress Management.** Derek, who has been under a lot of stress, confides in you that he wants to take depressants to relax. What would you say to persuade him not to do so? What healthy alternatives for managing stress would you recommend? (LESSON 4)



**5. Goal Setting.** Make a goal to live drug free. Use the goal-setting steps to develop an action plan for honoring your commitment. (LESSON 5)

## CAREER Corner

### Medical Records Technician

Do you enjoy managing information? Do you have strong organizational skills and an eye for detail? If you can keep track of a variety of important data, consider a career as a medical records technician. These professionals maintain medical records of patients in hospitals, clinics, and doctors' offices. They track prescription medicines and other health information to ensure that the right treatments and medications are given to patients.

Medical records technicians are required to have an Associate's degree in information management from a community college or vocational/technical school. Find out more about this and other health careers by clicking on Career Corner at [health.glencoe.com](http://health.glencoe.com).



**After You Read**

Use the notes you have taken in your Foldable to review what you have learned. On the back of your Foldable, write a descriptive paragraph about the effects medicines have on the human body.



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

**Lesson 1** Match each definition with the correct term.

<b>analgesics</b>	<b>antagonistic interaction</b>
<b>additive interaction</b>	<b>vaccines</b>
<b>side effects</b>	<b>synergistic effect</b>
<b>drugs</b>	<b>medicines</b>

1. Drugs that are used to treat or prevent disease or other conditions.
2. Pain relievers.
3. Reactions to medicine other than the one intended.
4. An interaction of two or more medicines that results in a greater effect than when each medicine is taken separately.

**Lesson 2** Fill in the blanks with the correct term.

<b>substance abuse</b>	<b>illegal drugs</b>
<b>illicit drug use</b>	<b>overdose</b>
<b>psychological dependence</b>	<b>addiction</b>
<b>physiological dependence</b>	

When a person uses (  5  ), he or she is committing the crime of (  6  ). In addition to legal problems, using drugs carries the risk of (  7  ), which can be fatal. (  8  ), a condition in which the body develops a chemical need for a drug, is another health risk of drug use.

**Lesson 3** Match each definition with the correct term.

<b>anabolic-androgenic steroids</b>	<b>paranoia</b>
<b>marijuana</b>	<b>inhalants</b>

9. An irrational suspicion or distrust of others.
10. Substances whose fumes are sniffed to give a mind-altering effect.
11. Synthetic substances that are similar to male sex hormones.

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

<b>euphoria</b>	<b>designer drugs</b>
<b>stimulants</b>	<b>narcotics</b>
<b>hallucinogens</b>	<b>psychoactive drugs</b>
<b>depressants</b>	

12. Pain-relieving drugs legally obtainable only by prescription.
13. Drugs that alter moods, thoughts, and sense perceptions, including vision, hearing, smell, and touch.
14. Synthetic substances made to imitate the effects of hallucinogens and other dangerous drugs.

**Lesson 5** Identify each statement as True or False. If false, replace the underlined term with the correct term.

<b>drug-free school zones</b>	<b>drug watches</b>
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15. Drug-free school zones are/is organized community efforts by neighborhood residents to patrol, monitor, report, and try to stop drug deals and drug abuse.
16. Drug watches are/is a designated area surrounding schools within which people caught selling drugs receive especially severe penalties.

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

1. Analyze and describe two types of medicines that fight diseases.
2. What is the difference between an additive interaction and an antagonistic interaction?
3. Compare and contrast OTC and prescription medicines.
4. Why are illegal drugs dangerous to the user?
5. List three legal consequences of drug use for teens.



6. Analyze and explain the harmful effects of drugs on a fetus.
7. Marijuana raises the level of dopamine in the brain. What effect does this have on the body?
8. Examine and describe the physical consequences of inhalant use.
9. What can happen if an athlete uses steroids?
10. How does a stimulant affect the central nervous system?
11. What are the symptoms of a hallucinogen overdose?
12. List five harmful effects of club drugs.
13. List and analyze three strategies you can apply for avoiding drugs.
14. How are communities helping in the effort to promote health by stopping drug use?
15. List three types of centers in which drug users can be treated.

**▶ WRITING CRITICALLY**

1. **Expository.** Write a public service announcement educating teens about the health and social consequences of drug use. Encourage teens to use refusal skills to avoid drug use or to get help if they have a drug problem.
2. **Personal.** Write a letter to yourself outlining your commitment to stay drug free. In your letter, explain your reasons for abstaining from drug use, and write a drug prevention strategy for yourself. You can look back at your letter if you are ever in a situation in which you need to reinforce your commitment.

**Standardized Test Practice**



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

Grade	8th	10th	12th
Ever used	1.9%	2.4%	3.4%
Used in past year	1.1%	1.5%	2.5%
Used in past month	0.5%	0.8%	1.6%

Nonmedical use of substances known as *anabolic steroids* is considered substance abuse. The table shows the abuse of anabolic steroids in a 2004 study that involved students from both public and private schools.

1. If 12,000 of the students studied were tenth graders, how many of them have not used anabolic steroids in the past month?

- A 96
- C 11,820
- B 180
- D 11,904

2. If 20,000 of the students were eighth graders, how many of them have not ever used anabolic steroids?

- F 380
- H 16,200
- G 3800
- I 19,620

3. Examine the values in the table. Provide a logical explanation as to why the percentages are higher for older students.

