

# Dealing with Respiratory Diseases, Asthma, and Allergies

## What You'll Learn

1. Analyze the causes, symptoms, diagnoses, and treatments of communicable respiratory diseases. (p. 491)
2. Analyze ways to prevent infection with communicable respiratory diseases. (p. 491)
3. Discuss asthma and ways to prevent and manage asthma attacks. (p. 494)
4. Describe common causes of allergies. (p. 496)
5. Describe ways to prevent or treat allergies. (p. 496)

## Why It's Important

At some time, almost everyone will be affected by a respiratory illness. In addition, millions of people are affected by asthma or allergies.

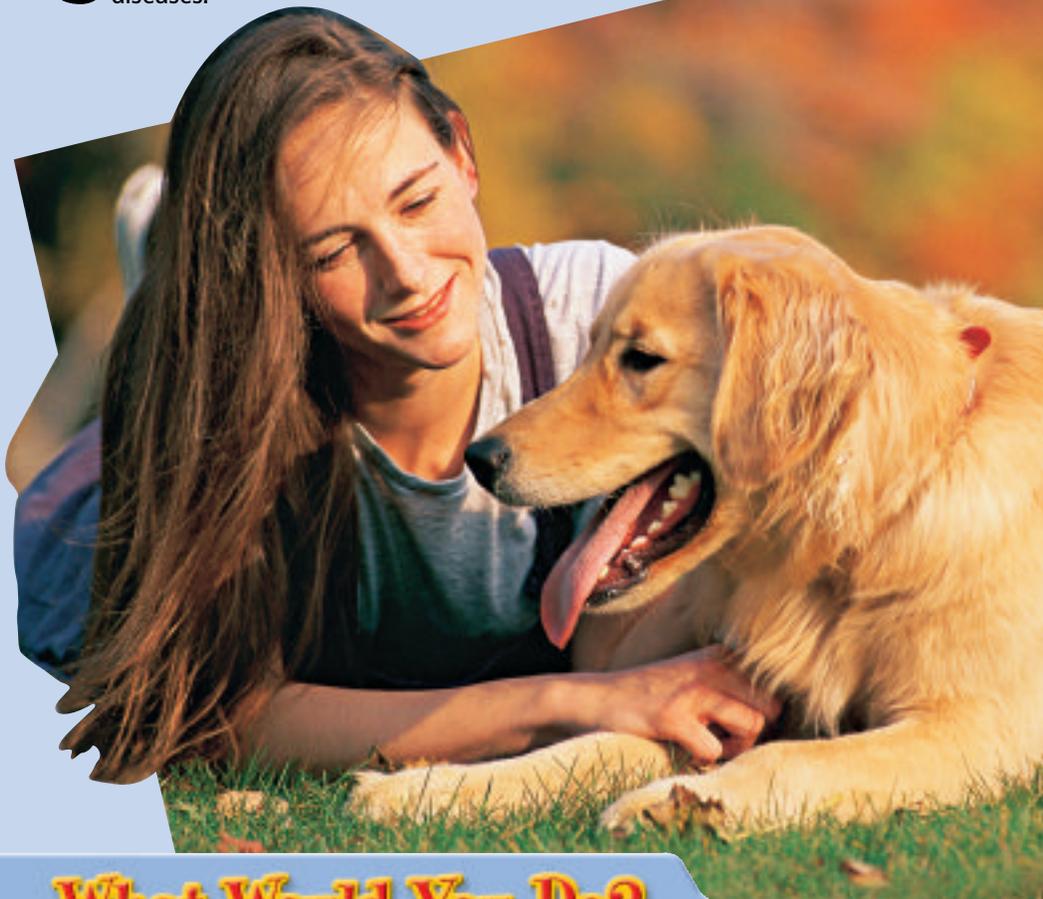
## Key Terms

- common cold
- influenza
- pneumonia
- strep throat
- rheumatic fever
- asthma
- allergy
- allergen
- pollen
- hay fever

### HEALTH GOALS

- I will choose behaviors to reduce my risk of infection with respiratory diseases.
- I will recognize ways to manage asthma and allergies.

Some diseases are spread from person to person while others are not. You will learn ways to prevent and manage these diseases.



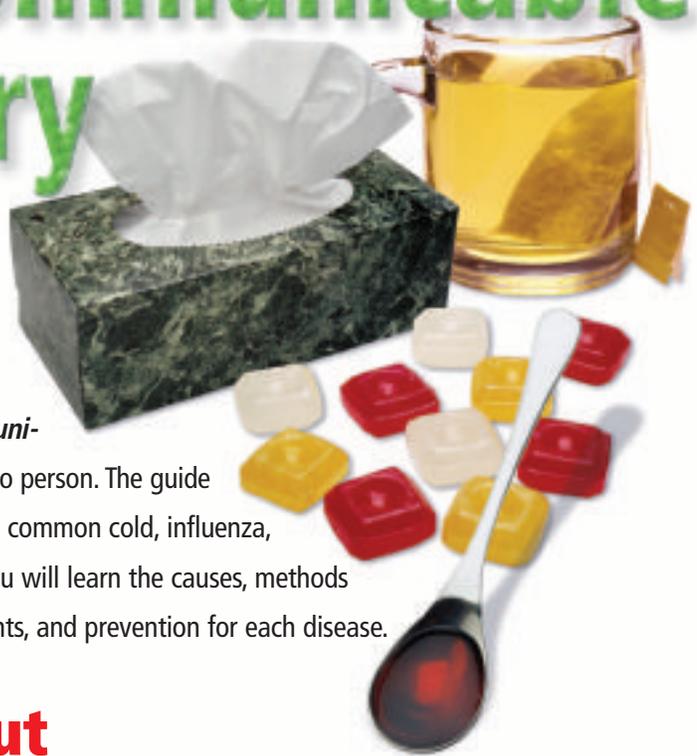
## What Would You Do?

**Writing About Allergies** Suppose that you are meeting your friend in the park. You notice she has her dog with her, and you are allergic to dog dander. After reading the information on page 496, write an entry in your health journal about two different ways you could handle this situation, and the possible outcomes of each.



Health TEKS covered by Lesson 45: 2D, 4A, 5D, 6B, 16A, 17A

# A Guide to Communicable Respiratory Diseases



This part of the lesson includes a Guide to Communicable Respiratory Diseases. **Communicable diseases** can be spread from person to person. The guide includes six communicable respiratory diseases: the common cold, influenza, pneumonia, strep throat, tuberculosis, and SARS. You will learn the causes, methods of transmission, symptoms, diagnoses and treatments, and prevention for each disease.

## What to Know About Communicable Respiratory Diseases

**The common cold** A respiratory infection caused by more than 100 different viruses is the **common cold**. One-third of all colds are caused by rhinoviruses. A **rhinovirus** is a virus that infects the nose. High levels of stress can increase a person's chances of catching a cold. Being exposed to cold weather or getting chilled does not cause a cold. A cold can last from 2 to 14 days.

OTC medicines may help relieve some symptoms, but they will not cure or shorten the length of a cold. Gargling with warm salt water may bring relief to a sore throat. Applying petroleum jelly to the nose may help an irritated nose.

**Influenza** A highly contagious viral infection of the respiratory tract is **influenza**, or the flu. Most people recover within a week or two, but it

can be life-threatening for elderly people, newborn babies, and people with chronic diseases. The flu can lead to pneumonia. Flu viruses are constantly changing, making it difficult for the immune system to form antibodies to new variations of the flu virus. Flu can spread rapidly in crowded places. The infected person who spreads the virus often does not yet show symptoms. An infected person is particularly contagious during the first three days of infection.

A physician usually determines if people have the flu by their symptoms and by whether the flu is present in the community. Aspirin or acetaminophen may relieve fever and discomfort.

Children and teens should not take aspirin to relieve symptoms as it may increase the chances of developing Reye's syndrome.

### Make the Connection

**Diseases in the United States** For more information on the nation's health concerns, see page 59 in Lesson 6.



## Make the Connection

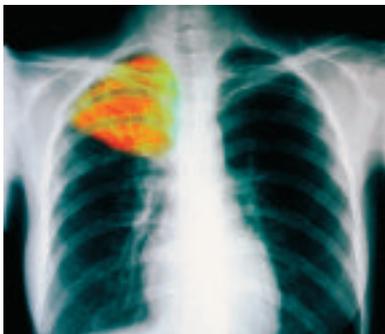
### Communicable Diseases

For more information on accessing health information, see page 17 in Lesson 2.

***Reye's syndrome*** is a disease that causes swelling of the brain and deterioration of liver function. Antibiotics are not effective against flu viruses, but may help prevent the pneumonia that sometimes follows it.

Flu shots are available. Since flu viruses change often, flu vaccines are updated each year. They are highly recommended for people under the age of 2 and over age 65; people with chronic illnesses and/or a history of respiratory infections; pregnant women who are in their second or third trimester during flu season; and health care workers.

**Pneumonia** An infection in the lungs caused by bacteria, viruses, or other pathogens is ***pneumonia***. Pneumonia bacteria and viruses can be spread by direct contact with an infected person or with contaminated objects. Laboratory tests, chest X rays, and physical examinations are used to diagnose pneumonia. Prompt treatment is critical. Antibiotics are used to treat bacterial pneumonia, but viral pneumonia is much more difficult to treat. Severe cases may require hospital care. A vaccine is available to prevent pneumococcal pneumonia, a type which kills more people than all other vaccine-preventable diseases.



▲ A chest X ray can confirm a tuberculosis diagnosis.



▲ Healthy lungs will appear clear in a chest X ray.

**Strep throat** A bacterial infection of the throat is ***strep throat***. If it is not treated promptly, rheumatic fever can occur. ***Rheumatic fever*** is an autoimmune disease in the heart that can cause fever, weakness, and damage to heart valves. When someone has strep throat, the throat may appear very red and small patches of pus may be visible. A throat culture is needed to diagnose strep throat. Antibiotics are prescribed to kill the bacteria and to prevent spread of the infection. Rest and fluids help the body fight the infection.

**Tuberculosis** A bacterial infection of the lungs is ***tuberculosis***. People with a weakened immune system, such as those with HIV and the elderly, are highly susceptible to tuberculosis. Those who are homeless, malnourished, or inject drugs are at increased risk for tuberculosis.

Tuberculosis bacteria become airborne through coughing and sneezing by an infected person. Only people with active tuberculosis are contagious. Tuberculosis is not likely to be spread through items or objects that have been touched by a person with the disease.

A tuberculin skin test is the injection of a protein substance under the skin in the forearm. If within two days a red welt forms around where the protein was injected, the person has been exposed to tuberculosis. This does not confirm that a person has tuberculosis. Chest X rays and sputum samples are used to confirm a diagnosis. Although antibiotics are used to treat tuberculosis, some tuberculosis pathogens have become resistant to them. Drugs are available to prevent tuberculosis in people

**TABLE 45.1 Communicable Respiratory Disease Facts**

Disease and Symptoms	Transmission	Treatment	Prevention
<b>Cold</b> runny nose, watery eyes, difficulty breathing, sneezing, sore throat, cough, and headache	air, contact with an infected person, or by touching contaminated objects	rest and drink plenty of fluids	wash hands frequently and do not touch the nose or eyes, sneeze or cough into a facial tissue, avoid close contact with anyone who has a cold
<b>Influenza</b> headache, chills, sneezing, stuffy nose, sore throat, and dry cough, followed by body aches and fever	air, enters the body through the mucous membranes of the eyes, nose, or mouth	rest and drink plenty of fluids	wash hands often, avoid direct contact with infected person, get a flu vaccination
<b>Pneumonia</b> shortness of breath, difficulty breathing, coughing, chest pain, weakness, fever, and chills	direct contact with a contaminated person or object, untreated respiratory diseases	antibiotics	avoid direct contact with infected person, get treatment for respiratory diseases, get a pneumococcal pneumonia vaccination
<b>Strep throat</b> fever and severe sore throat	coughing, sneezing, and close contact with an infected person	antibiotics, rest, and drink plenty of fluids	avoid contact with infected person, wash hands often
<b>Tuberculosis</b> extreme tiredness, coughing, night sweats, loss of appetite, weight loss, low-grade fever, chills, bloody sputum, shortness of breath, and chest pain	air, through coughing and sneezing of an infected person	antibiotics, supportive care	avoid contact with infected person
<b>SARS</b> fever higher than 100.4°F and symptoms of other respiratory illnesses, including cough, shortness of breath, difficulty breathing, low oxygen in the blood, or X-ray findings of pneumonia	air, enters the body through mucous membranes	good supportive care, rest	wash hands often, avoid close contact with infected person

who are in close contact with infected people. Rooms with good ventilation and air flow reduce the risk of the spread of tuberculosis.

**Severe acute respiratory syndrome (SARS)** A contagious respiratory illness caused by a new type of coronavirus is **SARS**. SARS surfaced in early 2003 in some Asian countries and then caused outbreaks in other

countries. It is important to understand that the symptoms of SARS are typical for many other respiratory illnesses, including a fever, cough, or shortness of breath. With this illness, another criterion for diagnosis is travel to specific Asian countries where SARS exists and/or close contact with a person infected with SARS. Since the initial outbreak, SARS is now under control.



# Asthma

A condition in which the bronchial tubes become inflamed and constrict, making breathing difficult for many people, is *asthma*. Asthma is an example of a noncommunicable disease. **Noncommunicable diseases** are not spread from person to person. No type of condition results in as much absenteeism in school as asthma.

## What to Know About Asthma

### Did You Know?

#### Asthma and Children

Asthma is the most common long-term disease in school-age children.

**Asthma** Asthma is a chronic disease that cannot be cured. Symptoms of asthma include coughing, wheezing, and shortness of breath. People with asthma have sensitive lungs that react to certain asthma triggers. **Asthma triggers** are substances that cause the airways to tighten, swell, and fill with mucus. The airways become narrow and blocked, and it is difficult to breathe.

Asthma triggers include pollen from trees; grasses and weeds; dust and mold; dog, cat, or other animal dander; cigarette smoke; air pollution; having a cold or the flu; aspirin or other OTC drugs; perfumes and fragrances; odors from sprays and paints; insecticides; certain foods; and smoke from burning wood, paper, or other items.

Asthma also can be triggered by emotional stress, especially during childhood and adolescence. Asthma attacks can be very serious.

An **asthma attack** is an episode of coughing, wheezing, shortness of breath and tightness in the chest experienced by a person who has asthma. Some people may become extremely sick from asthma attacks and need to be hospitalized, and some people have died from them.

Most children who suffer from asthma continue to have asthma as adults. However, for about one-fourth of children with asthma, the symptoms decrease significantly as they get older. Sometimes, however, asthma does not develop until a person is an adult.

**Exercise-induced asthma** A condition in which a person has difficulty breathing during or shortly after strenuous physical activity is called **exercise-induced asthma (EIA)**. The symptoms of EIA can be mild or severe and include coughing, wheezing, shortness of breath, and tightness in the chest.

Some people with EIA suffer an asthma attack only with exercise. A high percentage of people with EIA suffer asthma from allergies to airborne substances, such as air pollutants, dust, and animal dander. Exposure to cold, dry air during physical activity is a major trigger.

## Six Warning Signs and Symptoms of Asthma

The following are warning signs of an asthma attack:

- coughing
- wheezing
- shortness of breath
- tightness in the chest
- rapid breathing
- itchy or sore throat



# Activity: Using Life Skills

## Accessing Valid Health Information, Products, and Services: Managing Asthma

Asthma must be taken seriously, but it doesn't have to keep you from having fun. You can control asthma symptoms and have fewer, less severe asthma attacks by following these tips.

### 1 Identify health information, products, and services you need.

Develop a daily management plan and an emergency plan with your health-care provider.

### 4 Take your medications regularly, and keep them with you for emergencies.

**5 Evaluate health information, products, and services.** Learn how you feel right before an asthma attack. If you know your warning signs or symptoms, you can get the help you need.

### 2 Find health information, products, and services.

Find out what triggers your asthma attacks, and then stay away from those triggers.

**6 Take action when health information is misleading and/or health products and services are unsatisfactory.** Don't let asthma keep you from enjoying a sport or activity you love. Consult your health-care provider about how to manage your symptoms so you can participate.

### 3 Use your peak flow meter every day if it is part of your management plan.



▲ Some asthma medicines help prevent asthma attacks.

Since regular physical activity improves health status, learning to manage EIA is important. Proper medication allows most people who have EIA to participate in regular physical activity. People with EIA frequently breathe in puffs of medication from an inhaler before they exercise to prevent an EIA attack.

EIA often can be reduced and prevented by improving physical fitness. Breathing warm, moist air usually helps the condition. Swimming and other indoor water sports provide an ideal environment for people who have EIA.

**Ways to prevent asthma attacks**  
People who have asthma can prevent

asthma attacks by avoiding asthma triggers. For instance, they may avoid smoky restaurants, refrain from wearing perfumes and fragrances, or trade household chores with siblings so that they don't have to do yard work that could aggravate their asthma. Other ways of avoiding asthma attacks include recognizing warning signs and taking certain medication. If they fail to recognize these signs, their symptoms may get worse.

If you have asthma, make a plan with your parents or guardian and your physician about what to do when you notice warning signs and symptoms of asthma. People with asthma should always carry their medications with them in case of an attack.

### Mini-Review

1. What are some common communicable respiratory diseases?
2. What is the difference between a cold and asthma?



# Allergies

An overreaction of the body to a substance, that in most people causes no response, is an **allergy**. A substance that produces an allergic response is called an **allergen**. Most allergens are harmless substances. They come into contact with the skin, respiratory airways, the surface of the eyes, and the stomach.

## What to Know About Allergies

**Make the Connection**  
**Food Allergies** For more information on food allergies and intolerances, see page 308 in Lesson 27.

**Airborne allergens** The most common airborne allergens are animal dander, feathers, pollens, and mites. **Animal dander** is flakes of dead skin from an animal. People who have allergy symptoms, such as dizziness, nausea, skin rash, itchy or watery eyes, drops in blood pressure, or difficulty in breathing when they are near cats, dogs, or other animals, are allergic to animal dander.

**Pollen** is a yellowish powder produced by flowers, trees, and grass. Pollen may become airborne and trigger an allergic response. The most common response is hay fever. **Hay fever** is a common term for seasonal respiratory allergies that typically occur in the spring and fall. Symptoms include coughing, sneezing, and inflammation of the nasal mucous membranes. People who have hay fever may take medicine or receive shots regularly to lessen their response to pollen.

Some people are allergic to house dust because it usually contains small fragments of mites and their feces. Mites are tiny, eight-legged animals that resemble spiders.

**Other allergens** Not all allergens are airborne. A person can be allergic to medication, latex, insect stings, or foods. One medication to which many people are allergic is penicillin, an antibiotic. A person who is allergic to

penicillin may experience breathing difficulties, rapid pulse, and a sudden drop in blood pressure. Other types of antibiotics can be used to treat disease if a person is allergic to penicillin.

People also can have an allergic reaction to latex or an insect sting. Symptoms include skin rash, respiratory irritation, and in some cases, shock. To avoid a reaction to latex, a person could use plastic or vinyl gloves.

Many people are allergic to certain types of food. Peanuts, eggs, milk, and shellfish are some common food allergens. People with food allergies should avoid foods that contain their allergy trigger.

**Allergy tests** Skin tests can be used to identify allergens that produce allergic reactions. A **skin patch test** involves putting allergens on a patch, taping the patch to the skin, and observing the reaction. Another test involves using a needle to place allergens under the skin and observing the reaction. A **wheal**, or a round skin lump, indicates sensitivity to a particular allergen.

**Treating allergies** Medications can help reduce or eliminate the severity of certain reactions. People may need to receive medication on a regular basis.



allergen  
allergy  
asthma  
common cold  
communicable  
disease  
hay fever  
influenza  
pneumonia  
pollen  
rheumatic fever  
strep throat  
wheal

## Key Terms Review

Complete these fill-in-the-blank statements with the lesson Key Terms on the left. Do not write in this book.

1. A person with constricted bronchial tubes may have a condition called \_\_\_\_\_.
2. A respiratory infection that can be caused by one of more than 100 viruses is called the \_\_\_\_\_.
3. A powder made in flowers that is associated with allergies is \_\_\_\_\_.
4. A viral infection of the respiratory tract that is very contagious is \_\_\_\_\_.
5. Seasonal respiratory allergies are commonly known as \_\_\_\_\_.
6. An infection in the throat caused by bacteria is \_\_\_\_\_.
7. The general name for a substance, which is usually harmless, that produces an allergic response is a(n) \_\_\_\_\_.
8. A disease that can damage heart valves is \_\_\_\_\_.
9. An infection of the lungs caused by any number of pathogens is \_\_\_\_\_.
10. An overreaction of the body to a substance is called a(n) \_\_\_\_\_.

## Recalling the Facts

11. Why is proper hand washing important in preventing the common cold?
12. How is the flu spread?
13. Why is viral pneumonia more problematic than bacterial pneumonia?
14. What should a person do to reduce the risk of having an asthma attack?
15. Why should a person always know what the warning signs and symptoms of an asthma attack are?
16. Why should family members not smoke if another family member has asthma?
17. Why should you know if you are allergic to certain medications?
18. How do allergy tests show that you have an allergy?

## Critical Thinking

19. Why are being exposed to cold weather or getting chilled not causes of a cold?
20. How is it possible that a person who gets a flu shot can still get the flu?
21. Why do people with hay fever have symptoms such as coughing, sneezing, and inflammation of the nasal mucous membranes?
22. Why are allergies not contagious?

## Activities

### Responsible Decision Making

27. **Discuss** You are at home recovering from strep throat. Your friends invite you to a party and you want to go. Discuss with your classmates what would be a responsible decision in this situation. Refer to the Responsible Decision-Making Model on page 61 to review the steps involved in making responsible decisions.

### Real-Life Applications

23. What do you think is the best thing you can do to avoid communicable diseases?
24. Why do you think all people are not vaccinated for the flu?
25. Why do you think people might confuse a cold with allergies?
26. Is it a good idea to use leftover antibiotics for a cold? Why or why not?

### Sharpen Your Life Skills

28. **Access Health Information** There are several different ways to treat allergies. Contact your physician or a local allergist to research allergy treatments. Write a one-page paper on the advantages and disadvantages of these treatments. Could any of them help your own allergies, if you have any?

