Indicate how frequently you engage in each of the following behaviors (1 = never; 2 = occasionally; 3 = most of the time; 4 = all of the time). Total your points, and then turn to p. 642.

1. I cover my mouth while sneezing or coughing.
2. I eat at least five servings of fruits and vegetables each day.
3. I exercise at least five times a week.
4. I have regular check-ups with my dentist and doctor.
5. I wash my hands before eating a meal.
6. When my doctor prescribes antibiotics, I follow and complete the prescription.
7. I drink 8 to 10 glasses of water each day.
8. I get extra sleep when I am sick.
Contents

• **Section 1** What Are Infectious Diseases?
• **Section 2** Protecting Yourself from Infectious Diseases
• **Section 3** Common Infectious Diseases
Bellringer

• List ten ways a person might come into contact with infectious organisms.
Objectives

• **Identify** five different agents that can cause infectious diseases.
• **List** four ways that infectious diseases spread.
• **Describe** two different treatments for infectious diseases.
• **Name** two ways you can help prevent the development of antibiotic resistant bacteria.
What Causes Infectious Diseases?

- **Infectious diseases** are diseases caused by agents invading the body.

- **Bacteria** are single-celled organisms, some of which cause disease. Other kinds of bacteria are harmless or even helpful to the body. Tetanus, tuberculosis, and sinus infections are bacterial diseases.
What Causes Infectious Diseases?

- **Viruses** are tiny disease-causing particles made up of genetic material and a protein coat. Viruses survive and replicate inside living cells. Colds, the flu, measles, chicken pox, and AIDS are viral diseases.
- **Fungi** are organisms that absorb and use the nutrients of living or dead organisms. Some fungi cause diseases, such as athlete’s foot and ringworm.
What Causes Infectious Diseases?

• **Protozoans** are single-celled organisms that are larger and more complex than bacteria. They account for some of the leading causes of death worldwide, including malaria.

• **Parasites** get their energy and nutrients by feeding on other living things. Head lice, tapeworms, and some roundworms are parasites.
Section 1  What Are Infectious Diseases?

How Infectious Diseases Are Spread

**Person to Person**
People's body fluids may contain pathogens. Sneezing, coughing, sharing drink containers, and having sexual contact can spread diseases from person to person.

**Environment**
Look around you—almost everything you see is covered with microorganisms, a few of which can cause disease.

**Western black legged tick**

**Food and Water**
Many types of food can contain pathogens. Without proper cooking or treatment of foods these pathogens can be passed on to the humans that eat the food. Unpurified water also carries pathogens.

**Animals**
Like humans, animals can become sick and carry disease. When humans come into contact with infected animals, diseases can be spread.
How Are Infectious Diseases Treated?

- Antibiotics are medicines used to kill or slow the growth of bacteria. Examples include penicillin, tetracycline, and streptomycin.
- **Antibiotic resistance** is a condition in which bacteria can no longer be killed by a particular antibiotic.
- Improper use of antibiotics contributes to the growth of antibiotic-resistant bacteria.
How Antibiotic Resistant Bacteria Can Multiply and Spread

If a person finishes all the antibiotics prescribed...

the antibiotics and the immune system kill off all of the bacteria.

If a person stops taking antibiotics before the prescription is finished...

most bacteria die, but some more resistant bacteria survive and multiply.

Antibiotic-resistant bacteria can spread to others.

Person has pneumonia.

Antibiotic-sensitive bacteria
Antibiotic-resistant bacteria
How Are Infectious Diseases Treated?

• **Treating Viral Diseases**  Viral diseases are hard to treat. Most antiviral medications focus on relieving symptoms. Viruses are not affected by antibiotics.

• **Treating Fungal Infections**  Some fungal infections can be treated with over-the-counter antifungal medications. Others require prescription medications.
How Are Infectious Diseases Treated?

- **Treating Protozoan Infections**  The best protection is prevention through good hygiene and sanitation.
- **Treating Parasites**  Head lice can be treated with medicated shampoos.
Belringer

• List ways that a pathogen might enter the body.
Objectives

• **Describe** how the body fights infectious diseases.
• **Summarize** five things a person can do to stay well.
• **Describe** how immunity to a disease develops.
• **State** three things you should do when you are sick.
• **List** three things you can do to prevent the spread of infectious diseases.
How Your Body Fights Disease

• **Physical barriers** to pathogens include:
  - Skin
  - Mucous membranes
  - Chemicals

• **Inflammation** is a reaction to injury or infection characterized by pain, redness, and swelling.
How Your Body Fights Disease

- The immune system is the body’s system for fighting disease once it is in the body.
- **White blood cells** are cells in the blood that defend the body against disease.
- **Antibodies** are proteins that mark pathogens to be destroyed by white blood cells.
- The **lymphatic system** is a network of vessels that carry lymph throughout the body, carrying viruses and bacteria back to the lymph nodes.
Chapter 13

Section 2 Protecting Yourself from Infectious Diseases

What You Can Do to Stay Well

• Protect yourself.
• Eat a healthy, balanced diet.
• Drink plenty of water.
• Reduce your stress levels.
• Exercise regularly.
• Get regular medical checkups.
• Avoid close contact with sick people.
• Get enough sleep.
• Stay up to date on all available vaccines.
What to Do When You Are Sick

- Stay home and rest.
- Drink plenty of fluids.
- Throw away tissues you use right away.
- Follow all the directions your doctor gives.
How to Prevent the Spread of Disease

• Get vaccinated.
• Keep clean by washing with soap frequently.
• Don’t share food, drinks, or personal items such as toothbrushes.
• Cover your mouth when you sneeze or cough.
How to Prevent the Spread of Disease

• When you are outdoors:
  • wear long-sleeved shirts and pants in long grass
  • use insect repellant when necessary
  • avoid contact with animals that behave strangely
  • avoid drinking and swimming in remote waters
Bellringer

• List as many infectious diseases as you can. What type of pathogen do you think causes each of the diseases in your list?
Objectives

• **State** why diseases affect everybody.
• **Identify** two bacterial diseases, and describe their symptoms and ways that they are spread.
• **Identify** two viral diseases, and describe their symptoms and ways that they are spread.
• **List** examples of fungal, protozoan, and parasitic infections, and describe their symptoms.
• **Name** two organizations in your community that help treat and prevent the spread of infectious diseases.
Diseases Affect Everybody

- No matter how healthy we are, we all become ill from diseases sometimes.
- There are so many pathogens in so many places it is impossible to avoid them.
- The best defense against pathogens is avoiding behaviors that increase our chances of infection.
The number of school days missed each year in the United States because of the flu: 38 million

The amount that is spent in medical costs and lost work each year in the United States because of foodborne illnesses: $5 to $6 billion

The amount the United States spends each year to treat infectious diseases: $120 billion
Common Bacterial Diseases

- **Tetanus** causes severe muscle spasms. It can enter the body through cuts or wounds. Vaccinations are the best form of prevention.

- **Strep throat** causes a sore throat and spots on the tonsils. It is spread by contact with mucus. The best prevention is avoiding contact with infected people.
Common Bacterial Diseases

- **Meningitis** causes inflammation of membranes around the brain and spinal cord. It is spread by contact with mucus or saliva. There are some vaccines for meningitis.

- **Sinus infections** cause headaches, mucus, and pressure in the head. They are spread by contact with mucus. Prevention includes avoiding infected people and avoiding irritants and allergens in the air.
Common Bacterial Diseases

- **Salmonellosis** causes headaches, stomach cramps, diarrhea, and nausea. It is spread by eating food from an infected animal or food contaminated by an infected person. Prevention involves proper refrigeration, cooking, and handling of food.
### Common Viral Diseases

<table>
<thead>
<tr>
<th>Type</th>
<th>Symptoms</th>
<th>Transmission</th>
<th>Prevention</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flu</td>
<td>headache, sore muscles, sore throat, fever, vomiting, fatigue, and cough</td>
<td>spread by contact with saliva or mucus of an infected person and by personal contact</td>
<td>vaccination and avoiding contact with infected person</td>
<td>rest and plenty of fluids; no specific treatments; see doctor if symptoms become severe</td>
</tr>
<tr>
<td>Cold</td>
<td>scratchy, sore throat; sneezing and runny nose; and mild cough</td>
<td>spread by contact with saliva or mucus of an infected person</td>
<td>washing hands regularly and avoiding contact with infected person</td>
<td>rest and plenty of fluids; no specific treatments; see doctor if symptoms become severe</td>
</tr>
<tr>
<td>Mumps</td>
<td>pain and swelling of glands in the throat, fever, and headache</td>
<td>spread by contact with infected airborne droplets and personal contact</td>
<td>vaccination</td>
<td>see doctor; rest and plenty of fluids; no specific treatments</td>
</tr>
</tbody>
</table>
### Common Viral Diseases

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<th>Type</th>
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<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td>fatigue, runny nose, cough, slight fever, small white dots in mouth, and rash covering body</td>
<td>spread by contact with saliva or mucus of infected person</td>
<td>vaccination</td>
<td>see doctor; rest and plenty of fluids; no specific treatments</td>
</tr>
<tr>
<td>Mononucleosis</td>
<td>fever, swollen lymph nodes, sore throat, and weakness</td>
<td>spread by contact with saliva or mucus of an infected person</td>
<td>avoiding drinking from the same glass and eating from the same food as other people</td>
<td>see doctor; rest and plenty of fluids; no specific treatments</td>
</tr>
<tr>
<td>Hepatitis</td>
<td>inflammation of the liver, jaundice (yellowing of the skin), fever, and darkening of the urine</td>
<td>spread by contact with bodily fluids of infected person and by eating infected food or water</td>
<td>vaccination for hepatitis A and B, washing hands regularly, and avoiding contact with infected person</td>
<td>see doctor; rest and medications for hepatitis A; no cure for hepatitis B and C</td>
</tr>
</tbody>
</table>
Other Common Diseases

- **Fungal infections** include Athlete’s foot, jock itch, and ringworm. These often occur when the fungus contacts warm, moist skin. Prevention involves good personal hygiene and keeping clothes dry.
- **Malaria** is the most widespread and serious protozoan disease. It is spread from person to person via mosquitoes. Malaria can be prevented and treated with antimalarial medicines.
Other Common Infections

- **Parasitic infections** include hookworms and tapeworms inside the body, and lice, leeches, ticks, and fleas on the body.
- A person can contract parasites by eating infected food, drinking infected water, contacting infected soil, and by being bitten by infected insects.
International air travel has made it easier for diseases to spread from country to country.
The National Institute of Health (NIH) and Centers for Disease Control (CDC) track the spread of diseases and watch for new diseases entering the country.
Public health organizations throughout the world fight diseases through vaccinations and treatments.
End of Chapter 13 Show