LESSON 2

Common Infectious Diseases

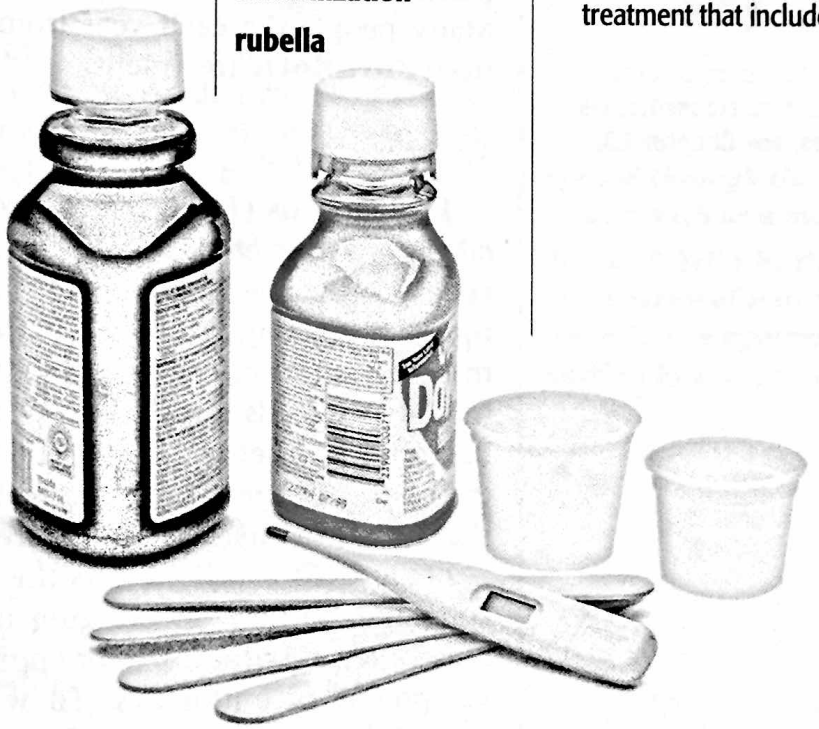
Some 40 types of infectious disease, including the common cold and the flu, commonly occur in the United States. Many of them are preventable or can be treated with medication. In this lesson, you will learn about some of these diseases, their causes and symptoms, and how to treat them.

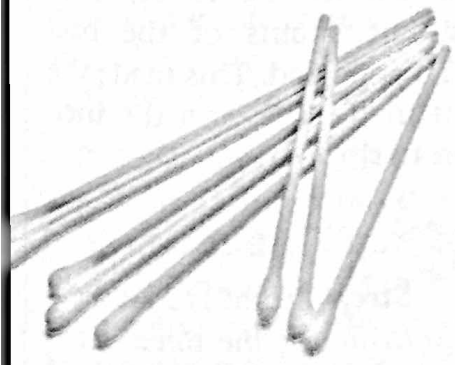
HEALTH TERMS

pneumonia
tuberculosis (TB)
strep throat
vaccine
immunization
rubella

HEALTH CONCEPTS

- New cases of infectious diseases once believed to be stamped out are recurring.
- Although some infectious diseases are better understood than others, all have a well-defined course of treatment that includes rest.





Respiratory Infections

Respiratory tract infections are infections of the breathing passages, which range from the nose to the alveoli of the lungs. Most of these illnesses are caused by viruses or bacteria.

Common Cold

The common cold is a viral infection that causes inflammation of the mucous membranes lining the nose and throat. Its symptoms include a stuffy, runny nose, sneezing, and sometimes a sore throat and headache. Most colds are contracted by breathing in virus-containing droplets that have been sneezed or coughed out by an infected person. Another method of transmission is rubbing the eyes or nose with fingers that have picked up the virus by hand-to-hand contact or by handling contaminated objects.

HEALTH Online

"I've got the flu" is a commonly heard complaint, especially during the winter. Links at **health.glencoe.com** provide detailed influenza information, including symptoms and treatments. Identify the three types of influenza viruses.

hot link

antibiotic For more information on the antibiotic medicines and their uses, see Chapter 23, page 513.

Most colds clear up within a week or so. There is no cure. The best treatment for a cold is rest, maintaining proper nutrition, and drinking plenty of fluids.

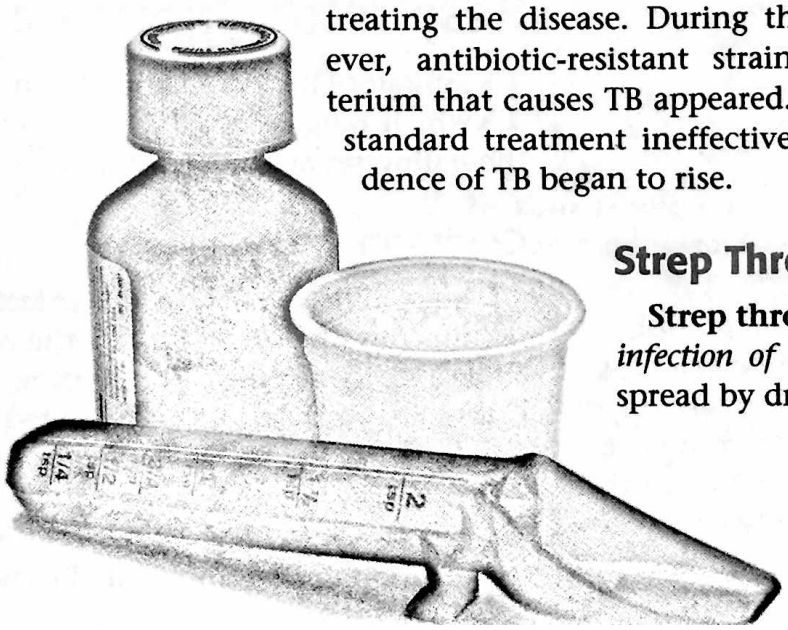
Influenza

Influenza is a viral infection of the respiratory tract. Symptoms of the flu include chills, fever, headache, muscle ache, and weakness. Like the common cold, flu is spread by virus-infected droplets coughed or sneezed into the air by an infected person. Major outbreaks of the flu tend to occur every few years, usually in the winter. Treatment for the flu is the same as for the common cold—rest, proper nutrition, and drinking plenty of fluids. Secondary bacterial infection may accompany the flu, particularly in the elderly and people with lung or heart problems. Flu may then develop into **pneumonia** (noo-MOHN-yuh), *a serious inflammation of the lungs.* Many people die each year from pneumonia. Secondary infections need **antibiotic** treatment.

Tuberculosis

Tuberculosis (TB) is *a highly contagious bacterial infection that most often affects the lungs.* TB is spread by airborne droplets produced by coughing or sneezing. The bacteria breathed into the lungs then multiply. In the majority of cases, the body's immune system stops the infection and healing takes place. When this does not happen, the infection spreads through the lymphatic system to the lymph nodes. Bacteria may then enter the bloodstream and spread to other parts of the body. In some people, the bacteria become inactive and may stay that way for years. When they are reactivated, damage may occur.

Because TB usually affects the lungs, the main symptoms include coughing (sometimes bringing up blood), chest pain, shortness of breath, fever, sweating, poor appetite, and weight loss. Before the development of antibiotics, TB was a major cause of death in the United States. Modern medicines have proved highly effective in treating the disease. During the 1980s, however, antibiotic-resistant strains of the bacterium that causes TB appeared. This made the standard treatment ineffective, and the incidence of TB began to rise.



Strep Throat

Strep throat is *a bacterial infection of the throat.* It is spread by droplets coughed

Infections caused by bacteria can be treated with antibiotic medications.

ACTIVITY ***Name as many diseases as you can that are commonly treated with antibiotics.***

or breathed into the air. Symptoms may include a sore throat, fever, a general feeling of illness, and enlarged lymph nodes in the neck. An untreated strep throat infection may lead to serious complications, such as inflammation of the kidneys or rheumatic fever, which can cause permanent heart damage. Strep throat can be cured with antibiotics.

Infectious Diseases of the Nervous System

The nervous system is subject to a variety of infectious diseases. Some of these can have serious consequences if not caught and treated at an early stage.

Encephalitis

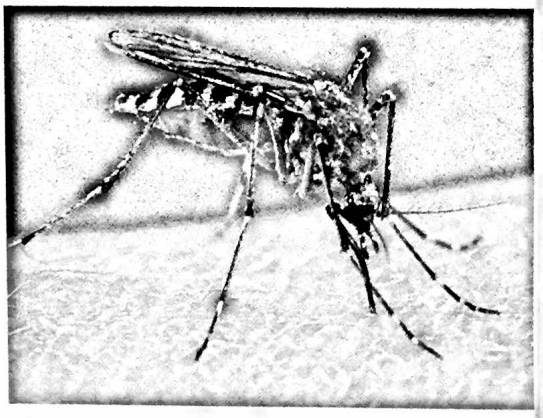
Encephalitis is an inflammation of the brain, usually caused by a virus carried by mosquitoes. Encephalitis often starts with a headache and fever. Untreated, it can progress to hallucinations, confusion, paralysis, and disturbances of speech, memory, behavior, and eye movement. There is a gradual loss of consciousness and sometimes coma. If encephalitis is caused by the herpes simplex virus, the antiviral medicine acyclovir may be effective. When the disease is caused by other viral infections, there is no known treatment.

Meningitis

Meningitis is an inflammation of the meninges, the membranes that cover the brain and spinal cord. Viral meningitis is relatively mild, but meningitis caused by bacterial infection is life-threatening. The organisms that cause meningitis usually reach the meninges through the bloodstream from an infection elsewhere in the body. The main symptoms are fever, severe headache, nausea and vomiting, sensitivity to light, and a stiff neck. In viral meningitis, the symptoms may resemble those of the flu. Viral meningitis requires no treatment. Bacterial meningitis is treated with antibiotics.

Poliomyelitis

Poliomyelitis (POHL-ee-oh-my-uh-LY-tuhs), more commonly known as *polio,* is an infectious disease of the central nervous system caused by a virus. In serious cases, the disease may lead to extensive paralysis, including paralysis of the muscles used in breathing, and death. During the mid-1950s, medical researchers Jonas Salk and Albert Sabin, working independently, each developed a polio **vaccine**—*a preparation based on a weakened or dead pathogen that provides immunity by causing the body to produce antibodies to the pathogen.* These new wonder medicines all but eliminated the disease from the United States and Europe. However, the disease has begun to reemerge among people who have not been vaccinated against it.



Certain diseases can be spread through the bite of insects such as a mosquito.

ACTIVITY ***Tell why the protective barrier of your skin is not effective against diseases carried by mosquitos.***

Measles

Measles is a highly contagious viral disease characterized by fever and a rash that covers the entire body. Measles mainly affects children but can occur at any age. The illness starts with a fever, runny nose, sore eyes, and cough. After three to four days, a red rash appears. The most common complications of measles are ear and chest infections. Prevention of the disease is important, because measles can have rare but serious complications. One of these is encephalitis, which was discussed earlier in this lesson.

Measles was largely eliminated through widespread **immunization,** *a program whereby communities or other large populations are systematically made immune to a disease.* During the 1990s, however, there was a brief rise in incidence of the disease because of a drop in Federal funding for immunization programs.

A viral disease with similar symptoms, **rubella,** or *German measles,* causes only a minor infection in children. However, the disease has serious consequences when it affects a woman in the early months of pregnancy. The virus may infect the fetus and cause a range of severe birth defects.

Mononucleosis

Mononucleosis (mon-oh-noo-klee-OH-sis)—or *mono*—is a viral infection common among young people in their teens. Its symptoms include chills, fever, sore throat, fatigue, and swollen lymph nodes. Mononucleosis spreads primarily through direct contact, which has given it its popular name, "the kissing disease." Once in the body, the virus multiplies in the lymphocytes. When infected with the virus, the lymphocytes change in appearance. Complete bed rest is needed in the care of mono. Treatment and recovery can take three to six weeks.

Hepatitis

Hepatitis is an inflammation of the liver. Toxic hepatitis may be caused by certain drugs, chemicals, or poisons. The most frequent cause of hepatitis is viral infection. The most obvious symptom is jaundice—yellowing of the skin and the whites of the eyes. Other symptoms include fever, nausea, loss of appetite, pain in the abdomen, aching muscles, and sometimes joint pain. In severe cases, hepatitis can result in permanent liver damage. Symptoms usually appear three to four weeks after exposure to the virus and last from two to six weeks. There are three main types of viral hepatitis.

- **Hepatitis A.** Hepatitis A results from eating food or drinking water that has been contaminated with the virus from an infected person's feces. Many cases occur among people who have traveled to areas where standards of hygiene are low.

- **Hepatitis B.** Hepatitis B is found in all body fluids of an infected person, especially blood. Hepatitis B used to be spread mainly by contaminated blood transfusions and blood products. However, tests that detect the virus in the blood have helped eliminate transfusion as a means of transmission. Contaminated medical instruments, sexual contact with an infected person, and hypodermic needles shared by infected drug users are the main ways hepatitis B is spread. Hepatitis B is more serious than hepatitis A. In some cases, the virus may lead to a chronic infection and eventually to liver damage.
- **Hepatitis C.** Like hepatitis B, hepatitis C is spread through infected blood. Discovered in 1989, hepatitis C can cause liver cancer. The virus can be detected in the blood, and blood is now screened before transfusion.

As with most other viral infections, there is no cure for hepatitis, although a vaccine for hepatitis B is now available. The treatment for hepatitis is rest, proper nutrition, and ingesting plenty of fluids.

The best way to treat a cold is also the best way to prevent it—rest, good nutrition, and drinking lots of fluids.

ACTIVITY ***Explain why drinking fluids is important when you have a cold or other infectious disease.***

Did You Know?

- Reye's syndrome is a rare but sometimes fatal illness that occurs in children after certain viral infections such as flu. Although its exact cause is unknown, there seems to be a tie-in with taking aspirin. Therefore, it is recommended that children and teens under 18 avoid aspirin.