

Lifestyle Diseases

When people hear the word *disease*, they often think of a condition that is contagious, or “catching.” Yet, one of the greatest threats today is a group of *diseases that are not transmitted by means of a pathogen*. While you cannot “catch” a heart attack or “come down” with a stroke, these and other **noninfectious diseases** are linked to real risk factors.

HEALTH TERMS

noninfectious diseases

cardiovascular diseases (CVDs)

hypertension

arteriosclerosis

angina pectoris

fibrillation

congestive heart failure

stroke

HEALTH CONCEPTS

- Many cardiovascular diseases relate to a person’s habits and lifestyle.
- Adopting positive habits now, while you are young, can help set you on the road to good health for life.

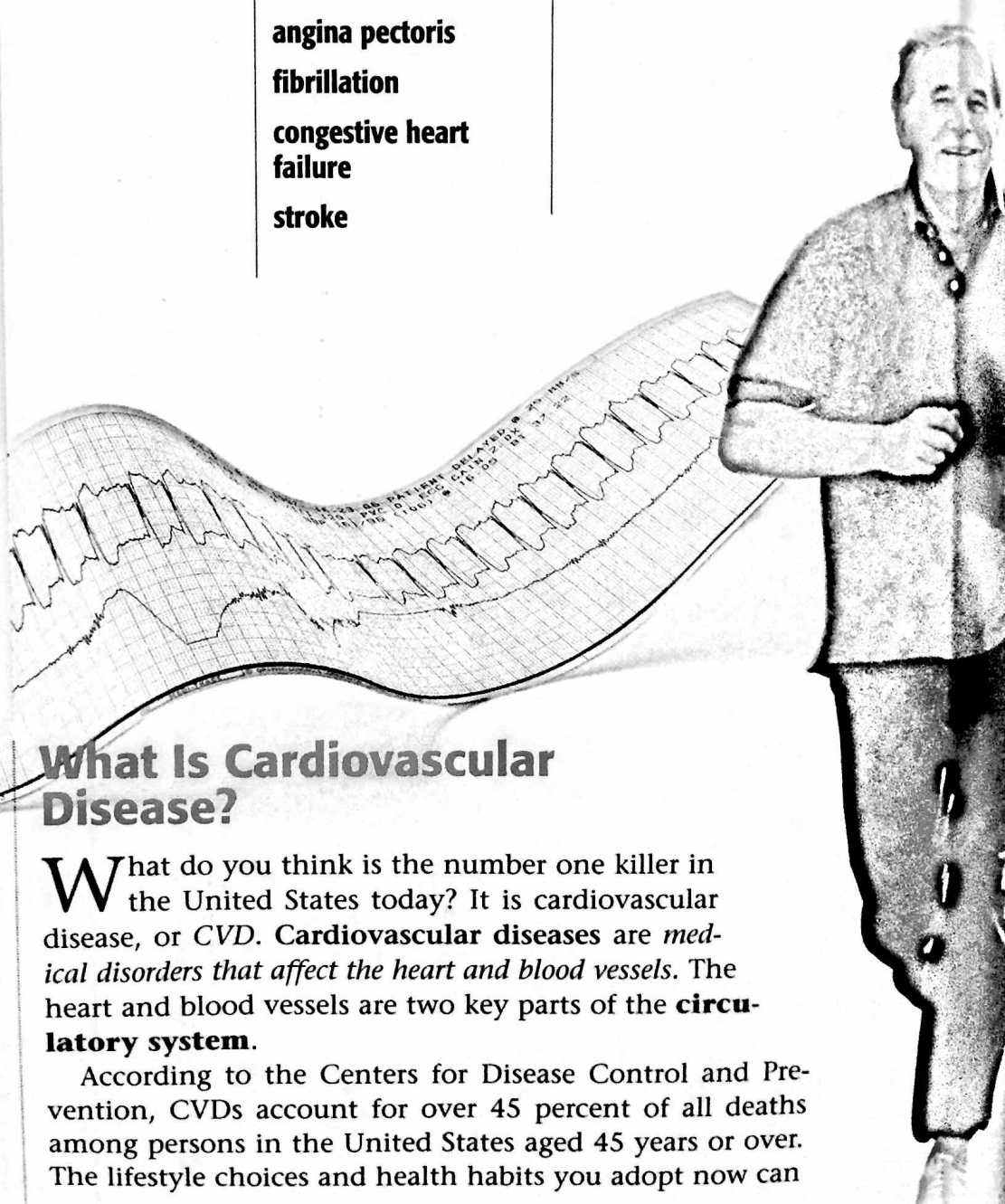
What Is Cardiovascular Disease?

What do you think is the number one killer in the United States today? It is cardiovascular disease, or *CVD*. **Cardiovascular diseases** are *medical disorders that affect the heart and blood vessels*. The heart and blood vessels are two key parts of the **circulatory system**.

According to the Centers for Disease Control and Prevention, CVDs account for over 45 percent of all deaths among persons in the United States aged 45 years or over. The lifestyle choices and health habits you adopt now can

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circulatory system For more information on the circulatory system and its functions, see Chapter 17, page 388.



have a direct influence on whether you will be a candidate for a CVD in the future.

Risk Factors for Cardiovascular Disease

A number of risk factors have been identified that increase a person's chances of developing a CVD. Five of these risk factors—heredity, ethnicity, gender, age, and environment—are beyond a person's control.

- **Heredity.** A tendency toward heart disease runs in families. If one or both parents had a CVD, one's chances of developing it are higher. Children of parents with **hypertension**, or *high blood pressure*, are also more likely to develop this CVD.
- **Ethnicity.** Some ethnic groups are at greater risk than others for developing CVDs. For example, African Americans are twice as likely as whites to develop high blood pressure. The reasons for this remain unknown at present.
- **Gender.** Males have a greater risk of heart disease and stroke than females. At the same time, the latest studies indicate that heart attack is the number one killer among American women and that their chances of survival are lower than those of men.
- **Age.** Risk of CVDs increases with age. Heart attack death rates increase markedly after the age of 45, with 55 percent of all heart attack victims being 65 or older. Risk of stroke also increases dramatically with age.
- **Environment.** Environmental factors such as smog are beyond your control, another form of air pollution—tobacco smoke from another person's cigar, pipe, or cigarette—is often avoidable. Stress, likewise, is a controllable environmental risk factor.



Behavior

Although the factors identified in the previous section are beyond the individual's ability to control, a fifth risk factor is not. That factor is behavior. Making the right healthful choices now, while you are young, can reduce your risk of developing a CVD later in life. These choices include ample physical activity, electing not to smoke, and moderation and balance in your food selections. Because of the link between lifestyle and CVDs, these diseases are sometimes referred to as "lifestyle diseases."

Types of Cardiovascular Diseases

The heart, blood, and arteries are the principal parts of the circulatory system. When these parts work together properly, the circulatory system runs efficiently. When a problem affects one part, the entire system is threatened.

Hypertension

Blood pressure is the force of blood against the walls of blood vessels as blood flows through the circulatory system. The force is created by the contraction of the heart muscle and the resistance of the vessel walls. Normal blood pressure varies with age, height, weight, and other factors. If a person's blood pressure stays above his or her

normal pressure, the person is said to have hypertension. An estimated 60 million Americans suffer from hypertension, which is both a disease and a causative factor in other CVDs. Because an individual may show no symptoms in the early stages, hypertension often goes undetected. Hypertension is, therefore, known as the "silent killer."

In many cases, the exact cause of hypertension is not known. However, many factors have been identified as being related to it, including the uncontrollable risk factors noted earlier. Controllable factors include obesity, alcohol use, inactivity, smoking, and excessive intake of salt or sodium.

Hypertension cannot be cured but can be controlled through basic lifestyle changes, such as eating well, losing excess weight, and exercise. In more extreme cases, medications are sometimes prescribed.

Diseases of the Arteries

At birth, the lining of the blood vessels is smooth. Over the years, fatty deposits, called *plaque*, build up along the inner lining of the arteries. This buildup is due mainly to food choices. If this buildup is permitted to continue, **arteriosclerosis** (ahr-tir-ee-oh-skluh-ROH-suhs), or *hardening of the arteries*, occurs. Arteriosclerosis is a condition in which the walls of the arteries become thick and lose their elasticity. It is the most common cause of death in the United States. Hypertension is a factor that contributes to arteriosclerosis.

As fatty deposits accumulate, blood vessels narrow. This condition, called *atherosclerosis* (ath-uh-roh-skluh-ROH-suhs), can result in blockage of the arteries. Foods high in fat and **cholesterol** are key contributing factors to atherosclerosis.

Diseases of the Heart

When atherosclerosis becomes severe enough, the blood vessels leading to the heart become blocked. Normal oxygen supply is cut off. The heart sends out a warning in the form of **angina pectoris** (AN-juh-nuh PEK-tuh-ris), or *pain and tightness in the chest caused by the lack of oxygen to the heart*. Angina is like an SOS from the body warning that the heart is in distress. Angina pain usually lasts a few minutes. Treatment includes medications that relax the blood vessels.

HEART ATTACK

If the distress of angina continues over time, eventually heart attack occurs. A heart attack is caused by insufficient oxygen and nutrients to the heart muscle cells. One and a half million people in the United States each year suffer heart attacks.

A heart attack can occur at any time and usually happens without warning. However, immediate response to the early signs, which include discomfort in the center of the chest, can mean the difference between life and death. The sensation of a heart attack may be one of pressure, fullness, squeezing, or aching. This distress may extend into one or both arms, the neck, jaw, upper abdomen, and even the back.

HEALTH
Online

Are you "heart smart"? Visit health.glencoe.com to learn how to lower your risk of heart disease and recognize warning signs of heart attack and stroke. Take an online quiz to see how much you have learned.

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cholesterol For more information on the risks associated with elevated cholesterol levels, see Chapter 5, page 106.

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cardiopulmonary resuscitation (CPR) For more information on the lifesaving technique of cardiopulmonary resuscitation (CPR), see Chapter 35, page 781.

▼ **Early signs of a heart attack can include a tightness in the chest, sensation in the arms or back, and shortness of breath.**

ACTIVITY List the causes of heart attack and of congestive heart failure.



Nausea, vomiting, sweating, and shortness of breath may accompany the attack. A person with these symptoms should seek medical attention immediately.

Depending on the amount of tissue death, a heart attack can cause death or a decrease in heart function. An immediate cause of death in many heart attacks is **fibrillation**—*the rapid ineffective beating of the heart in one of two chambers called ventricles*. Ventricular fibrillation is also known as “cardiac arrest.” When this occurs, **cardiopulmonary resuscitation (CPR)** should be initiated as soon as possible.

Heart attack is related to many risk factors, such as high levels of cholesterol in the blood. Cholesterol builds up inside the scarred arteries, which can lead to fatal blockages. Studies also link excess levels in the blood of *homocysteine* (hoh-moh-SIS-teen), a potentially deadly amino acid, to heart disease. Stress, another major risk factor, can increase other existing risk factors, such as overeating, smoking, and hypertension. People with Type A personalities may also be at higher risk.

CONGESTIVE HEART FAILURE

Heart attack is an immediate event in response to stress on the heart. Sometimes the result of years of arteriosclerosis and hypertension result not in heart attack but in **congestive heart failure**, *a slow, gradual weakening of the heart muscle from overwork*. Congestive heart failure can also be brought about by the use of certain illegal drugs.

Stroke

Sometimes arterial blockage affects the blood supply to the brain. When the blockage is severe, **stroke**—*an interruption of the flow of blood to any part of the brain*—may occur. Stroke can affect different parts of the body. The warning signs of stroke are:

- sudden weakness or numbness of the face, arm, and leg on one side of the body
- loss of speech, or trouble in speaking or understanding people
- sudden dimness or loss of vision, particularly in only one eye
- unexplained dizziness, unsteadiness, or sudden falls

There are various causes of stroke. One of the most common is the blocking of a cerebral artery by a blood clot, or *thrombus*, that forms inside the artery. Sometimes a diseased artery in the brain can burst and flood the surrounding brain tissue with blood. This damaging condition, called a *cerebral hemorrhage* (suh-REE-bruhl HEM-uh-rihj), is more likely to occur when a person suffers from a combination of atherosclerosis and hypertension.

Treating Cardiovascular Diseases

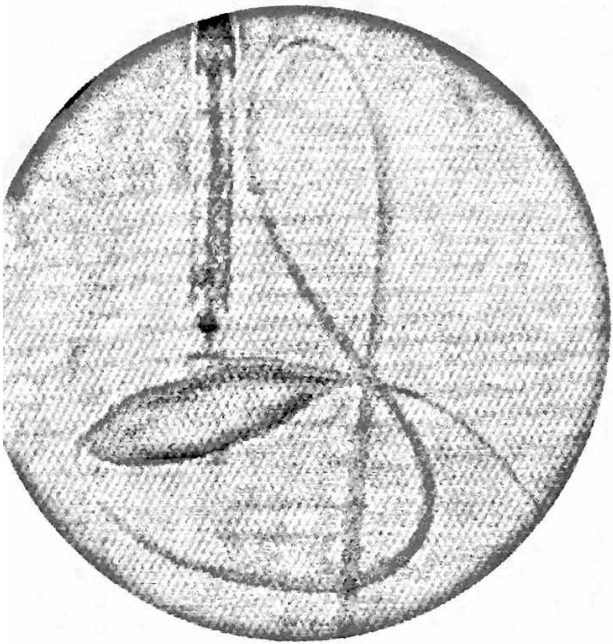
In recent decades there have been amazing advances in treating heart disease. These include new instruments and techniques for measuring electrical activity of the heart and the extent of the disease, as well as new surgical procedures.

- **Electrocardiogram.** An electrocardiogram (ih-lek-troh-KAR-dee-uh-gram)—or *EKG*—produces a graph of the electrical activity of the heart's rhythm. An EKG can help detect the nature of a heart attack and how the heart is behaving.
- **Radionuclide (RAY-dee-oh-NOO-klyd) imaging.** This process includes several tests that involve the injection of substances called *radionuclides* into the blood. Following the progress of the radionuclides on a computer screen, technicians are able to determine how much blood is being supplied to the heart, how well its chambers are functioning, and whether any part of the heart has been damaged by heart attack.
- **Phonocardiography (FOHN-uh-kar-dee-OG-ruh-fee).** This process involves placing a microphone on a person's chest to record heart sounds and signals, which are transferred through photography to graph paper. A professional can then examine the tracings for heartbeat irregularities.
- **Coronary angiography (KOR-uh-nayr-ee an-jee-OG-ruh-fee).** This procedure is used to help evaluate the extent of coronary artery disease. This procedure uses a *catheter*, a thin, flexible tube that can be guided through blood vessels to the heart. When dye is injected into the catheter, motion X rays can be taken, by which narrow or obstructed areas of the heart can be detected.
- **Artificial pacemaker.** If the heart's natural pacemaker fails, an artificial one is implanted in the chest and wired to the heart. The pacemaker can be set to work on demand when the natural heartbeat is too slow or at a fixed rate to work all the time.
- **Magnetic resonance imaging (MRI).** This test uses powerful magnets to look inside the body. Images of the heart muscle are transferred to a computer, allowing technicians to identify damage from a heart attack and diagnose certain congenital heart defects.

Surgical Procedures

Many surgical procedures have saved the lives of people with heart problems. Only since the middle of the twentieth century, however, have these procedures been available. Some, such as the implantation of artificial hearts and blood vessels, are still on the cutting edge. Procedures currently in use include:

- **Heart transplant.** If a patient's heart is badly damaged by heart disease, doctors may remove the weak heart and replace it with a heart from a person who has recently died.



▲ **Balloon angioplasty inside a blocked artery will open a path for blood flow.**

ACTIVITY *What measures can you take to keep your arteries free of plaque buildup?*

- **Coronary bypass surgery.** Coronary bypass surgery creates detours around obstructed or narrowed coronary arteries so that more blood can reach the heart. In this operation a large vein from the patient's leg is grafted onto the heart. This allows blood to flow to the area that was not getting enough blood.
- **Balloon angioplasty.** Balloon angioplasty involves threading a balloon-tipped catheter through the body to the site of the blockage. As the balloon is inflated, it pushes the plaque against the artery wall, opening a path for the blood to flow through.
- **Heart valve surgery.** Valves control the proper flow of blood through the heart. Defective valves may be present at birth or develop later in life. A valve may be too tight, which can restrict the flow of blood, or it may not close tightly enough, which can cause blood to flow backward. A surgical procedure replaces a defective valve with an artificial one made of metal or plastic.

Prevention of Cardiovascular Disease

Adopting healthful habits now, while you are young, can help prevent your risk of heart disease in the future. Practice the following:

- Avoid the use of tobacco products, alcohol, and drugs.
- Reduce your intake of cholesterol. Choose an eating plan that has plenty of vegetables, fruits, and grain products.
- Maintain a weight that is healthful for you.
- Limit your intake of salty foods. Avoid adding salt to food.
- Get plenty of physical activity.
- Manage stress in your daily life.