

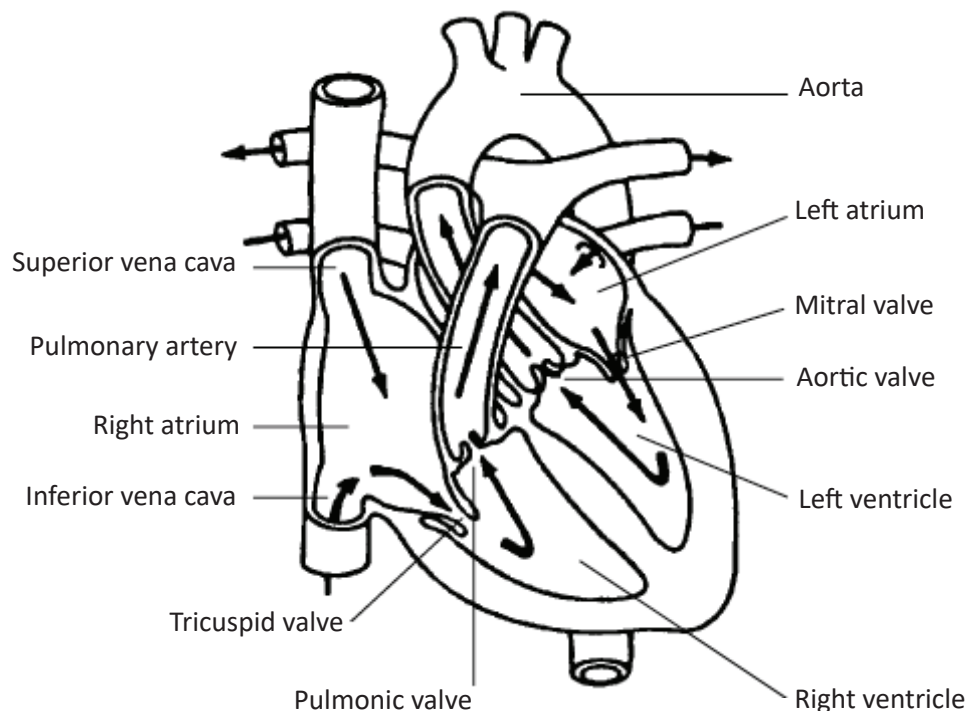
Your Heart and How It Works

If you have questions, ask your physician or nurse.

The heart is the largest muscle in the human body. It is about the size of a closed fist. The average heart beats 100,000 times a day, pumping about 2,000 gallons of blood. The right side of the heart pumps blood to the lungs where it gets oxygen; the left side of the heart then pumps the blood out to all parts of the body.

The heart has 4 chambers that pump the blood. The 2 upper chambers are the right atrium and left atrium. The 2 lower chambers are the right ventricle and left ventricle (Figure 1).

Figure 1

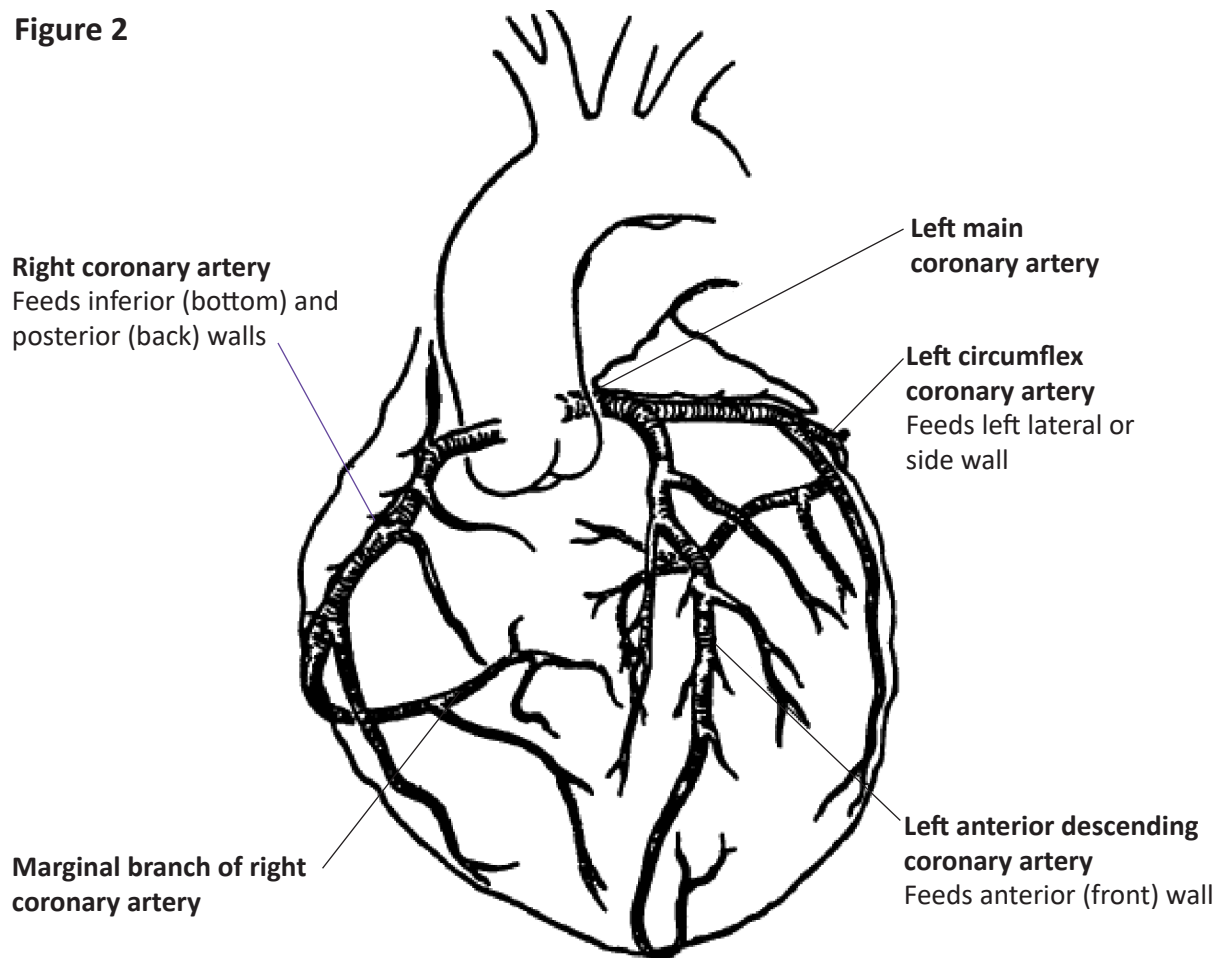


There are 4 valves in the heart that open and close with each heartbeat. This makes sure the blood flows in only 1 direction. The mitral and tricuspid valves direct the blood from the upper chambers (atria) to the lower chambers (ventricles). The aortic and pulmonary valves then direct the blood flow from the lower chambers out to the lungs and other parts of the body. When the valves close, they make the sound of the heartbeat.

Coronary arteries

The heart, like any other muscle, needs oxygen to do its work well. The coronary arteries are on the surface of the heart (Figure 2). They bring oxygen to the heart muscle.

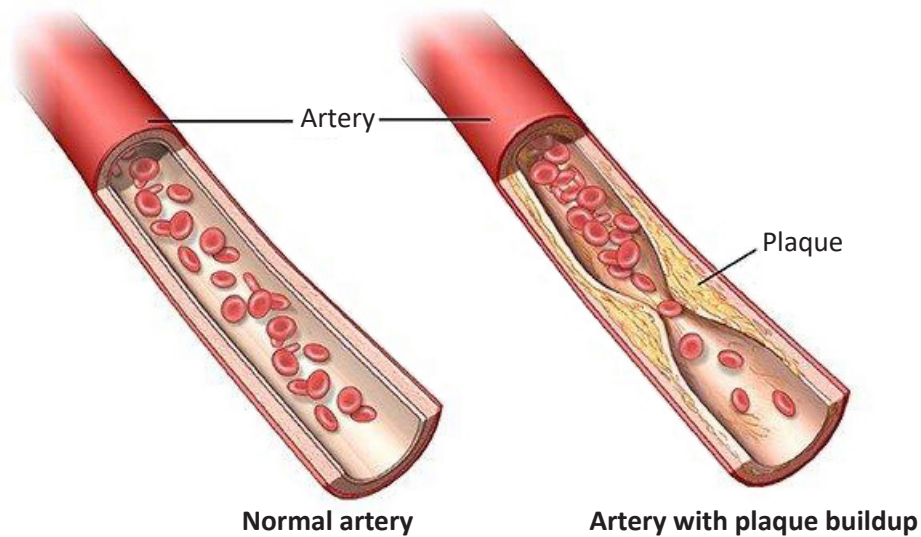
Figure 2



Coronary artery disease

Coronary artery disease (CAD) affects the arteries of the heart. CAD happens when plaque clogs the arteries. Plaque is made up of fat, cholesterol and calcium that collect in the arteries. As plaque builds up, the wall of the artery becomes rough, hard and narrowed over time (Figure 3). This condition is known as atherosclerosis. It decreases blood flow to the heart muscle. When blood flow decreases, the heart muscle does not get the oxygen and nutrients it needs to function at its best. This can cause damage to the heart muscle. CAD is the leading cause of death in the United States.

Figure 3. Atherosclerosis



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Risk factors

Some common risk factors for CAD include:

- Obesity
- Smoking
- Physical inactivity
- High stress
- Unhealthy diet
- Diabetes
- High blood pressure
- Family history of CAD
- High blood cholesterol levels
- Being older than 45 (for men)
- Being post-menopausal (for women)

Except for family history, age and menopause, people can change and control most of these risk factors with a heart-healthy lifestyle.

To learn more about CAD risk factors, go to the American Heart Association at heart.org.

Symptoms

With CAD, you may have 1 or more of the following symptoms:

- Nausea
- Dizziness
- Sweating
- Weakness

- Shortness of breath
- Chest pain or angina
- Skipped or fast heartbeats (palpitations)

Angina

The most common symptom of CAD is angina, a type of chest pain. Angina happens when the heart muscle does not get enough oxygen and nutrients. People with angina may feel these symptoms in their chest:

- A squeezing sensation
- Sharp or crushing pain
- Heaviness, fullness, aching or burning

Angina pain may also move to the shoulders, neck, throat, jaw or back. Angina symptoms often get worse during activity.

Other symptoms of angina may include:

- Nausea
- Sweating
- Difficulty breathing
- Extreme fatigue (tiredness) or weakness

These symptoms are more common in women and patients with diabetes.

Without treatment, angina may lead to a myocardial infarction (heart attack).

Heart attack

A heart attack is an injury to the heart muscle. When plaque breaks in a coronary artery, a blood clot forms around the breakage. It may block the blood flow to the heart muscle. Heart muscle that no longer gets enough blood flow can have permanent damage or tissue death known as scarring. Scarred heart tissue cannot work as it should. This may lead to heart failure, arrhythmias (irregular heartbeats) or death. If untreated, gradual buildup of plaque over time can also cause heart failure and arrhythmias.

If you have signs or symptoms of CAD, call your physician right away. Your physician will want to order tests such as an ECG, echocardiogram, exercise stress test and/or cardiac catheterization for you.

Ask your physician or nurse for more information on how to improve and maintain your health.