



Max Fletcher, gives us an education

Left side

- ◆ The pulmonary vein empties oxygen-rich blood from the lungs into the left atrium.
- ◆ As the atrium contracts, blood flows from your left atrium into your left ventricle through the open mitral valve.
- ◆ When the ventricle is full, the mitral valve shuts. This prevents blood from flowing backward into the atrium while the ventricle contracts.
- ◆ As the ventricle contracts, blood leaves the heart through the aortic valve, into the aorta and to the body.

How Does Blood Flow Through Your Lungs?

Once blood travels through the pulmonic valve, it enters your lungs. This is called the pulmonary circulation. From your pulmonic valve, blood travels to the pulmonary artery to tiny capillary vessels in the lungs.

Here, oxygen travels from the tiny air sacs in the lungs, through the walls of the capillaries, into the blood. At the same time, carbon dioxide, a waste product of metabolism, passes from the blood into the air sacs. Carbon dioxide leaves the body when you exhale. Once the blood is purified and oxygenated, it travels back to the left atrium through the pulmonary veins.

What Are the Coronary Arteries?

Like all organs, your heart is made of tissue that requires a supply of oxygen and nutrients. Although its chambers are full of blood, the heart receives no nourishment from this blood. The heart receives its own supply of blood from a network of arteries, called the coronary arteries.

Two major coronary arteries branch off from the aorta near the point where the aorta and the left ventricle meet:

- ◆ **Right coronary artery** supplies the right atrium and right ventricle with blood. It branches into the posterior descending artery, which supplies the bottom portion of the left ventricle and back of the septum with blood.
- ◆ **Left main coronary artery** branches into the circumflex artery and the left anterior descending artery. The circumflex artery supplies blood to the left atrium, side and back of the left ventricle, and the left anterior descending artery supplies the front and bottom of the left ventricle and the front of the septum with blood.



These arteries and their branches supply all parts of the heart muscle with blood.

When the coronary arteries narrow to the point that blood flow to the heart muscle is limited (coronary artery disease), a network of tiny blood vessels in the heart that aren't usually open called collateral vessels may enlarge and become active. This allows blood to flow around the blocked artery to the heart muscle, protecting the heart tissue from injury.

How Does the Heart Beat?

The atria and ventricles work together, alternately contracting and relaxing to pump blood through your heart. The electrical system of your heart is the power source that makes this possible.

Your heartbeat is triggered by electrical impulses that travel down a special pathway through your heart.

- ◆ The impulse starts in a small bundle of specialized cells called the SA node (sinoatrial node), located in the right atrium. This node is known as the heart's natural pacemaker. The electrical activity spreads through the walls of the atria and causes them to contract.
- ◆ A cluster of cells in the center of the heart between the atria and ventricles, the AV node (atrioventricular node) is like a gate that slows the electrical signal before it enters the ventricles. This delay gives the atria time to contract before the ventricles do.
- ◆ The His-Purkinje network is a pathway of fibers that sends the impulse to the muscular walls of the ventricles, causing them to contract.

At rest, a normal heart beats around 50 to 99 times a minute. Exercise, emotions, fever and some medications can cause your heart to beat faster, sometimes to well over 100 beats per minute.

When you think of heart disease, usually people think of coronary artery disease (narrowing of the arteries leading to the heart), but coronary artery disease is just one type of cardiovascular disease.

Cardiovascular disease includes a number of conditions affecting the structures or function of the heart. They can include:

- ◆ Coronary artery disease (including heart attack)
- ◆ Abnormal heart rhythms or arrhythmias
- ◆ Heart failure
- ◆ Heart valve disease
- ◆ Congenital heart disease
- ◆ Heart muscle disease (cardiomyopathy)
- ◆ Pericardial disease
- ◆ Aorta disease and Marfan syndrome
- ◆ Vascular disease (blood vessel disease)

Cardiovascular disease is the leading cause of death for both men and women. It is important to learn about your heart to help prevent heart disease. And, if you have cardiovascular disease, you can live a healthier, more active life by learning about your disease and treatments and by becoming an active participant in your care.

If you think you are having a heart attack, do not delay. Call for emergency help right away. Do not drive yourself to the hospital. Remember, quick treatment of a heart attack is very important to lessen the amount of damage to your heart.

