

YOUR HEART

A USER'S GUIDE

by Carole Bullock

Reggie Lewis, a star basketball player for the Boston Celtics, died of a heart attack when he was only 27 years old. His sudden death shocked the sports world. How could someone so athletic and youthful be vulnerable to heart disease?

Doctors believed Reggie's heart stopped because of an undiagnosed viral infection that had inflamed the heart.

Fortunately, such deaths among young adults are rare. While heart disease is the nation's No. 1 killer, most heart attacks are caused not by a virus, but by atherosclerosis, a disease that takes years to develop.

From the Greek words *athero* (gruel or paste) and *sclerosis* (hardness), atherosclerosis is a buildup of cholesterol, waste products from cells, calcium, and fibrin, a clotting material found in blood.

In children, this fatty buildup, also called plaque, may begin as a fatty streak along the inside wall of the blood vessels. For some, the disease can progress rapidly and begin to cause problems while they are in their 30s. Most people, however, don't begin to feel symptoms until their 50s or 60s. As the plaque builds up, the arteries become clogged like a stopped-up drainpipe. Plaques can rupture, causing a blood clot that can totally block blood flow to the heart. This causes a heart attack.

But the good news is that you can take steps right now, while you're young, to keep your "pipes" clean.

IN THE BEGINNING

If you look at them closely under the microscope, you can see the tiny cells twisting to a rhythmic beat. These are immature heart cells in the developing baby. Even when they are just a few days old, they are displaying the series of motions that will be needed to pump billions of gallons of blood during a lifetime.

When the heart cells are a few weeks old, they begin to line up and form a tube. Later, the tube folds over on itself, forming four parts, or chambers.

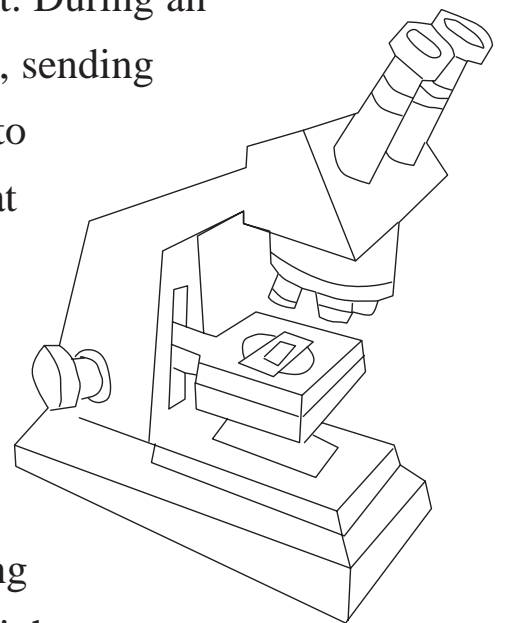
After birth, the heart is still growing. The final developmental step is when the nerves form on the heart. They branch out, connecting with the brain and muscles in the arms and legs and the blood vessels of the circulatory system.

Even while growing, the heart cells continue to beat. During an average lifetime, the heart beats about 2.5 billion times, sending millions of gallons of oxygen- and nutrient-rich blood to keep the body's cells alive. Quite a job for an organ that is about the size of a fist!

HOW THE HEART WORKS

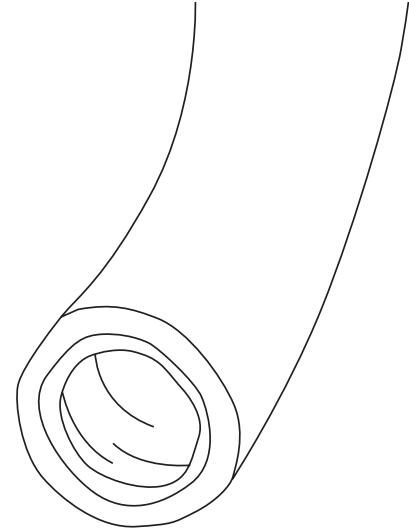
Swish, swish, swish. This is the sound of blood circulating through the body. The rhythmic sound is caused by the heart, which is continuously contracting and relaxing. The heart is made up of two pumps, the right and left, each with its own ventricle and atrium.

When the heart is relaxed, it is actually filling the upper section of the heart, called the atrium. The right atrium receives blood from the body. When the heart is relaxed, the “venous” blood (which appears dark red) flows through to fill the ventricle, the lower chamber of the heart. An electrical signal starts the heartbeat by causing the atrium to contract, which tops off the filling of the ventricle. The heart's natural pacemaker makes sure the heart is beating at just the right speed.



Once filled, the right ventricle contracts and the blood is pumped into the lungs, where it gives up the carbon dioxide and gets oxygen, which turns it bright red.

A healthy and clean artery



But what happens to the oxygenated blood?

Blood is sent to the lungs by the right side of the heart, but it comes back from the lungs to the left side, and into the left atrium. When filled, the left atrium contracts, sending the blood into the left ventricle. It in turn contracts and sends blood flowing throughout the vast network of blood vessels, nourishing every living organ and tissue in the body. There also are special heart valves that open and close to keep the blood flowing in one direction.

WHEN THINGS GO WRONG

The most common forms of heart and blood vessel problems are heart attacks and strokes. These are usually caused when the blood supply to the heart or brain is severely reduced. When the heart cells are deprived of oxygen and blood, they begin to die, affecting the ability of the heart to pump.

The blockages can be caused by blood clots that have formed in the narrowed arteries. These break up and block the blood flow.

How do arteries become narrowed? Normal aging can cause blood vessels to narrow and stiffen. But this process can be speeded up when there is too much cholesterol in the bloodstream.

The first symptoms of heart disease may include pain in the chest, called angina. This may be caused by plaque growing and thickening in the arteries that will cause a shortage of blood and oxygen reaching the heart. If the narrowed artery becomes completely blocked by a blood clot, a heart attack can occur. Or, if the blockage prevents blood flow to the brain, it can cause a stroke.

WHAT HAPPENS DURING A HEART ATTACK?

A heart attack refers to what happens when the heart stops receiving the blood and oxygen it needs to keep pumping. Heart attacks are most often caused by a clot forming in a narrow part of an artery. But they also may result from spasms in the arteries or from disease within the heart, such as a viral infection, that causes it to beat with an irregular rhythm that does not pump the blood effectively.

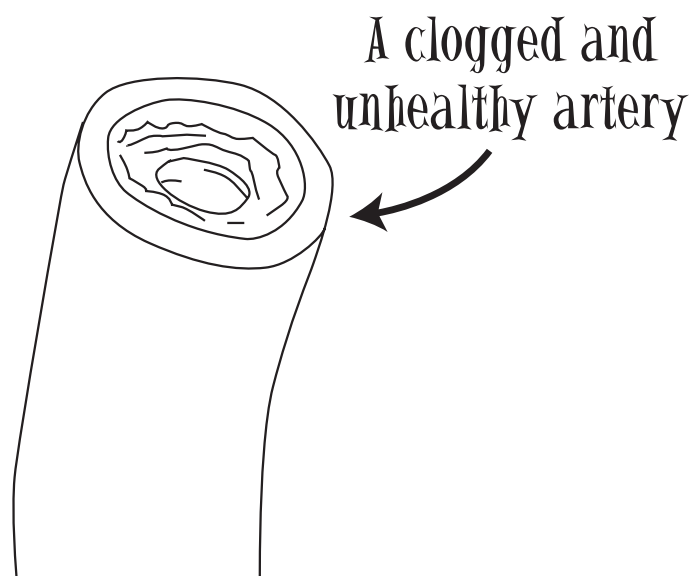
How permanent the damage is from a heart attack will depend on the time elapsed before blood flow returns or normal heartbeat resumes. The longer the heart cells go without blood, the more irreversible the damage to the heart muscle. If the heart is not pumping, then vital organs, including the brain, are not getting blood either. Disability or even death can occur unless a heart attack is treated quickly. Physicians treat heart attacks with clot-busting drugs that dissolve the clot and restore blood flow.

Strokes damage brain cells much the same way a heart attack damages the heart. Strokes can be caused by clots or by a ruptured blood vessel that bleeds into the brain. Either way, the brain does not get the flow of blood it requires to sustain itself and do its job. Because dead brain cells don't replace themselves, strokes can cause permanent injury. They often affect the senses, especially the ability to talk and understand speech. Severe stroke can lead to death.

FOUR STEPS TO HEART HEALTH

Fortunately, there is something you can do to help your heart stay healthy, and you can start today.

How we eat affects our hearts. Eating a diet low in saturated fats and cholesterol often can lower the amount of fatty buildup



inside arteries, but this is just one of the ways. The American Heart Association says there are four major steps that can make a difference in helping to prevent heart disease:

1. Stay away from cigarettes and tobacco smoke.

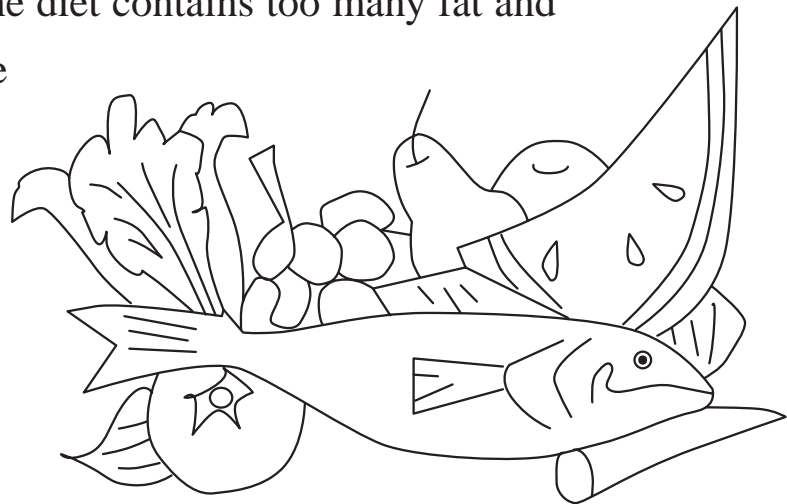
You probably know that tobacco smoke contributes to lung cancer and other diseases, but you may *not* know that it also can damage the blood vessels. Studies show that smokers are more than twice as likely to have a heart attack or stroke as nonsmokers. Even secondhand smoke can increase the risk of heart attack by 30 percent. The message is clear: “If you smoke, quit now. And if you don’t smoke, don’t start.”

2. Watch cholesterol intake.

Cholesterol is a fatty substance, made by the liver, which coats cells to protect them. But it can also be dangerous when too much of it builds up in the bloodstream. This can happen when the diet contains too many fat and cholesterol-rich foods (meat, butter, whole milk, cream, ice cream, cheese, eggs). If too much cholesterol circulates, it will be deposited in arteries, building a wall of plaque inside the blood vessels.

By eating a diet rich in fruits and vegetables (foods from plants do not contain cholesterol) and cutting down on fatty foods, especially foods high in saturated fats, you can help keep your arteries clean of plaque.

Cholesterol levels in the blood are measured by a simple blood test. If levels are too high, a low-saturated-fat, low-cholesterol diet usually is recommended.



3. Keep blood pressure in check.

High blood pressure has earned the name “silent killer” because it causes no symptoms, yet is a major cause of heart and blood vessel diseases, especially heart attacks and strokes.

Blood pressure is the force or pressure exerted by the heart in pumping blood. High blood pressure is a warning that the heart is working harder than normal in pumping blood and extra fluid through your body. But if untreated, it will increase the heart’s workload,

Even children can have high blood pressure. But exercise, choosing low-salt foods (salt can raise blood pressure in some people), and controlling your weight can keep blood pressure in check. Sometimes drugs are needed to control high blood pressure in teenagers, and even in children.

4. Stay physically active.

Studies show that people who have spent their lives being active will be less likely to die from a heart attack. The American Heart Association says just 30 - 60 minutes of moderate exercise most, if not all days of the week can be enough to keep you and your heart fit.

But make sure the exercise you choose is something you will enjoy so it can become a habit. Some people like group sports, such as soccer or baseball. Others prefer solo activities like bicycling, swimming, jogging, or jumping rope.

Remember, the patterns you set early in life—what foods you choose, how active you are—will often stick with you for life.