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| Abstract: | This chapter describes blood circulation. Blood is part of the cardiovascular system which is made up of your heart, blood, and blood vessels. When you breathe in air, oxygen passes through the lungs where blood picks it up. The oxygenated blood travels to the heart, which pumps it through the arteries to other parts of your body. As blood moves through your system, it releases oxygen into tissues and organs. The blood will eventually make it's way back to the heart for another cycle. High blood pressure makes your heart work hard all the time, which can lead to coronary heart disease, clogged arteries, or stroke. INSET: Chapter Overview. (Copyright applies to all Abstracts) |
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Chapter 2: Circulation: The Blood's Superhighway

Your blood is part of your body's cardiovascular system. The cardiovascular system is made up of your heart, blood, and blood vessels. Cardiovascular means the heart (cardio) and circulatory (vascular) system of your body. Your blood vessels include the arteries and veins that carry blood to and from your heart. The heart pumps blood that is full of oxygen and nutrients. Your arteries and veins move the blood around your body to tissues and organs. Your circulatory system also helps your body get rid of waste.

Veins and arteries also are called blood vessels. They're relatively large. Other blood vessels are called capillaries, venules, and smaller arterioles. Your heart moves blood through your blood vessels.

There are two groups of blood vessels in your cardiovascular system. These groups, or pathways, are called the pulmonary circuit and the systemic circuit. Pulmonary blood vessels carry blood back and forth between the lungs and heart. Systemic blood vessels carry blood between the heart and everywhere else in your body.

Ruby, Age 12

Ruby was getting her blood drawn for a test. "Hey," she said to the nurse, "why are the lines on my arm blue if the blood inside is red?" The nurse smiled and said, "Oxygen, Ruby."

How Blood Hitches a Ride in Your Body

Here's what Ruby's nurse meant. When you breathe, your lungs fill with air. Oxygen in the air passes through the air sacs in your lungs, where your blood picks it up. It's now oxygenated blood, or filled with oxygen. The oxygen gives blood its red color. The blood travels to the

heart, which pumps it through the arteries to other parts of your body.

As the blood moves through the circulatory system, it releases oxygen into the tissues and organs. The blood picks up waste carbon dioxide as it releases oxygen. Instead of oxygen, the blood now carries carbon dioxide, which makes the blood look blue.

Veins carry the blood with carbon dioxide back to the heart. The heart pumps the blood back into your lungs, where the carbon dioxide is dropped off. You breathe out the carbon dioxide when you exhale. When you breathe in, your blood picks up more oxygen in your lungs. The ride starts all over on your body's circulation superhighway.

Lars and Fran, Age 15

Lars reached across the cafeteria table and grabbed Fran's potato chips. He tossed some carrot sticks on her tray. "Why are you messing with my lunch?" Fran said.

"Come on," said Lars. "My grandma has high blood pressure, and the doc told her to watch what she eats."

"I'm not your grandma," said Fran, making a face at Lars.

"But I want you around for a long time," said Lars. "And grandma's doc says you're never too young to start preventing HBP."

"It's a good thing I like carrots.... and you," laughed Fran as she nibbled the carrot sticks.

Why High Blood Pressure Is Bad

High blood pressure is bad. People with HBP are three times more likely than other people to get coronary heart disease, or clogged arteries. They are six times more likely to develop heart failure and seven times more likely to have a stroke.

If that's not enough to make you run for the no-salt pretzels, HBP makes your heart work harder. A little hard work in the form of exercise is good for your heart. But HBP makes your heart work hard all the time. Over time, this weakens the heart and arteries.

A heart that's only a little larger than normal might work okay. But a heart that always wrestles with high blood pressure can grow large and weak. You may become tired and weary. Your blood may not move all the way to your feet and hands, making them feel cold. This can lead to swelling of the ankles, feet, and sometimes the entire leg.

Over time, your arteries will harden and scar. Hard, scarred arteries attract fatty deposits faster. Your arteries narrow and become clogged. A blood clot can form in one of your arteries and block blood flow. This can cause a stroke, heart attack, or even death.

Chronic high blood pressure can damage your eyes and kidneys, too. This can occur if the arteries that supply blood to these organs become hard. The blood flow is reduced or cut off, and the lack of oxygen can cause damage.

You can see how important it is to maintain good circulation in your body. Without it, the consequences may become serious.

Did You Know?

The hypothalamus, which is a part of your brain, regulates your body's blood pressure.

Fast Facts

British physiologist Stephen Hales (1677-1761) was the first person to measure blood pressure in the arteries of mammals.

At a Glance

London doctor William Harvey (1578-1657) first wrote about how the heart works and how

blood moves around the human body. People did not fully accept his ideas until the 1800s, when more studies proved his theories.

Advice From Teens

"My older sister had a stroke last year. The doctor said it was a minor one. She still limps a little, but you really can't tell she had a stroke otherwise. We were scared for her for a while, though. Because my sister had a stroke, my family knows the warning signs now. Call 9-1-1 if you have any of these signs or are with someone who has them:

- Numbness or weakness in the face, arm, or leg, especially on one side of the body
- Trouble speaking and understanding
- Trouble seeing
- Trouble walking, or feeling dizzy or off balance
- Painful headache with no reason

--Gerald, age 17

Points to Consider

Place your fingers on the underside of your wrist or on the side of your neck. Can you feel the blood pulsing through your veins? What do you think of that?

Why do you think high blood pressure can make your heart weak?

If you don't have high blood pressure, should you worry about getting it later? Why or why not?

PHOTO (COLOR): Your body has two groups of blood vessels. Some carry blood to the heart, Some carry it away from the heart.

PHOTO (COLOR): If the blood supply to your eyes is cut off, they can be damaged.

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By Susan R. Gregson

#### **Chapter Overview**

Blood is part of your body's cardiovascular system. Cardiovascular means of the heart and circulation.

Blood moves through your heart, lungs, and body to carry oxygen to your muscles and organs.

Everyone needs blood pressure to move blood around his or her body. Some people have high blood pressure, though. This makes their heart work harder.

High blood pressure increases your risk for heart problems and stroke. It can damage your eyes and kidneys, too.

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**Source:** High Blood Pressure (Capstone Press)