

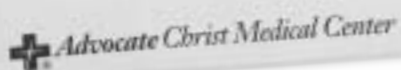
Name _____

Date _____

To: Junior Heart Doc
From: Marc Silver, M.D.
Re: A Look Inside the Heart

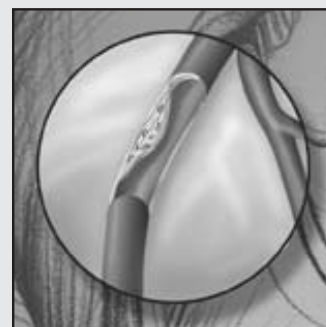
Now that you have reviewed circulation and explored its importance to the body, let's take a closer look at Mr. Harvey's heart to more accurately determine what is wrong with it. We'll look at images of blocked arteries, and then I will introduce you to a special diagnostic tool that cardiologists use to look inside the heart.

Dr. Marc Silver, Cardiologist



Angiography

Notes:



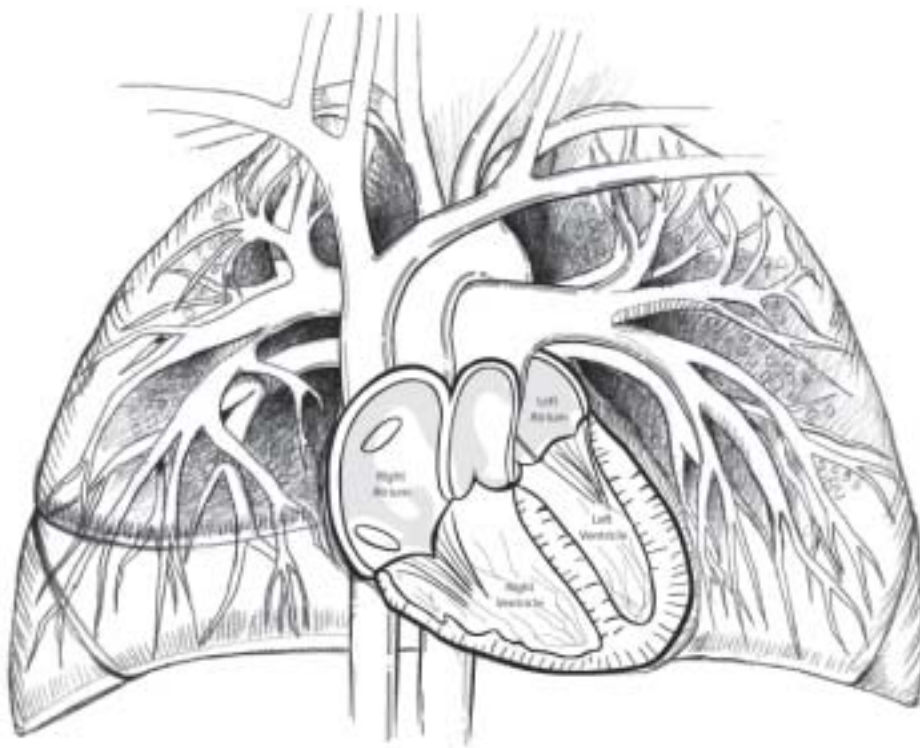
Blockage



Lesson 3: The Heart Has Needs, Too!

Part A: Flow of Blood Through the Heart

Read the steps below, and then number the part of the heart diagram that matches each step of blood flow. Use a red colored pencil to show oxygenated blood flowing through the heart, and a blue colored pencil to show where deoxygenated blood flows through the heart.



1. The right atrium receives deoxygenated blood from the body via a network of veins.
2. A one-way valve provides a pathway for venous blood to flow from the right atrium to the right ventricle.
3. The right ventricle pumps the blood to the lungs.
4. While in the lungs, the blood collects a new supply of oxygen.
5. Freshly oxygenated blood flows to the left atrium through another one-way valve.
6. The blood enters the left ventricle. The thick muscular wall of the left ventricle enables it to perform the major pumping action of the heart.
7. Oxygenated blood is pumped from the left ventricle through the aortic valve and out to the body.
8. The blood is distributed to the entire body via a network of arteries that originate from the aorta.

Notes:

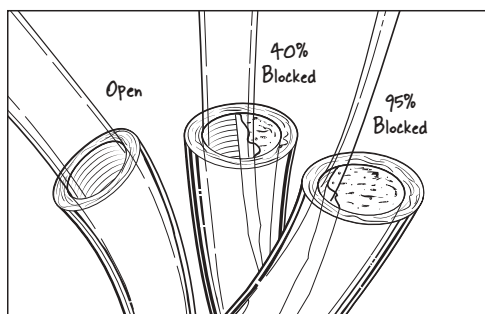




Lesson 3: The Heart Has Needs, Too!

Part C: What Is Heart Disease, and Why Is It Harmful?

In a person with coronary artery disease, the arteries are narrowed by a layer of plaque, which consists of deposits of cells, fat and cholesterol. As more plaque accumulates, the amount of blood reaching the heart muscle is reduced. The heart muscle can suffer damage from lack of blood and oxygen. It may not beat as strongly, it may beat irregularly or it may stop beating altogether.

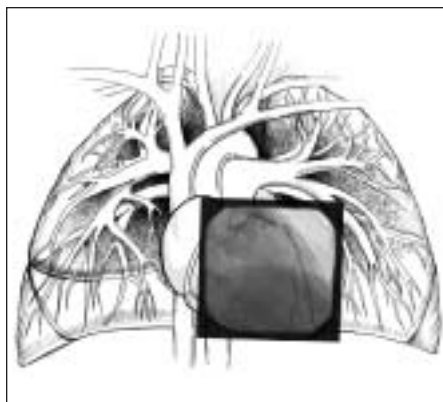


1. Which artery will supply the least amount of blood to the heart muscle?

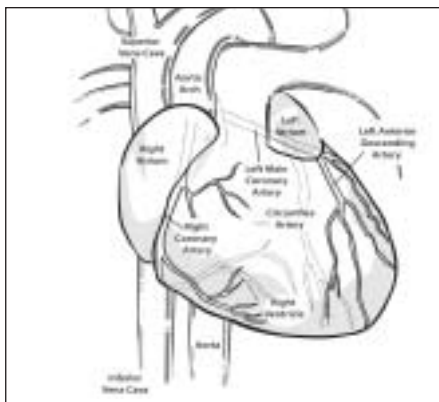
2. Which artery will supply the most amount of blood to the heart muscle?

Part D: Diagnosing Heart Disease

When a doctor suspects that a patient has heart disease, he or she may use a diagnostic tool called angiography. Angiography is a special type of X-ray that allows a close look at the arteries of the heart. A catheter, or flexible tube, is inserted into a large artery in the patient's leg and is threaded up to the aorta. A special fluid called contrast dye is injected into the aorta, and then the X-ray machine captures pictures (angiograms) of dye in the arteries. The doctor can then tell if there is a blockage in any of the arteries that supply blood to the heart muscle.



Look at an angiogram layered over a diagram of the heart.



Shade the area of the heart past the blockage that would receive less blood if there were a blockage in the left main coronary artery.

Notes:





Lesson 3: The Heart Has Needs, Too!

Part E: Reading Mr. Harvey's Angiogram

Note from the Cardiologist:


To: Junior Heart Doc
 From: Marc Silver, M.D.
 Re: Analyzing Angiograms

As a Junior Heart Doc, you are now familiar with the coronary arteries, plaque, heart disease and angiography. Look at Mr. Harvey's angiogram and determine the percentage of blockage. Verify your answer with the three angiograms, in which the percentage of blockage has already been determined.

Patient	Blockage	Artery Affected	Condition	Treatment
A	None	None	Patient is healthy	None needed
B	40%	Left main coronary artery	Patient is developing coronary artery disease	Lifestyle change and medication
C	95%	Left main coronary artery	Patient has coronary artery disease	Invasive treatment
Mr. Harvey				

As a Junior Heart Doc, your next job is to meet with Mr. Harvey to discuss the results of his angiography. Take a few minutes to answer the questions on the next page to prepare for your meeting.

Dr. Marc Silver, Cardiologist

 Advocate Christ Medical Center

Notes:





Lesson 3: The Heart Has Needs, Too!

1. What are the coronary arteries? Why are they important?

2. What is the result of Mr. Harvey's angiography?

3. What would happen if Mr. Harvey's left coronary artery became 100 percent blocked?

4. What part of his heart would this blockage directly affect?

Did You Know?



Coronary artery disease is caused by atherosclerosis (hardening of the arteries). Atherosclerosis occurs when plaque (a fatty substance) forms in the wall of an artery and reduces blood flow to the heart muscle. As plaque builds up, the artery narrows and can become blocked. As a result, the heart doesn't get enough of the oxygen-rich blood it needs.