## Guided Lecture Notes, Chapter 32, The Cardiovascular System

Learning Objective 1. List and describe the major parts of the cardiovascular system. (Refer to **PowerPoint slides 3 to 18**.)

* Define the word *blood*. Explain that it consists of both plasma (mostly liquid) and blood cells.
* Explain and describe the structure of each type of blood cell and the role it plays in the body.
* Using an anatomy chart, point out each of the three layers of a blood vessel, and explain the role of each layer.
* Differentiate between an artery and a vein. Explain the role of the arteries and veins in carrying blood to and from the heart.
* Explain the lymphatic system, its location, function, and structure.
* Describe the structure of the human heart. Start by describing the three layers that form the walls of the heart. Then describe how the heart has four chambers. Explain the role of the four heart valves in ensuring a one-way flow of blood through the heart. Describe the conduction system, and its role in regulating the beating of the heart. Finally, explain that the heart receives oxygen and nutrients from the coronary circulation.
* Use a model of a heart and indicate its various parts and their functions as you lecture.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 2. Discuss the major functions of the cardiovascular system. (**Refer to PowerPoint slide 20**.)

* Discuss the transport of nutrients, oxygen, and waste products in the blood as one of the main functions of the cardiovascular system.
* Explain the pulmonary and systemic circulations.
* Draw and label the pathway/sequence of structures involved in the flow of the pulmonary and systemic circulation.
* Describe the cardiac cycle.
* Describe regulation of temperature as a function of the cardiovascular system.
* Discuss the cardiovascular system’s role in protecting the body from infection and blood loss.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 3. Describe how aging affects the cardiovascular system. (**Refer to PowerPoint slide 23**.)

* Explain that even though there is much we can do to protect our cardiovascular system, some changes will occur simply as a result of the aging process. These changes include less efficient contraction, decreased elasticity of the arteries and veins, and decreased numbers of blood cells.
* Explain how less efficient contraction can affect a person’s cardiovascular functioning.
* Discuss the effect of loss of elasticity on the body’s ability to control blood pressure and flow.
* Explain how the production of blood cells slows as a person ages, and state the implications of this with regard to red blood cells and white blood cells.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 4. Explain how exercise and a healthy lifestyle can lessen the effects of aging on the cardiovascular system. (**Refer to PowerPoint slides 22**, 24 and 25.)

* Discuss the suggestions given by the American Heart Association for “Life's Simple 7.” Point out that perhaps more than any other organ system, the cardiovascular system is affected by the choices we make in life.
* List some of the factors that contribute to the development of atherosclerosis (diabetes, hypertension, obesity, stress, smoking, eating a high-cholesterol diet, a lack of physical inactivity, and heredity).
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 5. Discuss various disorders that affect the cardiovascular system. (Refer to **PowerPoint slides 27 to 38**.)

* Define the term anemia and list factors that can lead to anemia. Identify sickle cell anemia as a type of anemia resulting from abnormally shaped red blood cells.
* Ask students to name some foods that are rich in iron and can therefore help prevent anemia caused by a lack of iron in the diet.
* Define the term leukemia.
* Differentiate between the two types of bleeding disorders.
* Explain the pathophysiology of atherosclerosis. Emphasize that atherosclerosis places a person at risk for strokes, heart attacks, kidney failure, and peripheral vascular disease.
* Differentiate between venous thrombosis and venous (stasis) ulcers.
* Define the term congenital.
* Discuss the cardiac risk factors that can be changed and those that cannot be changed.
* Initiate a discussion on how to modify the cardiac risk factors that can be changed. Encourage students to provide examples.
* Explain the cause and treatment of coronary artery disease. Discuss the difference between angina pectoris and myocardial infarction.
* List and describe the causes of heart failure. Identify heart failure as either “right-sided” or “left-sided.” Explain some of the signs and symptoms that might be seen in a person with each type of heart failure. Mention that medications may be prescribed to increase the heart’s ability to pump and to pull excess fluid from the tissues. Explain that nursing assistants may be responsible for carefully monitoring the intake and output of a person with heart failure, and that fluids may be restricted.
* Explain what a conduction disorder is, and note that a pacemaker may be surgically implanted to treat a conduction disorder.
* List the various observations which should be reported to the nurse immediately.
* Provide statistics given by the Centers for Disease Control and Prevention (CDC) regarding the incidence of cardiovascular disease among Americans, especially of heart disease and stroke.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 6. List diagnostic tests that are often used to diagnose disorders of the cardiovascular system. (Refer to **PowerPoint slides 40 to 42**.)

* List the different methods of diagnosing cardiovascular disorders.
* Show students an example of an electrocardiogram (EKG) readout.
* Have learners refer to learning activities located at the end of the chapter.