

## **Chapter 15: The Cardiovascular System**

### **Slide 15-2:**

The word cardiovascular means two things. Cardio, meaning heart and vascular meaning vessel. The cardiovascular system is a system of the heart and vessels working together.

### **Slide 15-3:**

The location of the heart is posterior to the sternum, breast bone, medial to the lungs, mediastinum, anterior to vertebral column, and lies upon the diaphragm, which is dome shaped and divides the thorax from the abdomen. The base of the heart lies beneath the second rib toward the upper right shoulder. The apex or point of the heart is located at the 5<sup>th</sup> intercostal space, which is the space between the ribs.

**The heart is a myogenic muscular organ found in all animals with a circulatory system (including all vertebrates), that is responsible for pumping blood throughout the blood vessels by repeated, rhythmic contractions. The term *cardiac* (as in cardiology) means "related to the heart" and comes from the Greek καρδιά, *kardia*, for "heart".**

**The vertebrate heart is composed of cardiac muscle, which is an involuntary striated muscle tissue found only in this organ, and connective tissue. The average human heart, beating at 72 beats per minute, will beat approximately 2.5 billion times during an average 66 year lifespan, and weighs approximately 250 to 300 grams (9 to 11 oz) in females and 300 to 350 grams (11 to 12 oz) in males.<sup>1</sup>**

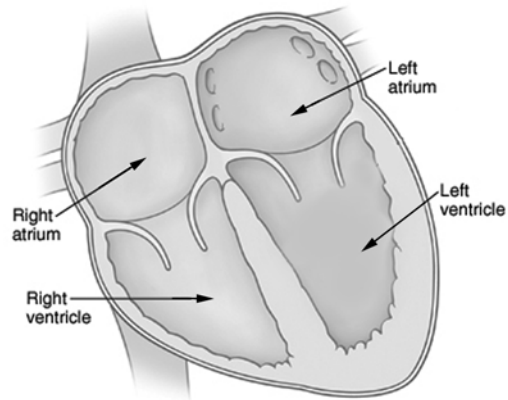
### **Slide 15-4:**

There are different coverings of the heart. The heart is completely surrounded in fat. The pericardial cavity is a shiny sac inside the heart and the fibrous pericardium is a sac around the heart.

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<sup>1</sup> Kumar, Abbas, Fausto: *Robbins and Cotran Pathologic Basis of Disease*, 7th Ed. p. 556

Figure 1-1



**Slide 15-7:**

There are four heart valves: the tricuspid valve, bicuspid valve, pulmonary valve, and the aortic valve. The tricuspid valve has three cusps. This valve prevents backflow into the right atrium. The bicuspid valve has two cusps. It is also known as the mitral valve. This valve prevents backflow into the left atrium. The pulmonary valve takes blood to the lungs and prevents backflow into the right ventricle while the aortic valve prevents backflow into the left ventricle.

**Four valves regulate blood flow through your heart:**

- **The tricuspid valve regulates blood flow between the right atrium and right ventricle.**
- **The pulmonary valve controls blood flow from the right ventricle into the pulmonary arteries, which carry blood to your lungs to pick up oxygen.**
- **The mitral valve lets oxygen-rich blood from your lungs pass from the left atrium into the left ventricle.**
- **The aortic valve opens the way for oxygen-rich blood to pass from the left ventricle into the aorta, your body's largest artery, where it is delivered to the rest of the body.**

Tricuspid

Bicuspid

Aortic Semilunar Valves

Pulmonary Semilunar Valves

