

Figuring Out Cardiac Anatomy: Your Heart

The circulatory system — or *cardiovascular system* — consists of the heart and the blood vessels. The heart, the main organ of the circulatory system, causes blood to flow. The heart's pumping action squeezes blood out of the heart, and the pressure it generates forces the blood through the blood vessels. Anatomically speaking, the heart is only about the size of your fist. Moreover, it's not really shaped like a heart; a human heart is really shaped like a cone (see Figure 1). It lies between your lungs, just behind (posterior to) your sternum, and the "tip" (apex) of the cone points to the left. In fact, your heart is situated slightly to the left of center in your chest.

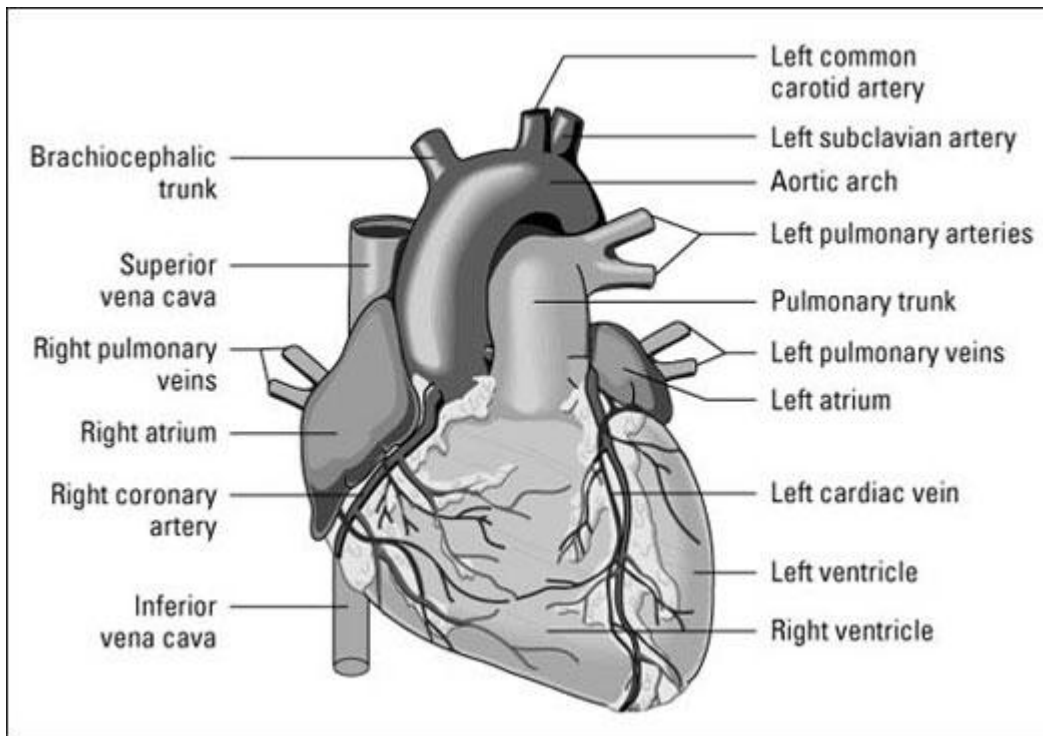


Figure 1: Anterior view of the heart.

A thick layer of muscle tissue and a protective membrane that folds into two layers, called the *pericardium* or *pericardial membranes*, surround the heart. The heart itself is a well-organized grouping of hollow spaces.

- **Endocardium:** This innermost layer of the heart is made up of *endothelial tissue* that lines the inside of the heart and is continuous with all your blood vessels.
- **Pericardial cavity:** Working your way out, in this space, you find the coronary vessels — the blood vessels that supply the tissues of the heart with nutrients and oxygen.
- **Myocardium:** This next layer out is the hard-working, contracting, muscular layer of your heart (*myo-* refers to muscle).
- **Epicardium:** This inner layer of the pericardium covers the myocardium. The epicardium secretes *pericardial fluid*, which protects the tissues as they rub together when the heart beats.
- **Parietal pericardium:** Beyond the pericardial cavity, working your way out to the outside of the heart, this outermost layer of the heart is a thin, white covering made of fibrous connective

tissue that joins the major blood vessels (such as the aorta) to the sternum and diaphragm. Your heart is not just floating in your chest. Like the epicardium, the *parietal pericardium* also secretes *pericardial fluid* to lubricate the heart's tissues.

The hollow spaces of the heart are called *chambers*. Four chambers, two on each side, fill with blood and release blood in a rhythmic pattern:

- Left atrium
- Right atrium
- Left ventricle
- Right ventricle

Together, the left atrium and the right atrium are the *atria* (plural). A membrane called the *interatrial septum* separates the atria, and a membrane called the *interventricular septum* separates the two ventricles. Each chamber of the heart plays a specific role in pumping blood, and the anatomy of each chamber fits its function perfectly.

The heart also contains several *valves*, the names of which tell you their anatomic location or characteristics (see Figure 2). For example, the *atrioventricular (AV) valves* are between the atria and the ventricles; the *bicuspid (AV) valve* has two flaps, and the *tricuspid (AV) valve* has three flaps. The *semilunar valves* are shaped like half-moons. Valves act like locks on a canal: They allow measured quantities of blood into a chamber, and they prevent blood from flowing backward. Valves keep blood flowing in the right direction on the pathway, which helps maintain the proper rhythm action in the heart and in you.

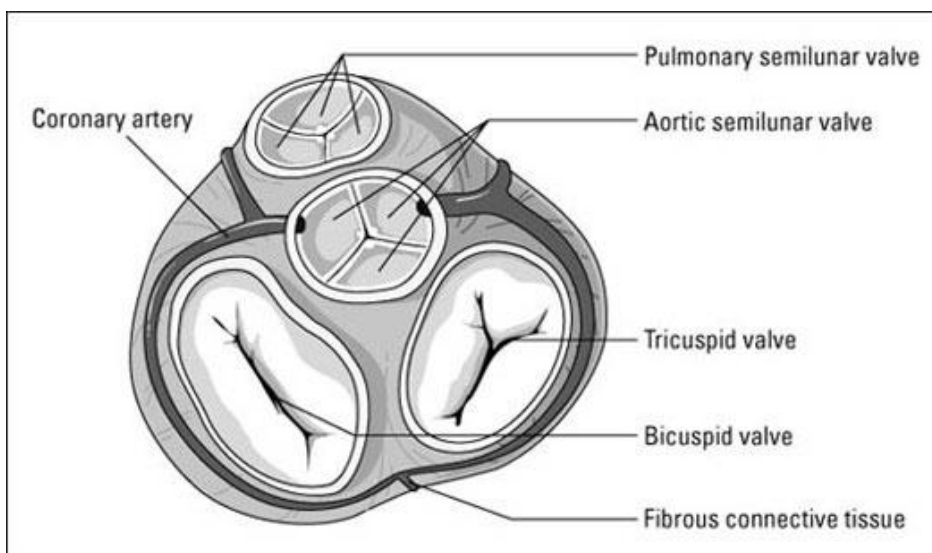


Figure 2: Heart valves