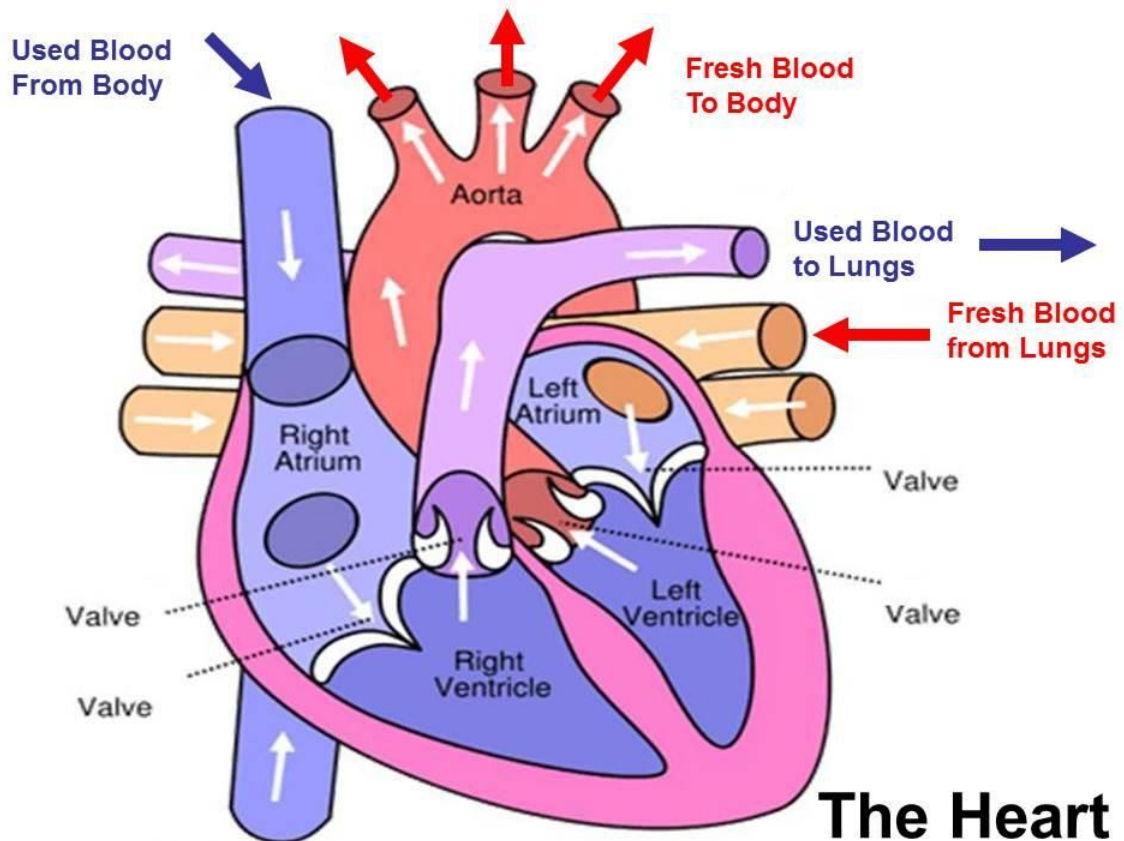


### Introduction to the Heart

The heart is a muscular organ that supplies blood and oxygen to all parts of the body. The heart is located in the chest cavity just behind the breastbone, between the lungs and superior to the diaphragm. The heart is surrounded by a fluid filled sac called the pericardium. Blood is pumped away from the heart through arteries and returns to the heart through veins. The major artery of the body is the aorta and the major veins of the body are the vena cavae.

### Function of the Heart

The primary function of the heart is to take deoxygenated blood and transfer it back to the tissues and cells of the body oxygenated. In order to do this, first the superior vena cava and the inferior vena cava send oxygen poor blood to the right atrium of the heart. The superior vena cava sends deoxygenated blood from the upper body, and the inferior vena cava sends deoxygenated blood from the lower body. After the blood is transferred to the right atrium, it is then transported to the right ventricle. Next the blood is transferred to the pulmonary arteries. The pulmonary arteries send blood to the right & left lungs. The lung capillaries deliver oxygen and carbon dioxide is dropped off. After that the pulmonary veins deliver the freshly oxygenated blood back in to the left atrium of the heart. Then, the blood is transferred to the left ventricle which sends blood back to the Aorta. The Aorta transfers blood through the rest of the body, the brain, and the coronary arteries.

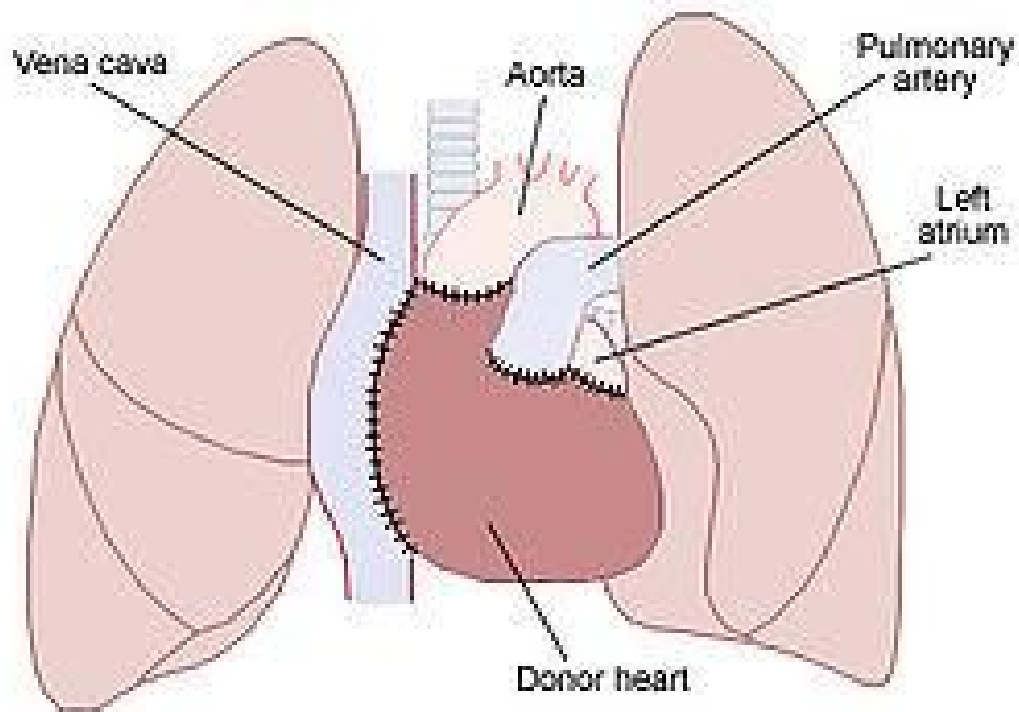


### **Transplantation of the Heart**

A heart transplant is an operation performed most commonly with people with heart failure or severe coronary artery disease. The most common procedure is taking a working heart from a recently deceased person and transplanting it into a donor recipient. If an orthotopic procedure is performed, the original heart is removed completely. However, if the heterotopic procedure is performed, a part of the original heart is left in place to support the donor heart.

Heart transplantation begins with a donor heart being identified. The new heart either comes from a recently deceased heart donor, or a brain dead heart donor. The patient is instructed to come to the hospital for evaluation and pre-surgical medication. The heart is then inspected by the surgeons.

The orthotopic procedure starts with opening the chest. The pericardium is opened, the great vessels are dissected and the recipient is attached to cardiopulmonary bypass. The donor's heart is injected with potassium chloride to stop the heart from beating before it is removed and packages in ice. Ice can keep the heart alive for about 4-5 hours, depending on the starting condition of the heart. The bad heart is removed by transecting the great vessels and a portion of the left atrium. This does not affect the pulmonary veins because a portion of the left atrium stays holding the pulmonary veins in place. The donor heart is trimmed to fit in the remainder of the left atrium. The new heart is then restarted, the cardiopulmonary bypass is removed, and the chest cavity is closed.



However, the Heterotopic procedure is different. The patient's heart is not removed. The two hearts are positioned so the sections and blood vessels form a "Double Heart." This gives the original heart a chance to recover, or if the donor heart is rejected, it can be removed.

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6/2/13  
Gift Of Life: The Heart

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