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DEPARTMENT: PHARMACOLOGY

COURSE CODE: ANA 202

MATRIC NUMBER: 19/MHS07/006

COLLEGE: MEDICINE AND HEALTH SCIENCE

**THE HEART** is a muscle about the size of the fist . It is located under the left of the breast bone

Its functions is to pump blood through the arteries and veins and to the rest of the body. It is divided into four chambers

RIGHT ATRIUM

LEFT ATRUIM

RIGHT VENTRICLE

LEFT VENTRICLE

The right and left atrium- are the collection for blood

 The right and left ventricle -Receives the blood and pump it to lungs and the body

The chambers are separated by valves which controls the direction of blood flow which are : Tricuspid valve, Pulmonic Valve, Metro Valve, Aortic Valve . CIRCULATION begins at the right side of the heart where blood from the body comes to the right atrium which passes to the right ventricle in which blood is pumped into the lungs to receive oxygen. The oxygenated blood will flow to the left atrium to left ventricle where it is pumped to the aorta to other part of the body. On the right side of the heart the tricuspid valve separates the right atrium and the left atrium then flows to the ventricle.

*FUNCTIONS OF EACH VALVES*

**TRISCUSPID VALVE** – On the right side of the heart the tricuspid valve separates the right atrium and the left atrium then flows to the ventricle.

**PULMONIC VALVE**- Blood flows here to go to the lungs

**MITRAL VALVE** – On the left side of the heart this valve separates the right ventricle to left ventricle It is also known as the bicuspid valve due to its having two cusps, an anterior and a posterior cusp. These cusps are also attached via chordae tendinae to two papillary muscles projecting from the ventricular wall.[[](https://en.wikipedia.org/wiki/Heart#cite_note-FOOTNOTEGray's_Anatomy2008970-28)

**AORTIC VALVE** – Blood flows from the left ventricle to the aorta to the aortic valve and to the rest of the body.

**CORONARY CIRCULATION**

Heart tissue, like all cells in the body, needs to be supplied with oxygen, nutrients and a way of removing metabolic wastes. This is achieved by the coronary circulation, which includes arteries, veins, and lymphatic vessels. Blood flow through the coronary vessels occurs in peaks and troughs relating to the heart muscle's relaxation or contraction.

Heart tissue receives blood from two arteries which arise just above the aortic valve. These are the left main coronary artery and the right coronary artery. The left main coronary artery splits shortly after leaving the aorta into two vessels, the left anterior descending and the left circumflex artery. The left anterior descending artery supplies heart tissue and the front, outer side, and the septum of the left ventricle. It does this by branching into smaller arteries—diagonal and septal branches. The left circumflex supplies the back and underneath of the left ventricle. The right coronary artery supplies the right atrium, right ventricle, and lower posterior sections of the left ventricle. The right coronary artery also supplies blood to the atrioventricular node (in about 90% of people) and the sinoatrial node (in about 60% of people). The right coronary artery runs in a groove at the back of the heart and the left anterior descending artery runs in a groove at the front. There is significant variation between people in the anatomy of the arteries that supply the heart . The arteries divide at their furtherst reaches into smaller branches that join together at the edges of each arterial distribution.

The coronary sinus is a large vein that drains into the right atrium, and receives most of the venous drainage of the heart. It receives blood from the great cardiac vein (receiving the left atrium and both ventricles), the posterior cardiac vein (draining the back of the left ventricle), the middle cardiac vein (draining the bottom of the left and right ventricles), and small cardiac veins.The anterior cardiac veins drain the front of the right ventricle and drain directly into the right atrium

Arteries carry blood with oxygen and other nutrients throughout the body. Veins take blood back to the heart which pumps into the lungs to be oxygenated.

**ELECTRIC SIGNALS** flows through the heart to control its pumping .

THE SA NODE – Is the pacemaker of the heart . The electric signals flows to the low chamber which forms the AV node which controls the signal the atria contracts before the ventricle .

The ventricle carries the signals flow out of muscle so as the muscle contracts at the same time to pump blood to the lungs and through the body.

**CONGENITAL ANOMALIES OF THE HEART**

1. **Ventricular Septal Defect (VSD)**

A VSD is a hole in the part of your septum that separates your heart’s lower chambers, or ventricles. If you have a VSD, blood gets pumped back to your lungs instead of to your body.

A small VSD may also close on its own. But if yours is larger, you may need surgery to repair it.

1. **Valve Defects**

Valves control the flow of blood through your heart’s ventricles and arteries. And some minor heart defects can involve the valves, including:

**Stenosis.** When your valves become narrow or stiff, and won’t open or allow blood to pass easily.

**Regurgitation.** Your valves don’t close tightly, which lets your blood leak backward through them.

**Atresia.** This happens when your valve isn't formed right or has no opening to let your blood pass through.

1. **Hole in the Heart (Septal Defect)**

This means you’re born with a hole in the wall, or septum, that separates the left and right sides of your heart. The hole lets blood from the two sides mix.

1. **Patent ductus arteriosus (PDA).** Simply put, this is a hole in your baby’s aorta that doesn’t close.

During pregnancy, the hole allows your baby’s blood to bypass his lungs and get oxygen from your umbilical cord. After he’s born, he starts to get oxygen from his own lungs, and the hole has to close.

If it doesn’t, it’s called patent ductus arteriosus, or PDA. Small PDAs may get better on their own. A larger one could need surgery.

1. **d-Transposition of the great arteries**

A heart in which the two main arteries carrying blood away from the heart are reversed.

A normal blood pattern carries blood in a cycle: body-heart-lungs-heart-body.

When a d-transposition occurs, the blood pathway is impaired because the two arteries are connecting to the wrong chambers in the heart.

This means that the blood flow cycle is stuck in either:

* body–heart –body (without being routed to the lungs for oxygen) or
* lungs–heart–lungs (without delivering oxygen to the body)

Without surgery, the only way to survive this condition temporarily is to have leakages that allow some oxygen-rich blood to cross into the oxygen-poor blood for delivery to the body. A hospital facility can also catheterize a patient until corrective surgery can be performed