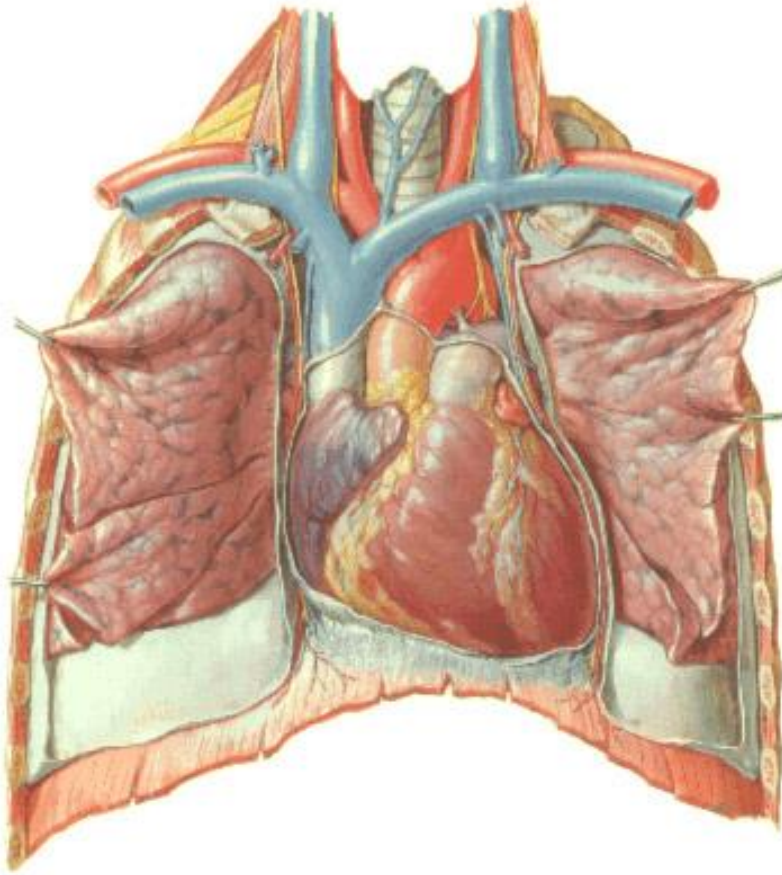


Biomedical Terminology

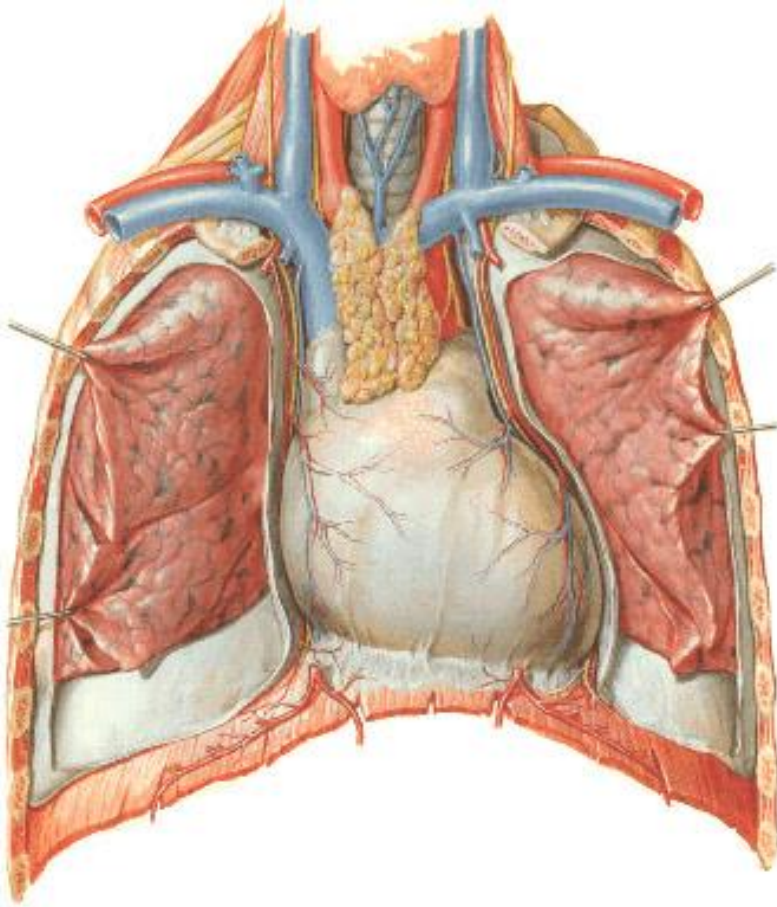
Cardiovascular and Lymphatic System

Cardiovascular System



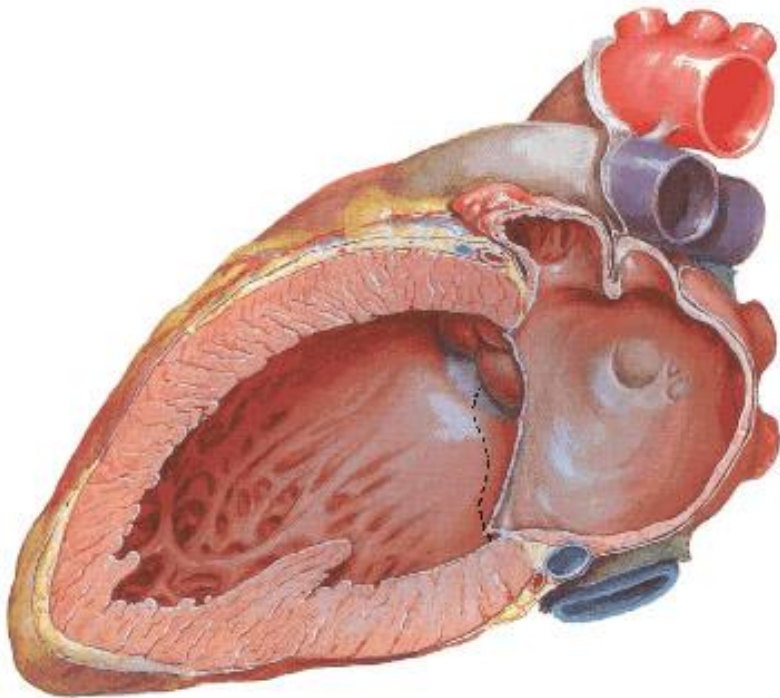
- Cardiovascular system is composed of the
 - Heart (cardi/o)
 - Blood vessels (angi/o)
 - Arteries (arteri/o) – blood vessels which carry blood away from the heart
 - Veins (phleb/o, ven/o) – blood vessels which carry blood towards the heart
 - Capillaries – exchange vessels
 - Blood
- Its function is to transport nutrients, gases, hormones and other products throughout the body

Pericardium



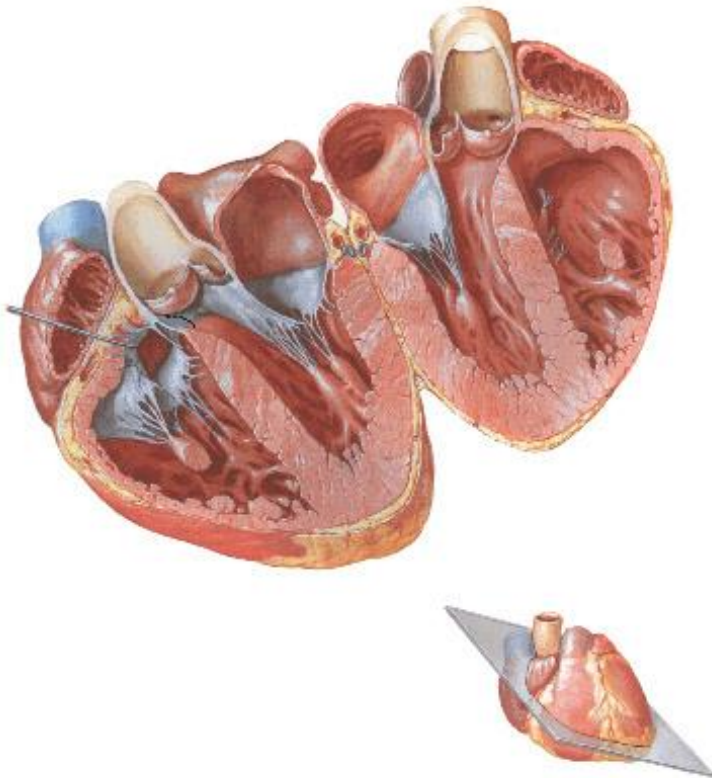
- The heart is surrounded by the pericardium
 - Parietal pericardium is the outer layer. It is a serous membrane
 - The visceral pericardium is the deepest layer and is in contact with the myocardium. It is also a serous membrane

Layers of the Heart



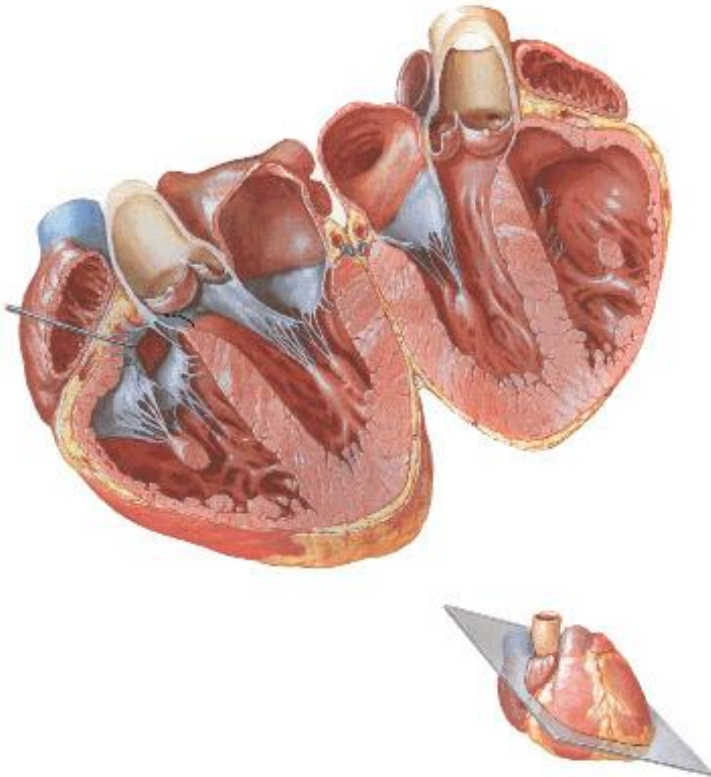
- The heart wall has three layers
 - The epicardium is the outer layer of the heart (it is the same layer as the visceral pericardium)
 - The myocardium is the next muscular layer
 - The endocardium is the inner lining of the heart

Chambers and Valves of the Heart



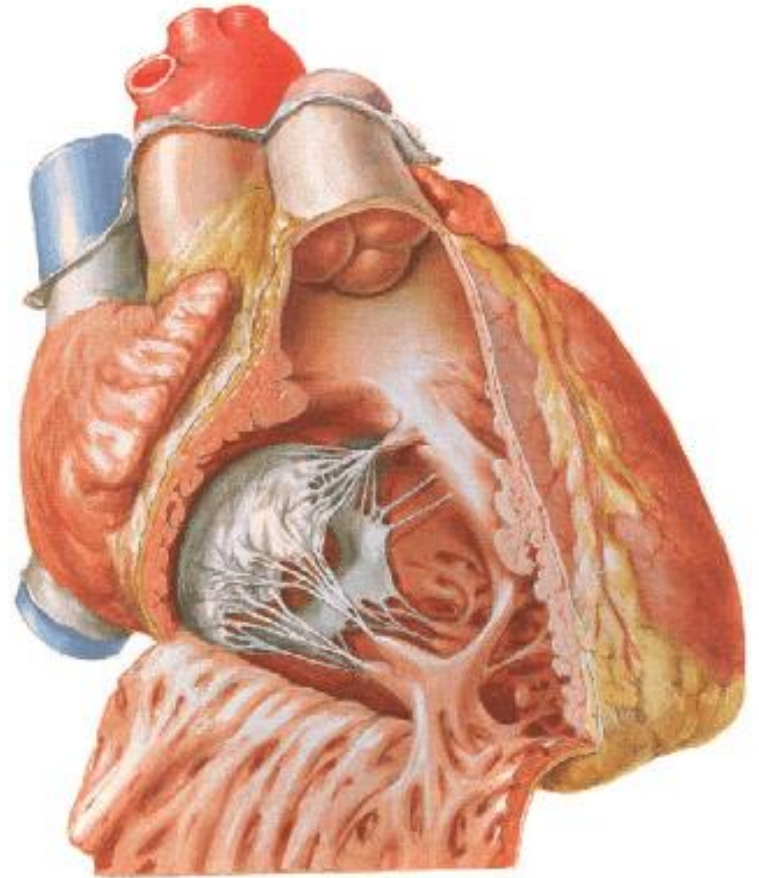
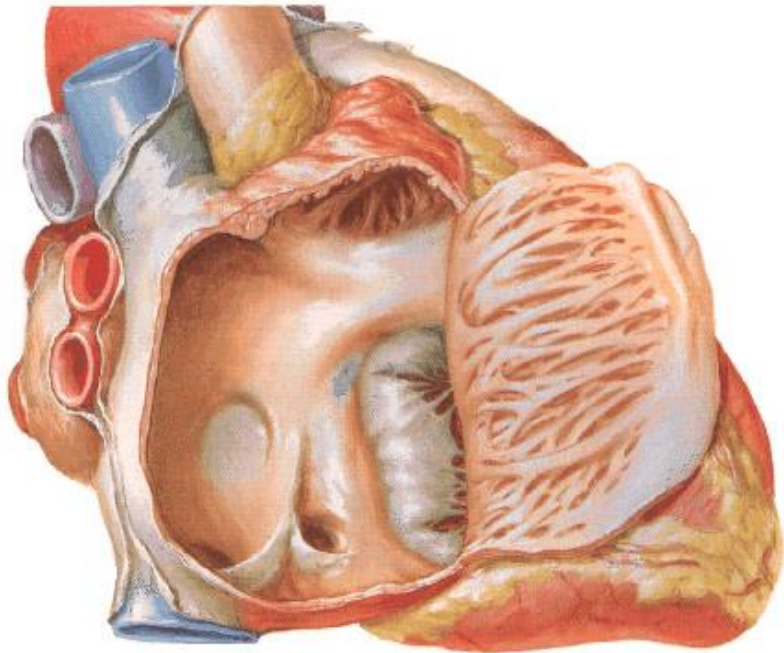
- The heart has 4 chambers and 4 valves
 - Two chambers are receiving chambers which receive blood
 - Right atrium receives blood from the periphery of the body
 - Left atrium receives blood from the lungs
 - Two chamber are discharging chambers
 - Right ventricle discharges blood to the lungs
 - Left ventricle discharges blood to the periphery of the body

Chambers and Valves of the Heart

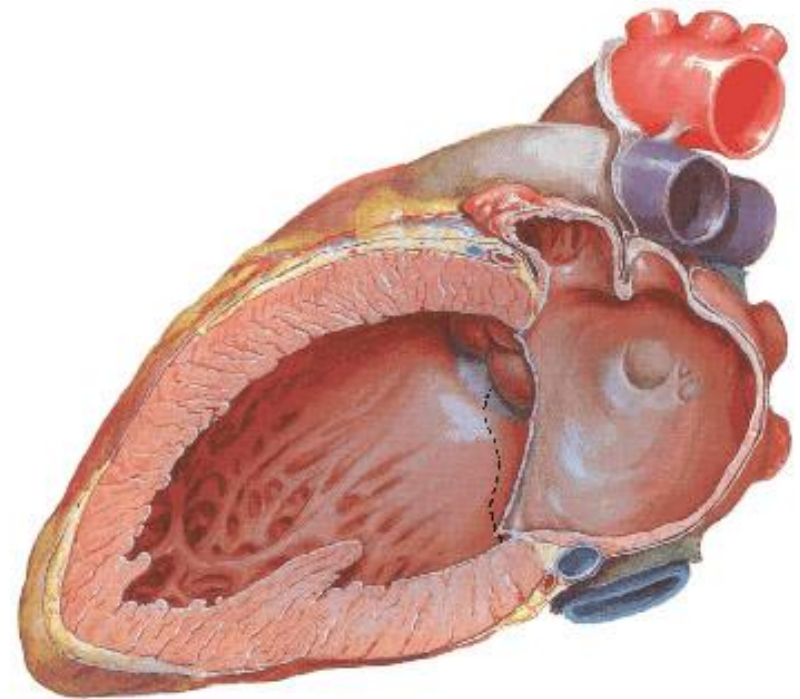
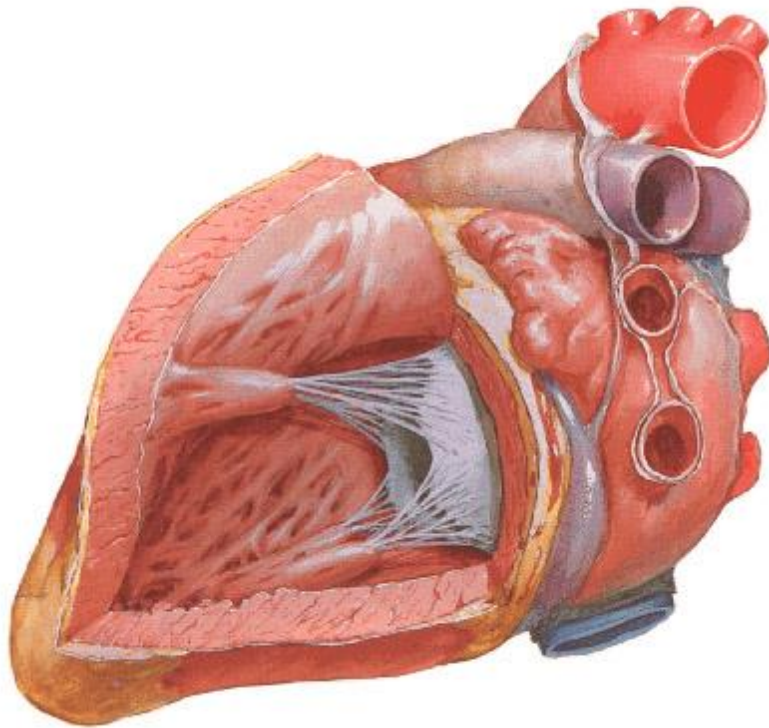


- Two valves are atrioventricular valves
 - The tricuspid valve allows blood to pass from the right atrium to the right ventricle and prevents backflow
 - The bicuspid valve allows blood to pass from the left atrium to the left ventricle and prevents backflow
- Two valves are semilunar valves
 - The pulmonary semilunar valve allows blood to pass from the right ventricle to the pulmonary artery (and to the lungs)
 - The aortic semilunar valve allows blood to pass from the left ventricle to the aorta (and to the periphery of the body)

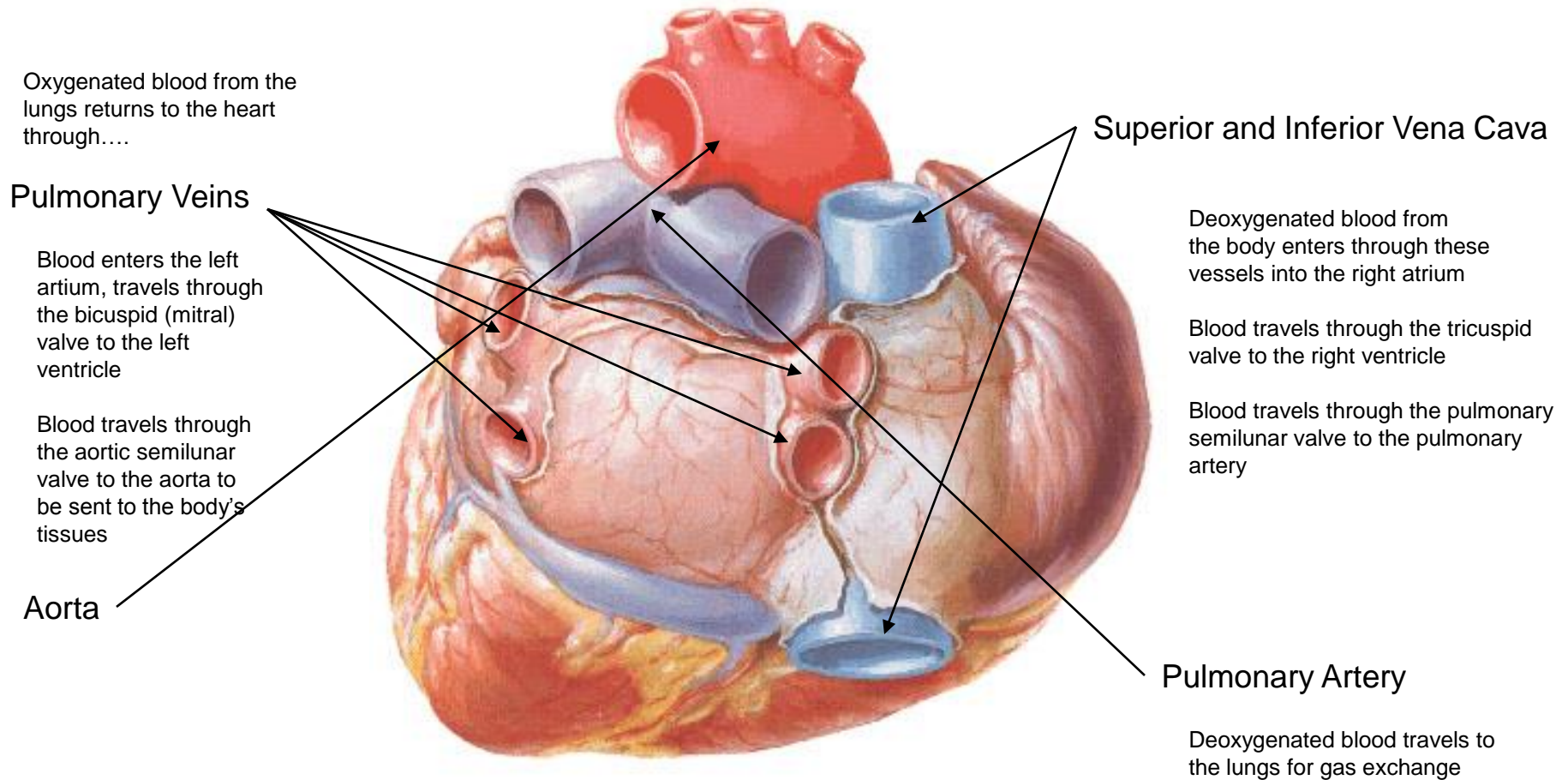
Right Atrium and Right Ventricle



Left Atrium and Left Ventricle

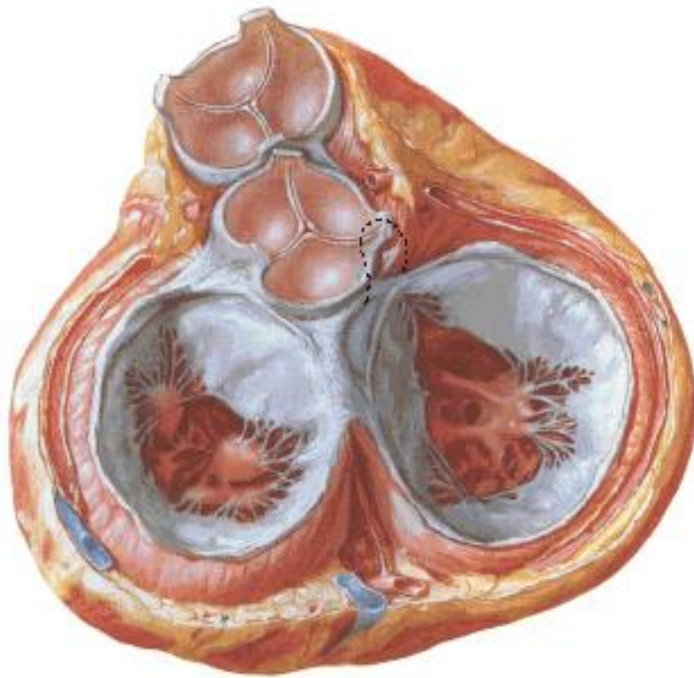


Vessels Related to the Heart

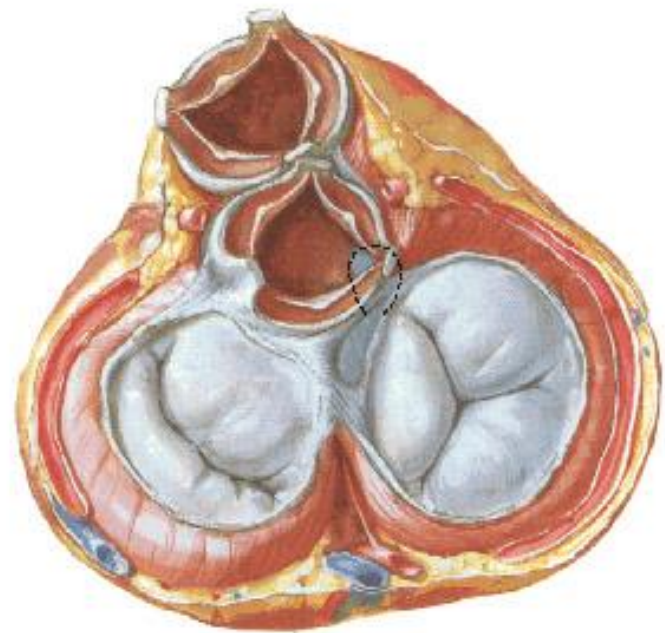


Systole and Diastole

Valves of Heart in Diastole

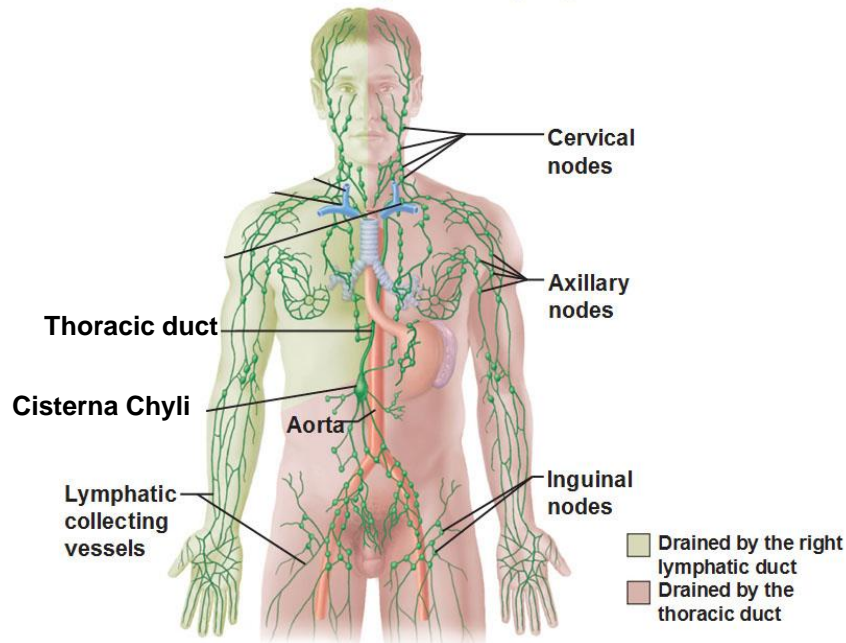


Valves of Heart in Systole



Lymphatic System

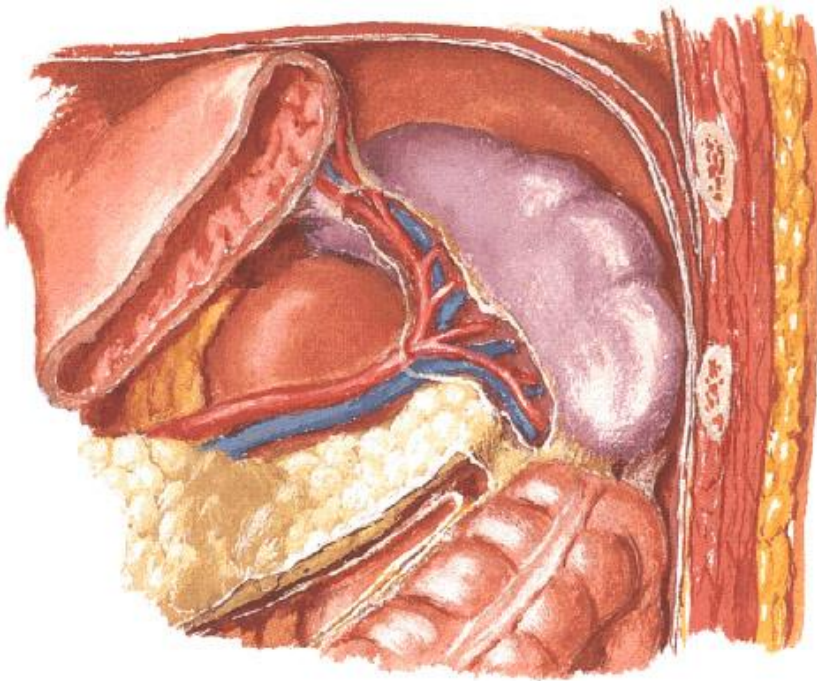
General Distribution of Lymphatic Collecting Vessels and Regional Lymph Nodes



- Lymphatic System
 - Returns 10-15% of fluid that does not return directly to capillaries through osmotic pressure
 - This fluid, which is called lymph filters through lymph nodes and can stimulate the immune response to antigens
 - The lymph also returns plasma proteins that leak from the capillaries to the blood stream
 - Lymphatic vessels ultimately drain back into the blood circulation at the subclavian veins

Spleen

Spleen in Situ



- The spleen acts as a large modified lymph node in the circulation of blood instead of lymphatic fluid
- Blood leaves the vessels in the Spleen and allows macrophages to remove antigens and also allows for the removal of old RBC
- Blood then returns to the vessels and exits the spleen
- Since the spleen is full of blood, hemorrhage to the spleen can be very dangerous and often requires a splenectomy

Biomedical Terminology

Terminology Relevant to Test

Combining Forms

Cardiovascular and Lymphatic System

- Angi/o
 - Vessel (usually refers to a blood vessel)
 - Ex) angiogram
 - Definition of suffix –gram
 - » X-ray image
 - Definition of angiogram
 - X-ray image of a blood vessel (uses a contrast medium to help visualize the blood vessels)
 - A doctor inserts a needle into the blood vessels of the arm or groin and threads an instrument up to the coronary artery to either widen the artery with a balloon or place a stent in the coronary artery (this is a cardiac catheterization). This is a procedure which is essentially a surgical repair of a blood vessel. What is this procedure called?
 - Angioplasty

Combining Forms

Cardiovascular and Lymphatic System

- Aort/o

- Aorta

- Ex) Aortic stenosis

- Definition of suffix -ic
 - » Pertaining to
 - Definition of stenosis
 - » Constriction or narrowing

- Definition of aortic stenosis

- Narrowing pertaining to aorta (narrowing of aortic valve)

- Arteri/o

- Artery

- Ex) arteriosclerosis

- Definition of suffix – sclerosis
 - » Hardening

- Definition of arteriosclerosis

- Hardening of arteries

Combining Forms

Cardiovascular and Lymphatic System

- Atri/o
 - Atrium
 - Ex) atrial septal defect
 - Definition of suffix –al
 - » Pertaining to
 - Definition of atrial septal defect
 - » A condition in which a hole (present in utero) in the septum between the two atria fails to close causing a shunt of blood in circulation and leading to less oxygen in circulating blood

Combining Forms

Cardiovascular and Lymphatic System

- **Cardi/o**

- Heart

- Ex)

- cardiomegaly

- Definition of suffix –megaly

- » Enlargement

- Definition of cardiomegaly

- Enlargement of the heart

- **Lymph/o**

- Lymph, lymph gland

- Ex) lymphoma

- Definition of suffix –oma

- » Tumor, swelling

- Tumor of lymphatic tissue

Combining Forms

Cardiovascular and Lymphatic System

- Phleb/o, ven/o
 - Vein
 - Ex) phlebitis
 - Definition of suffix –itis
 - » Inflammation
 - Definition of phlebitis
 - Inflammation of a vein
 - If someone removes blood, they must do an incision into a vein to remove blood (same applies with giving fluids intravenously). What is this procedure called?
 - Phlebotomy

Combining Forms

Cardiovascular and Lymphatic System

- Plasm/o
 - Plasma
- Splen/o
 - Spleen (*Note: only one e*)
 - Ex) splenomegaly
 - Definition of suffix –megaly
 - » Enlargement
 - Definition of splenomegaly
 - Enlargement of the spleen
 - If the spleen was ruptured and needed to be removed, what surgical procedure indicates an excision of the spleen?
 - Splenectomy

Combining Forms

Cardiovascular and Lymphatic System

- Thym/o
 - Thymus
 - Ex) Thymoma
 - Definition of suffix –oma
 - » Tumor, swelling
 - Definition of thymoma
 - » Tumor of the thymus gland
- Valv/o, valvulo
 - Valve
- Ventricul/o
 - Ventricle

Combining Forms commonly used with Cardiovascular and Lymphatic System

- Ather/o
 - Yellowish, fatty plaque
 - Ex) atherosclerosis
 - Definition of suffix –sclerosis
 - » Hardening
 - Definition of atherosclerosis
 - » Hardening of fatty plaque (deposited on the arterial wall)

Combining Forms commonly used with Cardiovascular and Lymphatic System

- Ech/o
 - Sound
 - Ex) Echocardiogram (ECHO)
 - Record of the heart (used to detect valvular disease and evaluate the heart during stress testing)
- Electr/o
 - Electricity, electrical activity
 - Ex) electrocardiogram (ECG, EKG)
 - Record of the electrical activity of the heart
 - <http://www.nhlbi.nih.gov/health/health-topics/topics/hhw/electrical.html>

Combining Forms commonly used with Cardiovascular and Lymphatic System

- Isch/o
 - Deficiency, blockage
 - Ischemia
 - Definition of suffix – emia
 - » Blood
 - Blockage of blood
- Therm/o
 - Heat
- Thromb/o
 - Clot
 - Ex) Thrombosis
 - Definition of suffix – osis
 - » Abnormal condition

Prefixes commonly used with Cardiovascular and Lymphatic System

- Brady-
 - Slow
 - Ex) bradycardia
 - Definition of combining form cardi/o
 - » Heart
 - Definition of suffix –ia
 - » Condition of diseased or abnormal state
- Tachy-
 - Fast, rapid
 - Ex) tachycardia
 - Definition of combining form cardi/o
 - » Heart
 - Definition of suffix –ia
 - » Condition of diseased or abnormal state

Suffixes commonly used with Cardiovascular and Lymphatic System

- -ac
 - Pertaining to
- -apheresis
 - Removal
- -crit
 - To separate
 - Ex) hematocrit
 - Separate blood (volume percentage of erythrocytes in whole blood after separation by centrifuge)
 - Male – 40-50%
 - Female – 36-44%
- -graph
 - Instrument used to record
 - *Gram – record, x-ray image ,
graphy – process of recording, x-ray imaging*

Suffixes commonly used with Cardiovascular and Lymphatic System

- -odynia
 - Pain
 - Ex) cardiodynia
 - Pain in the heart
- -penia
 - Abnormal reduction in number
 - Ex) leukopenia
 - An abnormal reduction of white blood cells (leukocytes)
 - Can be due to side effects of cancer treatment, bone marrow disease, autoimmune disease.
 - Can occur normally (not a pathology, especially in African-American women)

Suffixes commonly used with Cardiovascular and Lymphatic System

- -poiesis
 - Formation
 - Ex) hematopoiesis (hemopoieses)
 - Formation of blood cells
 - Occurs in the blood marrow
- -sclerosis
 - hardening