

English For the Students of Veterinary Medicine

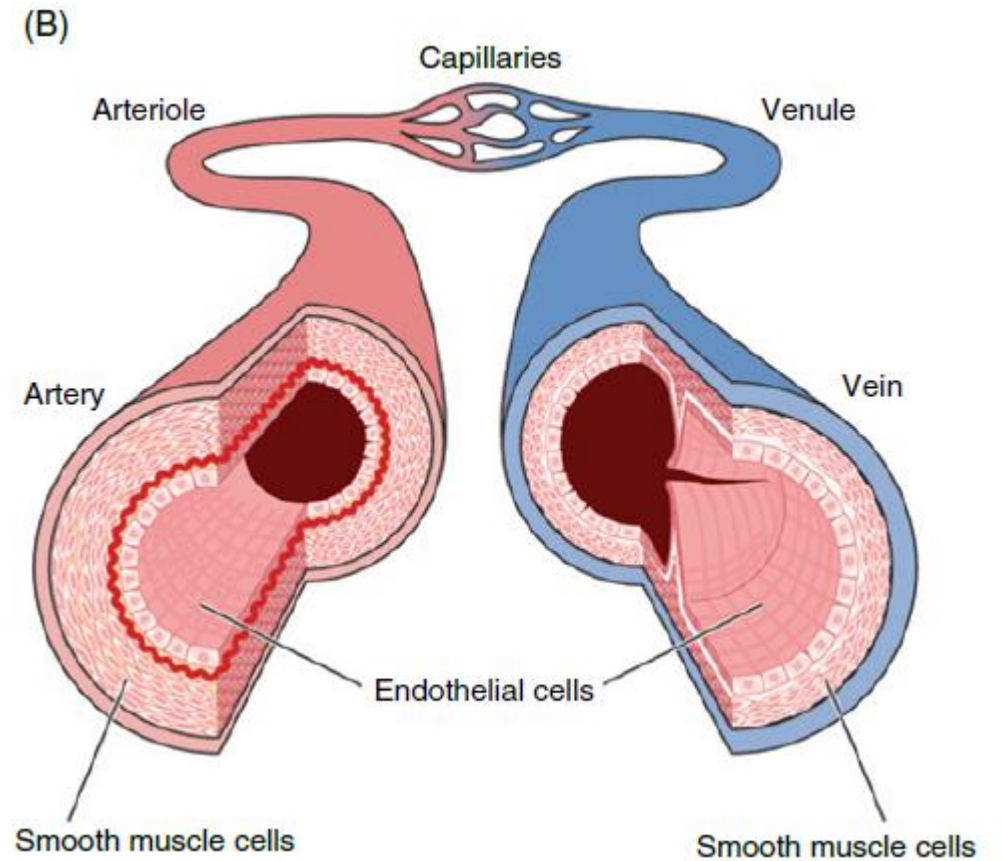
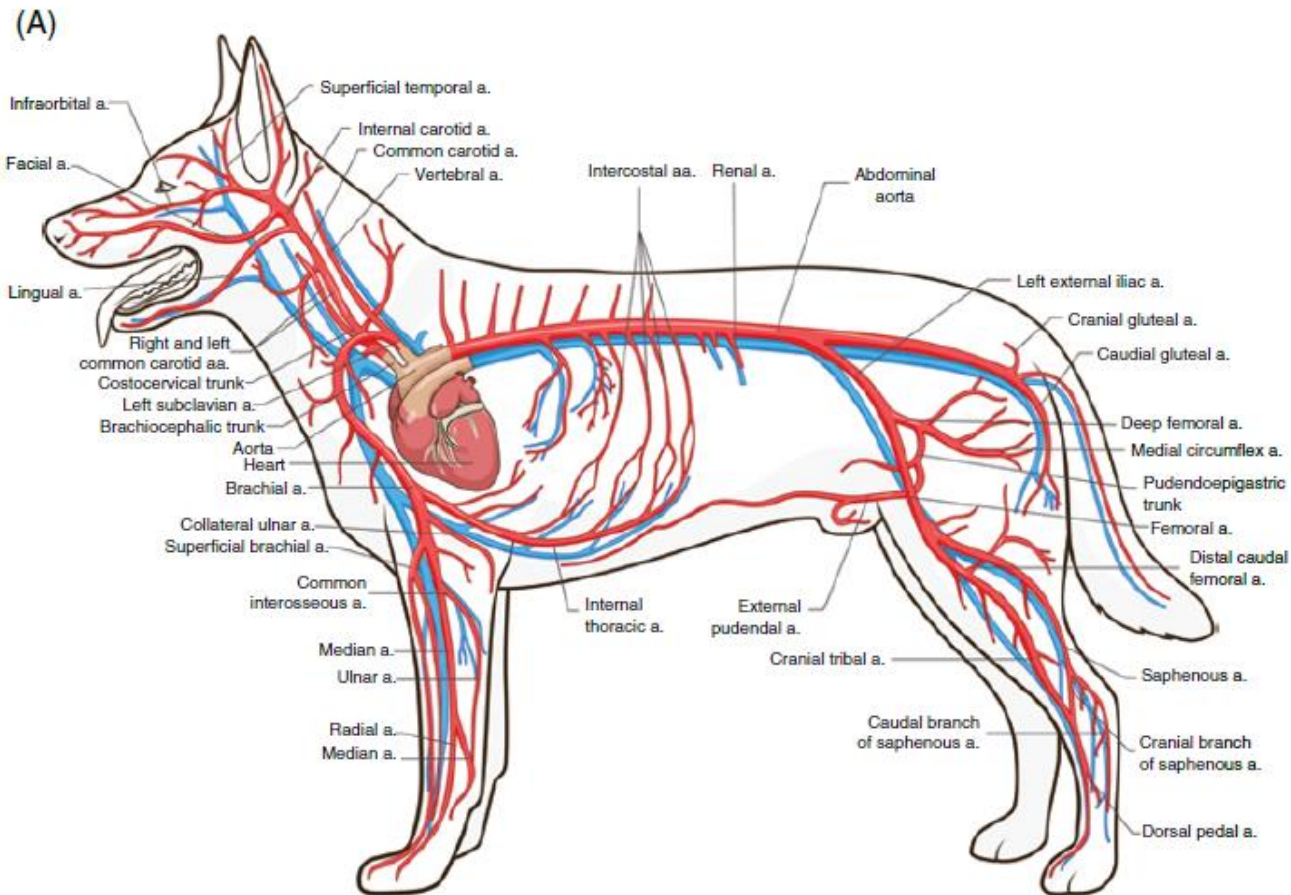
The Cardiovascular System

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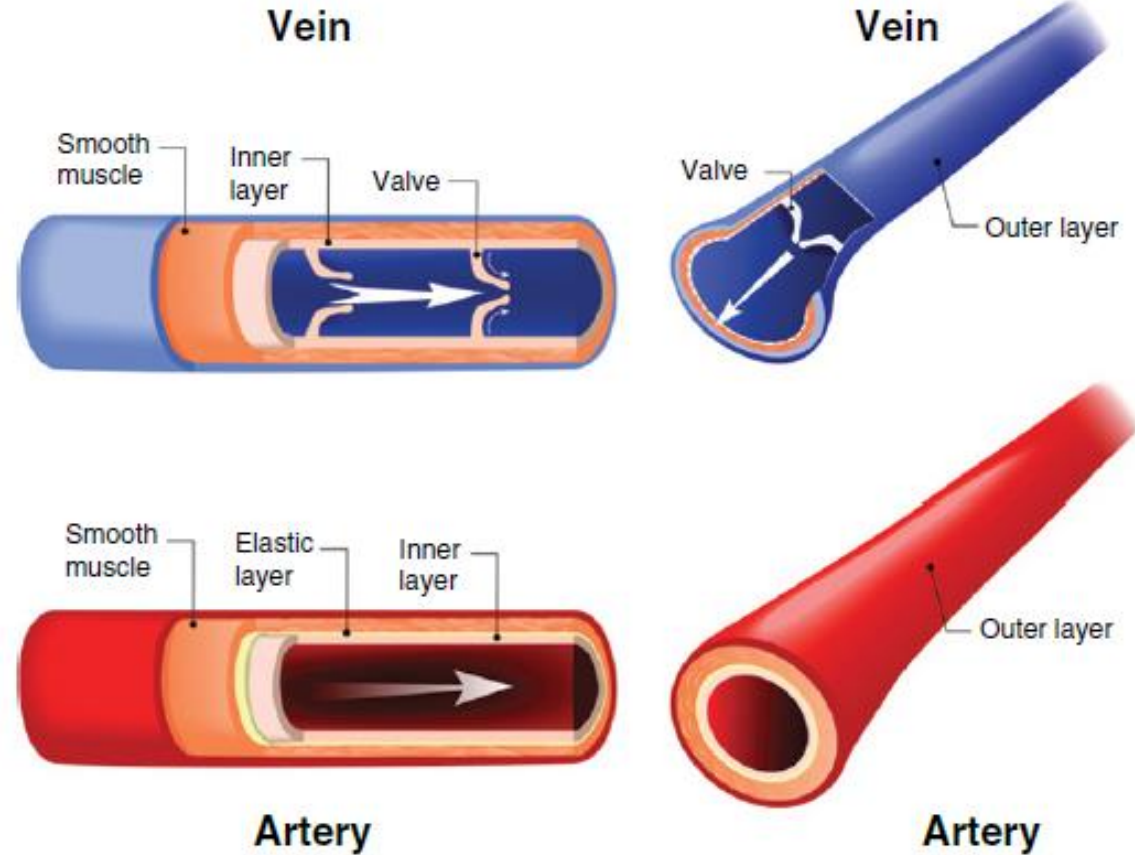
The Cardiovascular System

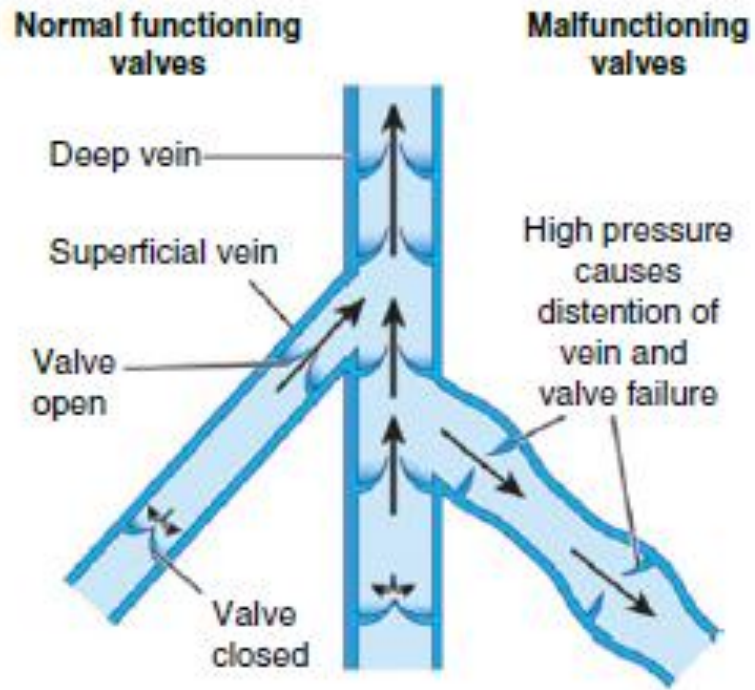
- *Blood Vessels*
- *Anatomy of the heart*
 - *The flow of blood*
 - *The heart beat*
 - *Electrocardiogram*
 - *Blood pressure*
- *Circulation*
- *Pathology and procedures*

Blood Vessels

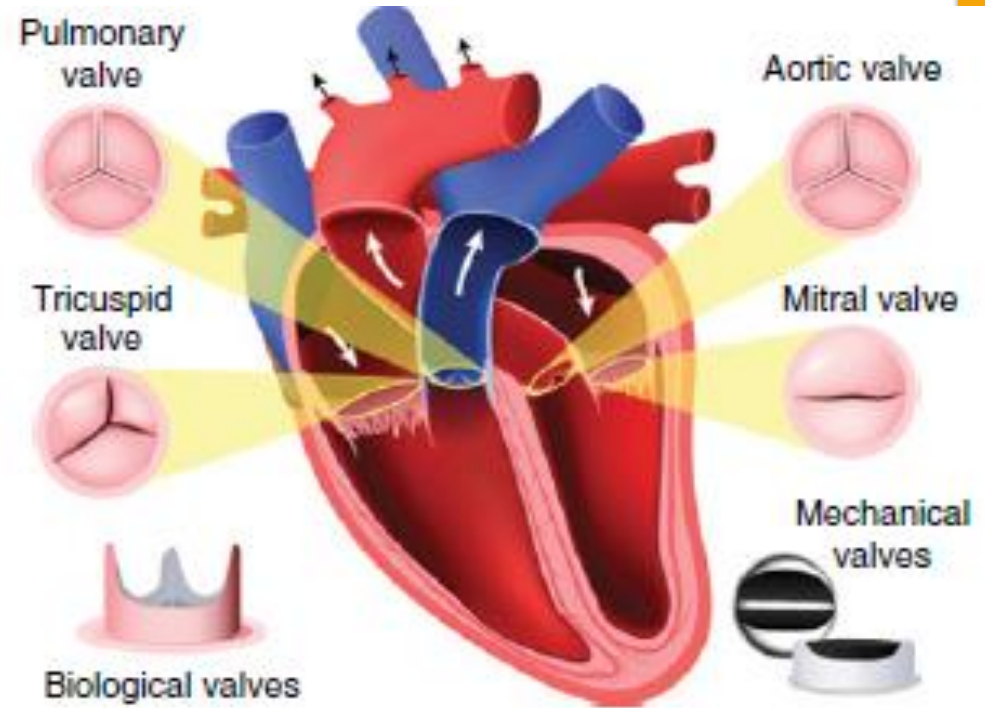


Blood Vessels





External view of valves in the veins

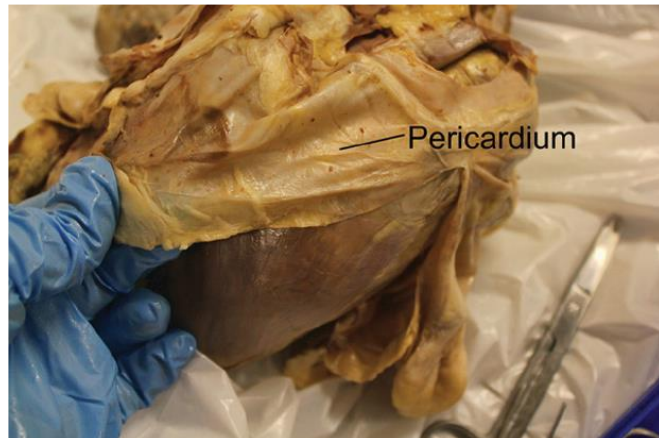
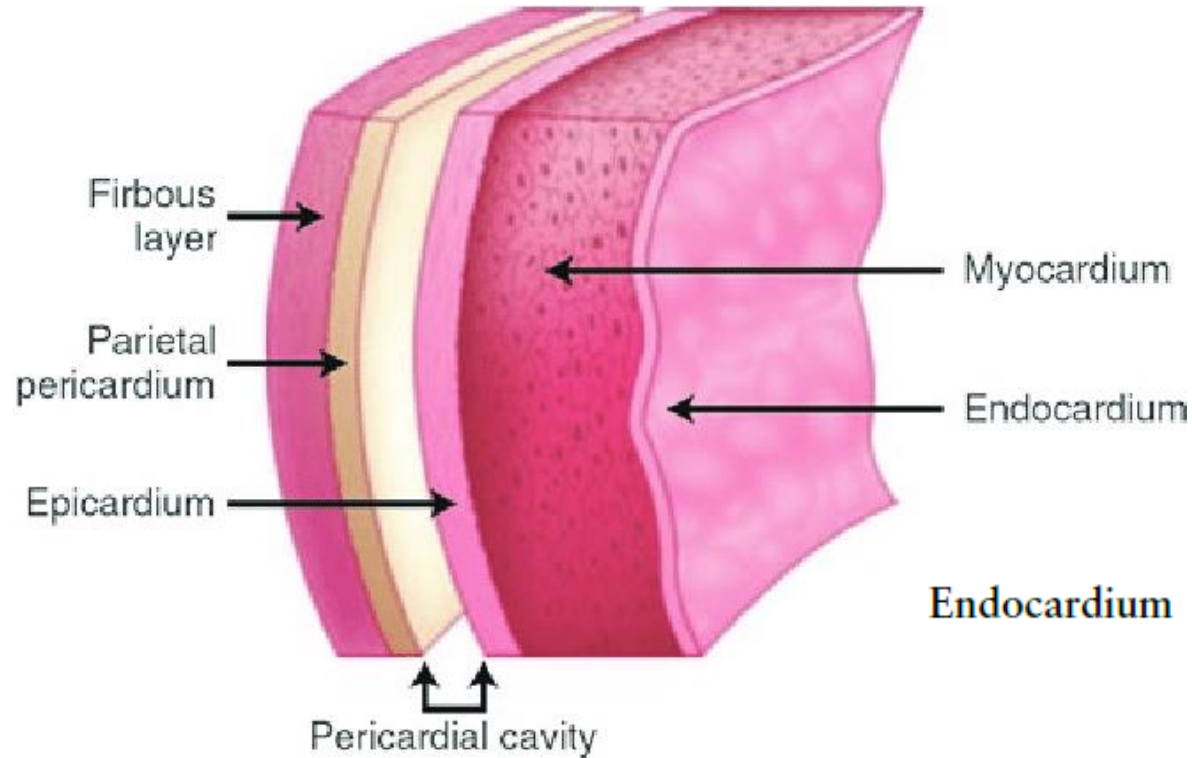


Types of heart valve



Internal view of valves in the veins

Layers of the heart

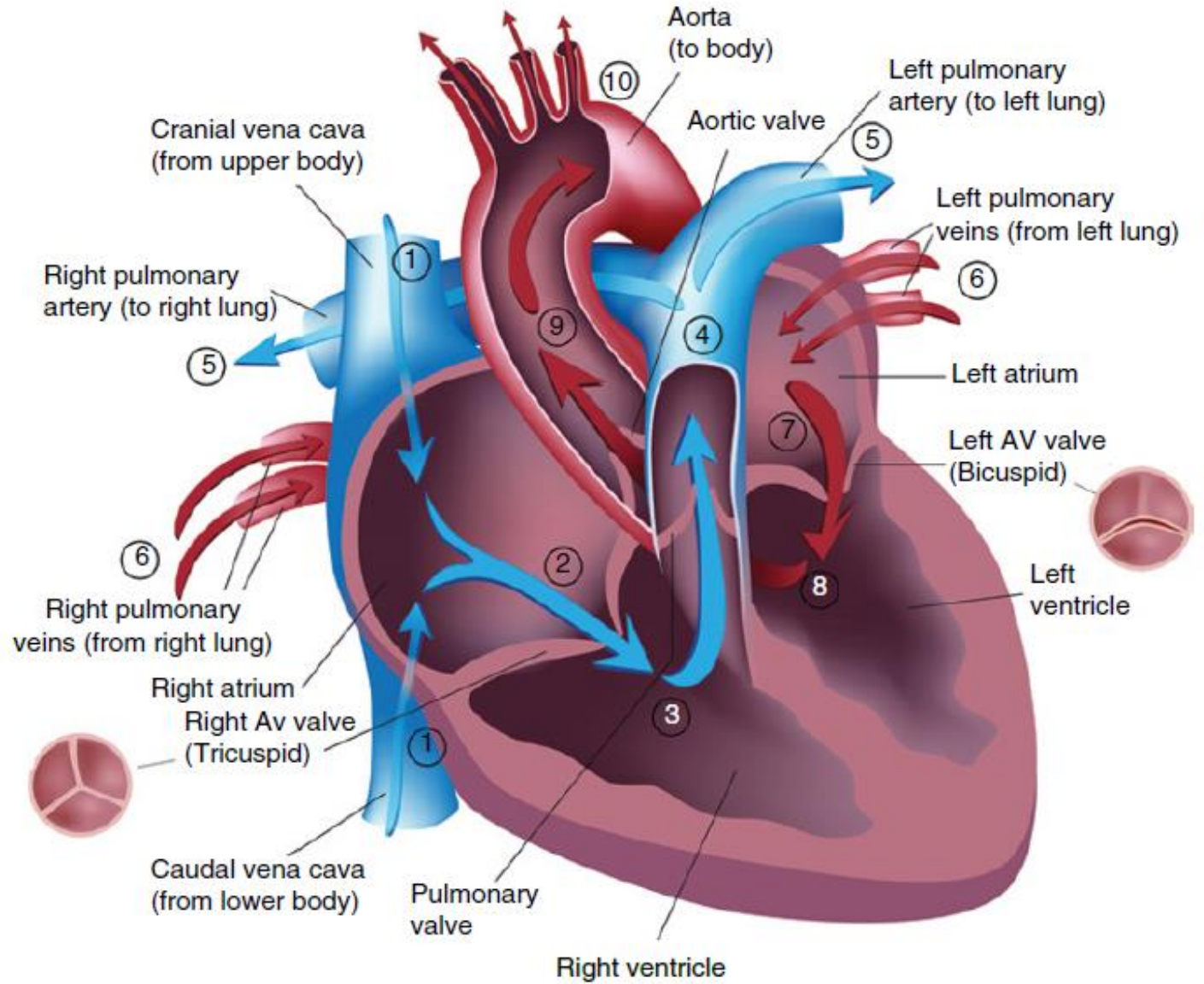
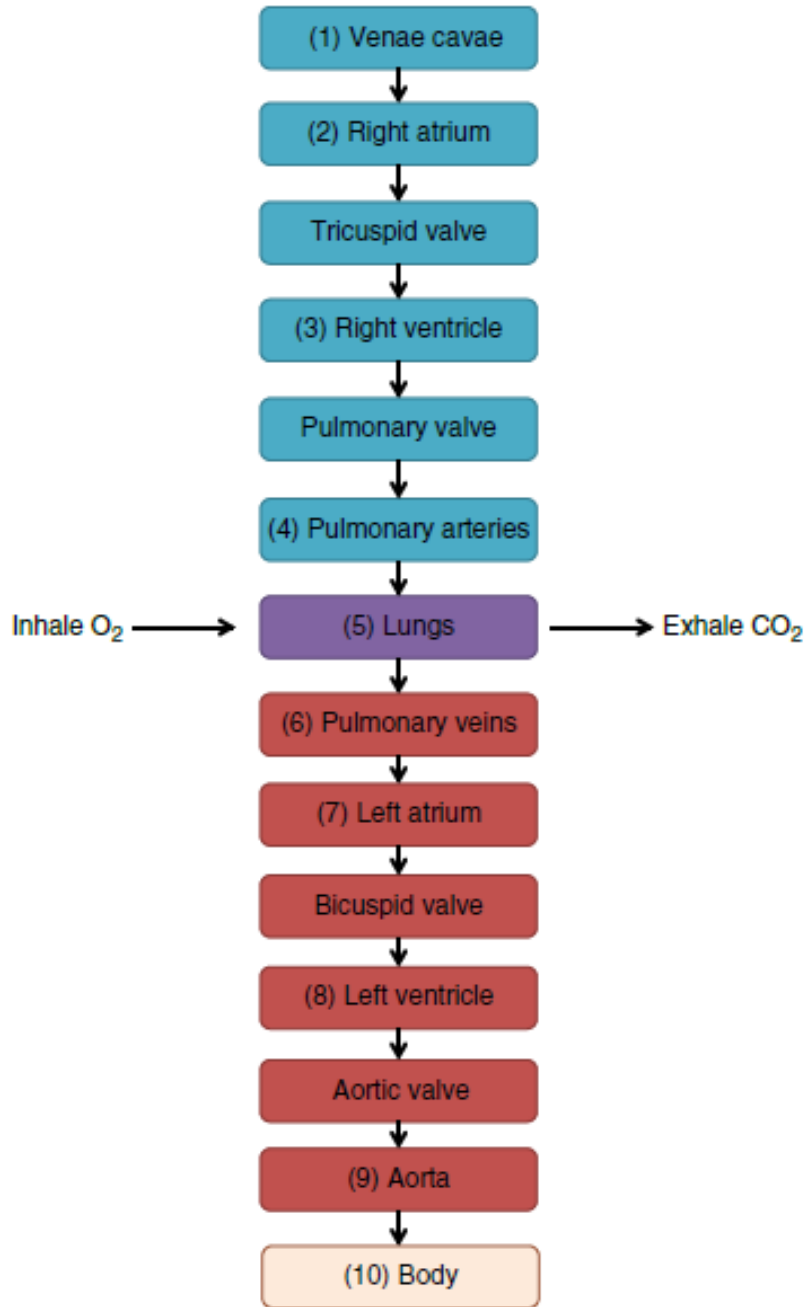


Pericardium

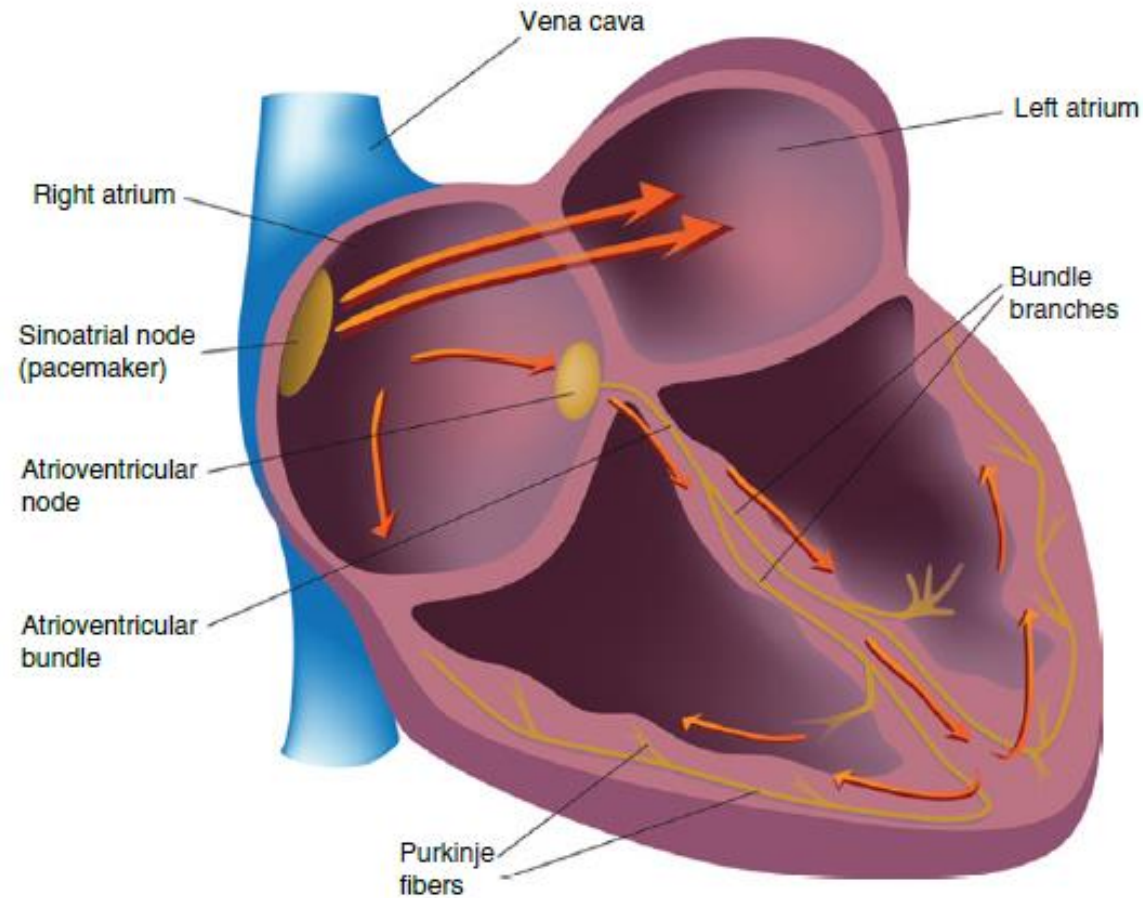
Membrane surrounding the heart. This membrane is actually a two-layer sac made up of the visceral pericardium and parietal pericardium. The visceral layer adheres to the heart, whereas the parietal layer lines the fibrous outer portion of the pericardium. The space between the heart and the pericardium is termed the pericardial space. Within this pericardial space is a fluid that acts as a lubricant for the membranes as the heart beats. This fluid is called pericardial fluid.

Endocardium Inner lining of the heart. This layer of endothelial cells lines the chambers and valves within the heart.

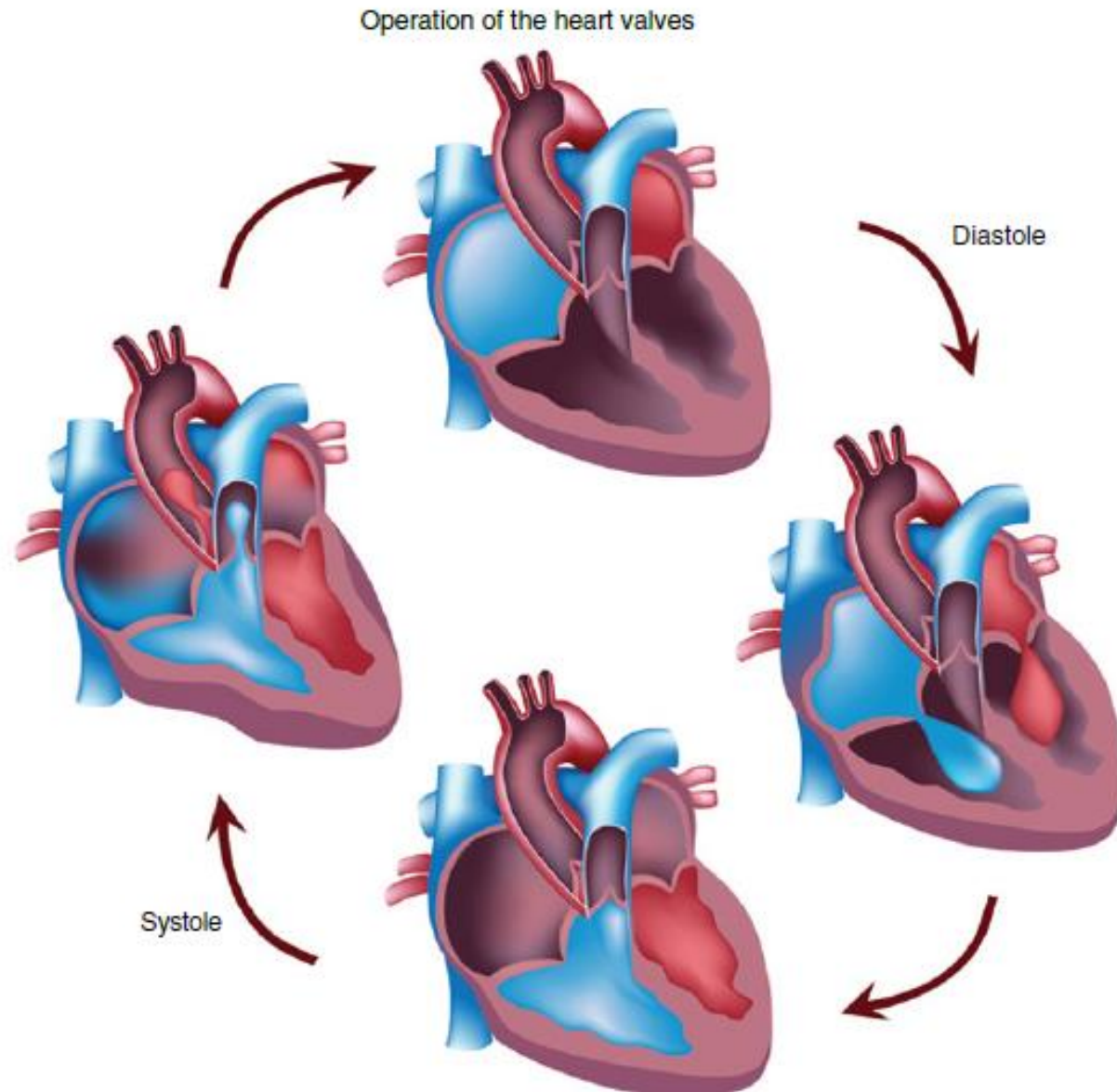
Myocardium Muscle layer of the heart. This is literally the heart muscle and gives the heart the power to push the blood throughout the body.



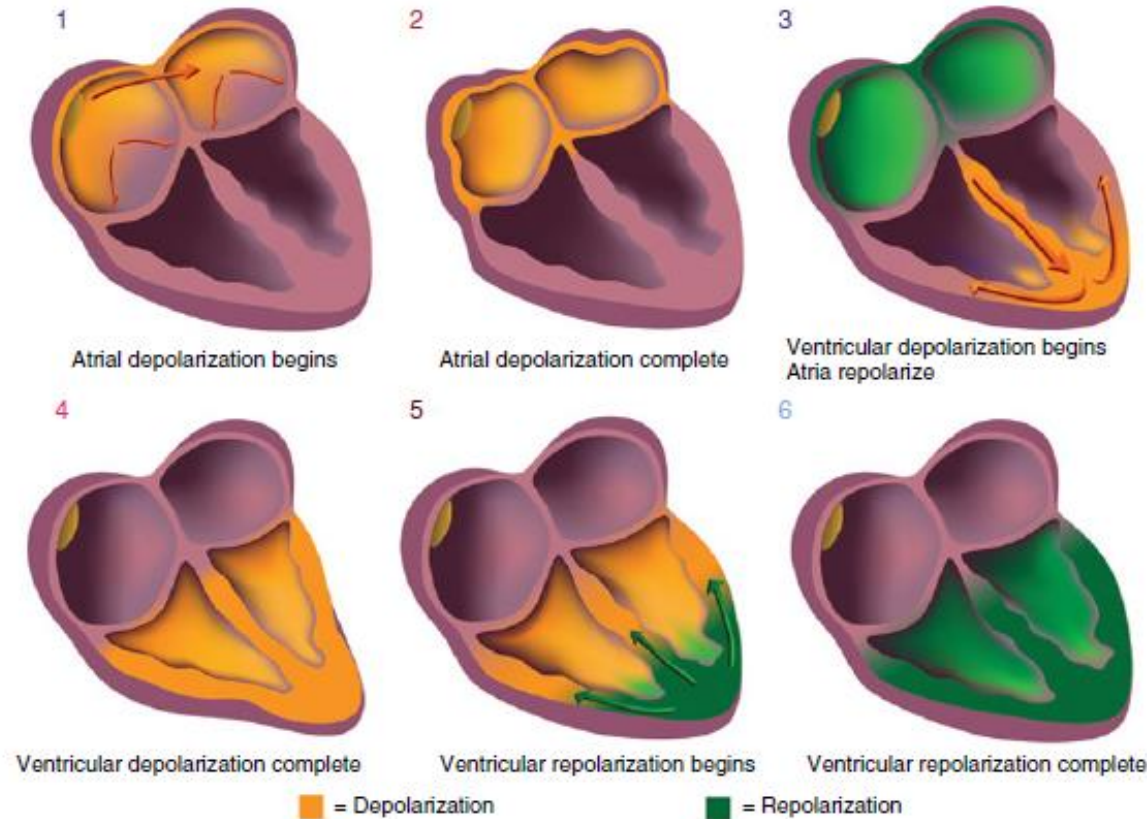
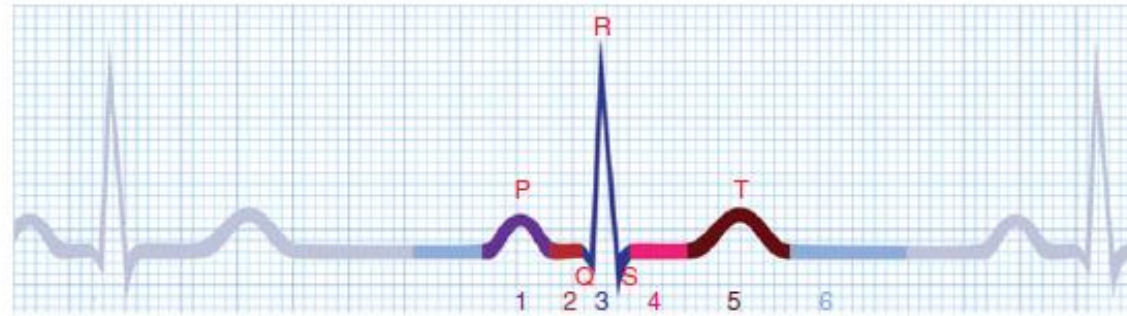
Conduction system of the heart



The cardiac cycle



Electrocardiogram



Electrocardiogram

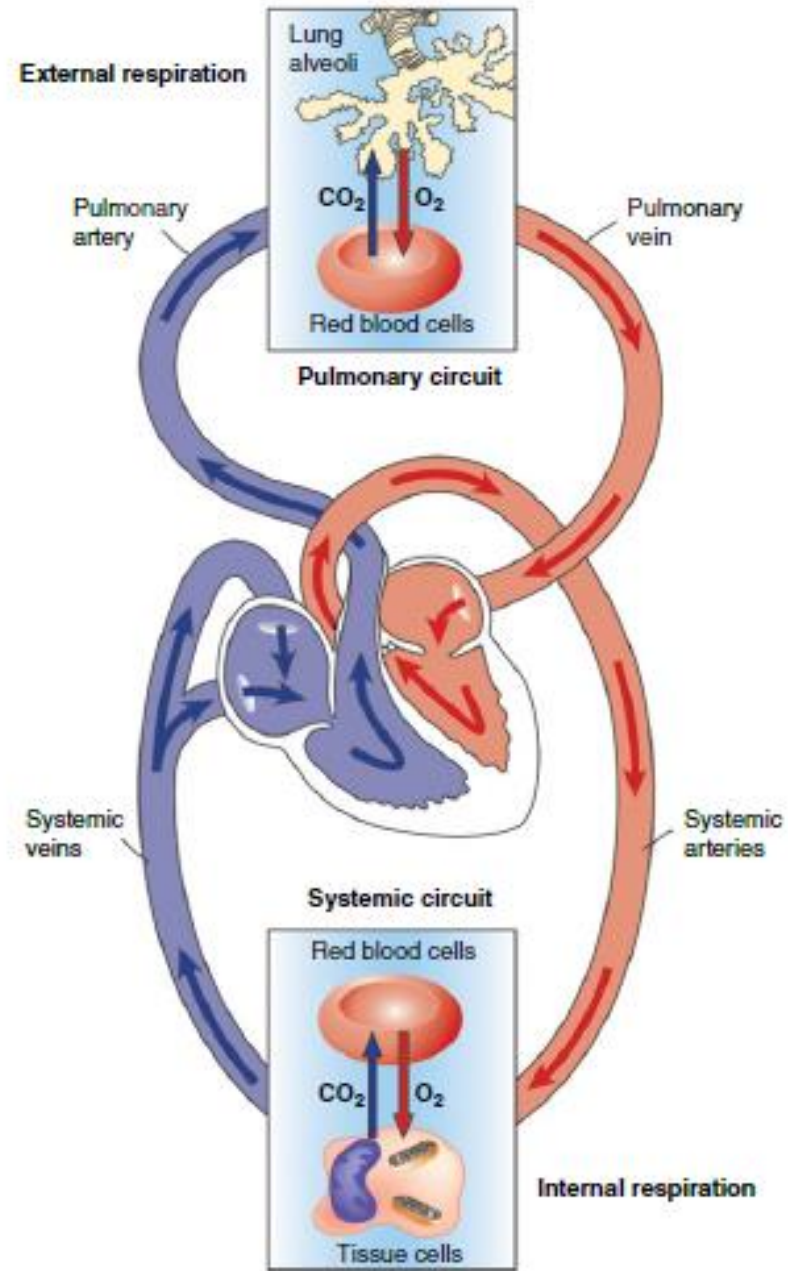


Blood pressure

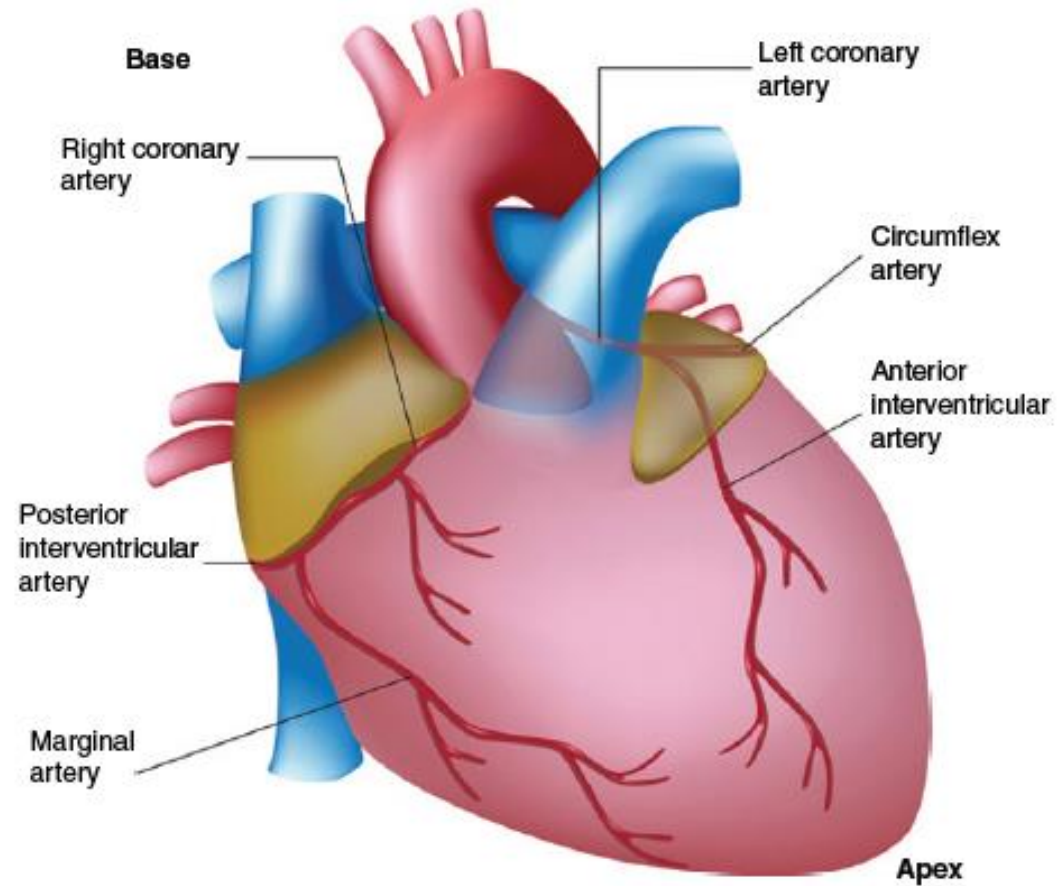
Blood Pressure

Measurement

The circulation



External anatomy of the heart



Pathology and procedures

Aneurysm

Sac (dilation) formed by weakening of a blood vessel. Can lead to hemorrhage and stroke (Figure 6.15).

Arrhythmia

Abnormal heart rhythm. Also called dysrhythmia.

Asystole

Without contraction; lack of heart activity.

Atherosclerosis

Hardening of arteries due to plaque buildup (Figure 6.16).

Atrial septal defect (ASD)

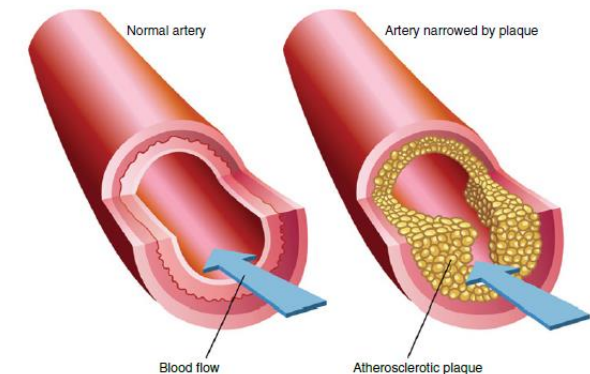
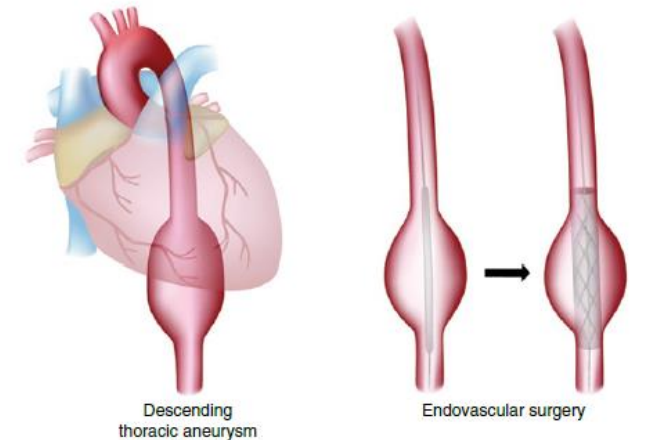
Small hole(s) in the interatrial septum.

Auscultation

Listening with a stethoscope to sounds within the body. Thoracic auscultation is used to listen to heart and breath sounds. Abdominal auscultation is often used to listen to gut sounds (Figure 6.17).

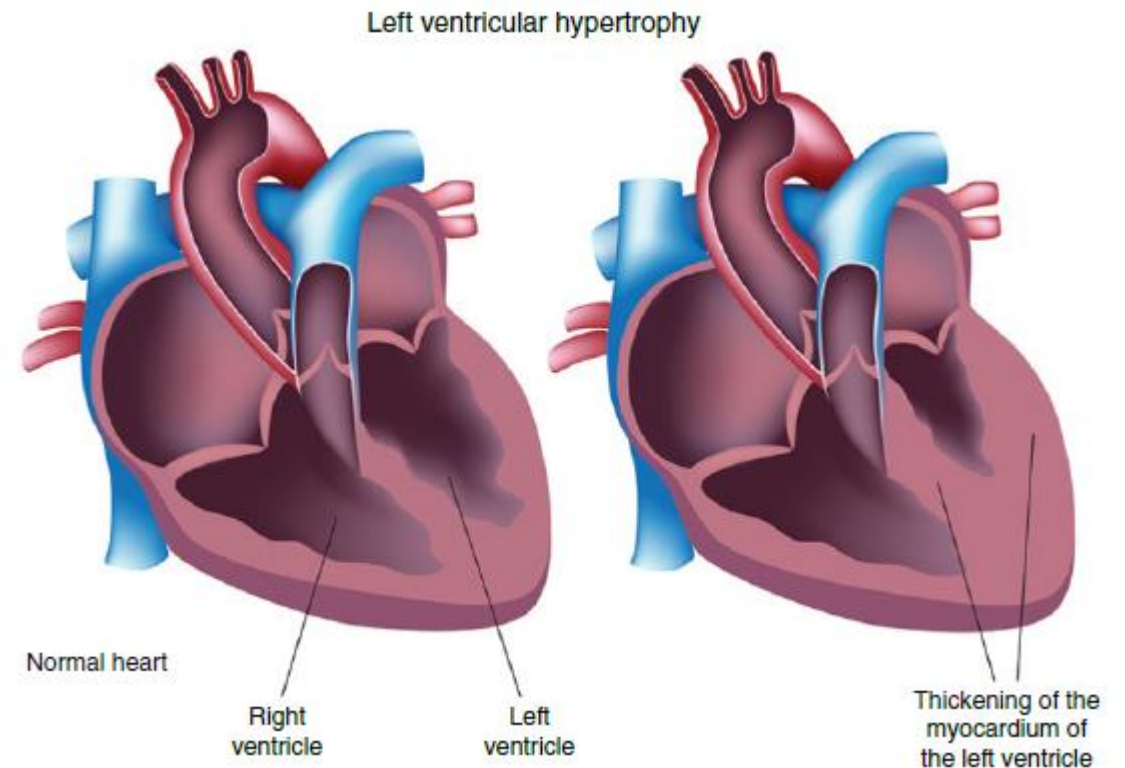
Cardiac hypertrophy (HCM)

Enlargement of the heart due to increased cell size (Figure 6.18).

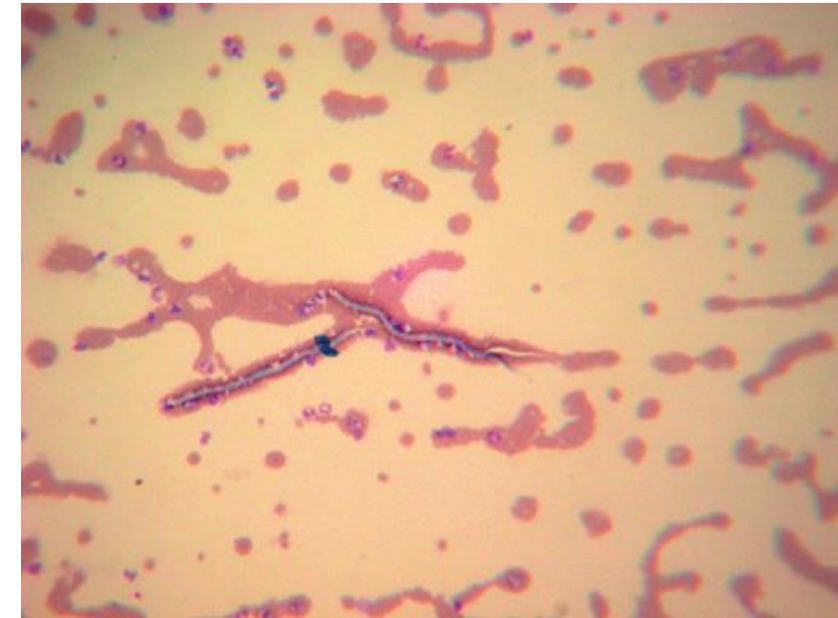


Pathology and procedures

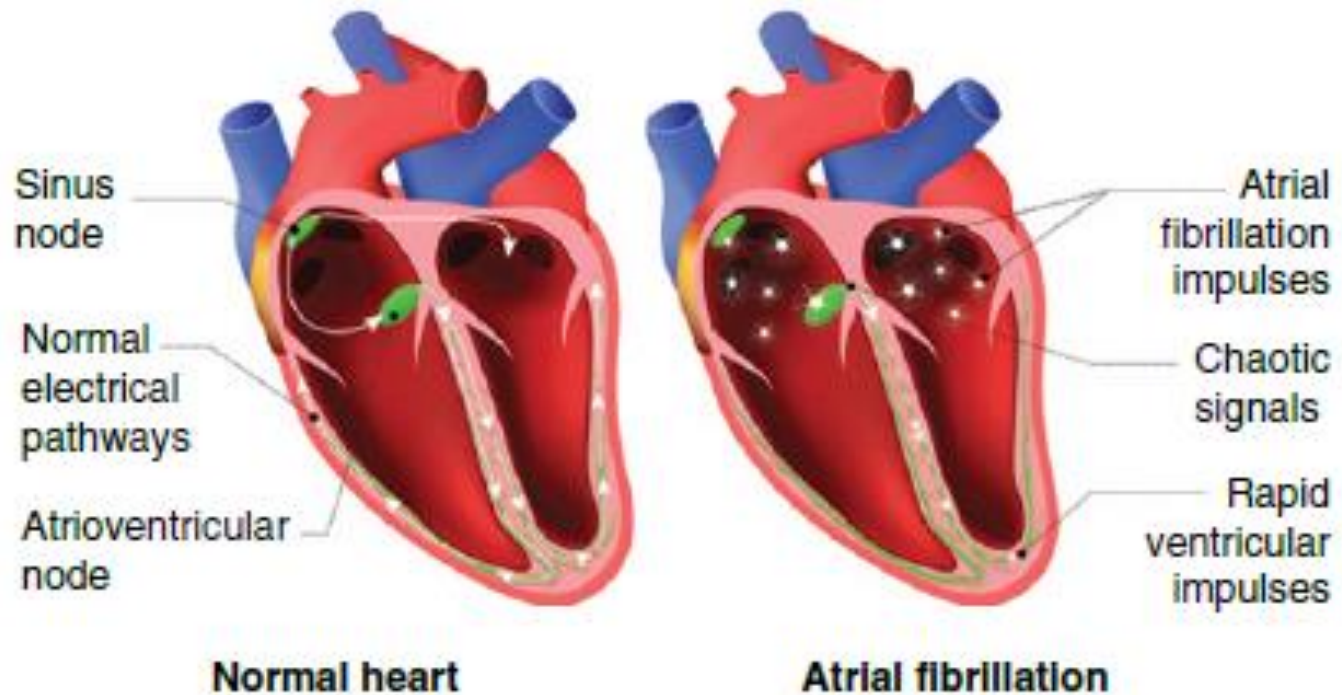
Cardiac tamponade	Compression of the heart due to fluid or blood in the pericardial sac.
Congenital heart disease (CHD)	Abnormalities of the heart at birth.
Congestive heart failure (CHF)	Heart is unable to pump its required amount of blood.
Capillary refill time (CRT)	The time it takes for the mucous membranes to return to a normal pink color after applying finger pressure.
Defibrillation	Use of electrical shock to restore normal heart rhythm (Figure 6.19).
Echocardiogram (ECHO)	High-frequency sound waves and echoes that produce an image of the heart (Figure 6.20).
Embolism	Blockage of a vessel by a clot or foreign material.
Embolus (plural: emboli)	A detached, moving clot.
Fibrillation	Rapid, random, and irregular contractions of the heart (Figure 6.21).
Flutter	Rapid but regular contractions of the atria and ventricles. Can be further isolated as an atrial flutter or ventricular flutter depending on the chambers involved.
Heartworm disease	Infestation of the parasite <i>Dirofilaria immitis</i> in the right ventricle and pulmonary arteries. Transmitted after a blood meal from a mosquito (Figure 6.22).
Hyperemia	Excessive blood in a body part. This usually occurs due to vasodilation.



Pathology and procedures



Pathology and procedures



Pathology and procedures

Hypertension

Increased blood pressure.

Hypotension

Decreased blood pressure.

Hypoxia

Decreased oxygen to tissues.

Infarction

Area of dead tissue.

Ischemia

Lack of blood flow to tissues.

Ligate

To tie off a vessel to prevent bleeding or to constrict tissue using ligature. Ligature is material such as a thread or wire.

Mitral valve prolapse
(MVP)

Displacement of the bicuspid valve leading to incomplete closure of the valve during ventricular contraction (Figure 6.23).

Murmur

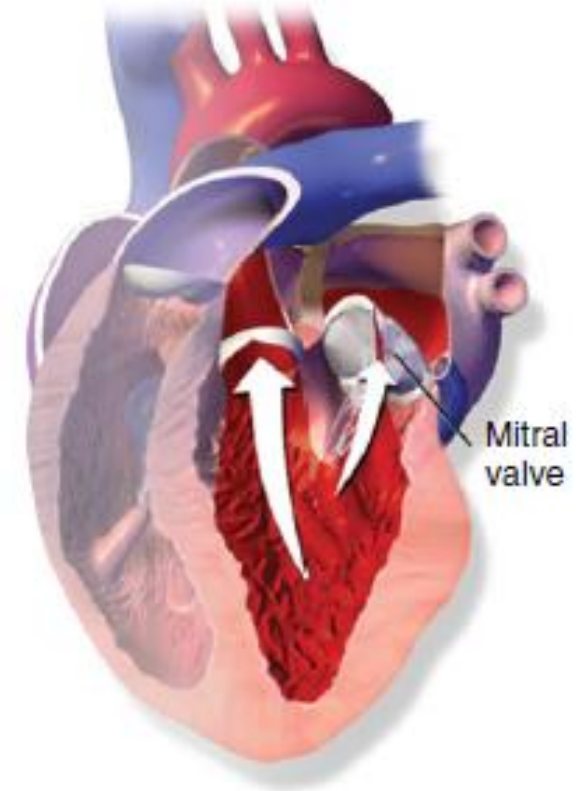
An extra heart sound.

Occlusion

Blockage; obstruction or closure of body passage.

Patent

Open; unobstructed. Term can be used to describe vessels and catheters.



Pathology and procedures

Patent ductus arteriosus (PDA)

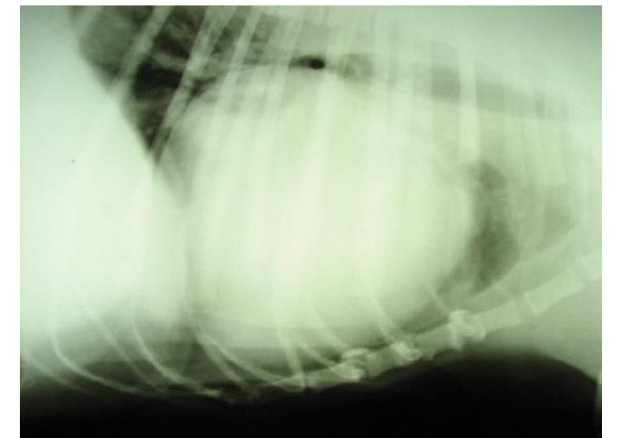
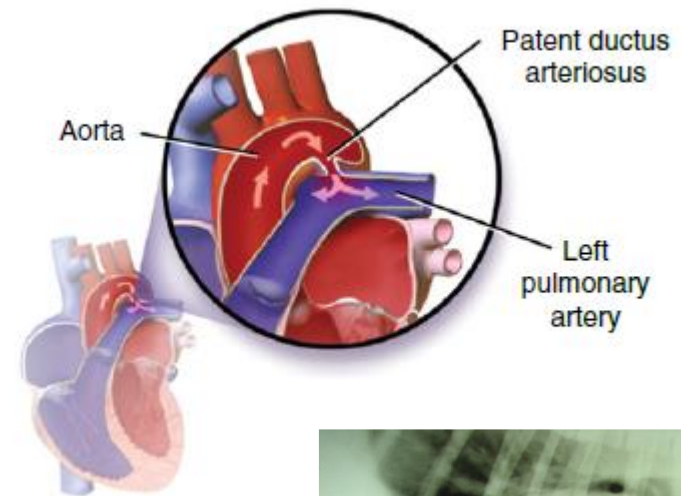
Condition in which the small duct between the aorta and pulmonary artery, which normally closes after birth, remains open. The duct itself is called the ductus arteriosus. PDA causes continuous murmur, fatigue, and exercise intolerance. It is the most common heart malformation in dogs and is most often seen in Collies, Shelties, Old English Sheepdogs, and Pomeranians (Figure 6.24).

Perfusion (tissue perfusion)

Passage of fluid through the blood vessels of a specific organ; blood flow through the tissue.

Pericardial effusion

Escape of fluid into the pericardial sac leading to cardiac tamponade. An effusion is an escape of fluid and can occur anywhere in the body (Figure 6.25).



Pathology and procedures

Premature ventricular contraction (PVC, VPC)

Shock

Sphygmomanometer

Ventricles are triggered to contract by the Purkinje fibers rather than the SA node.

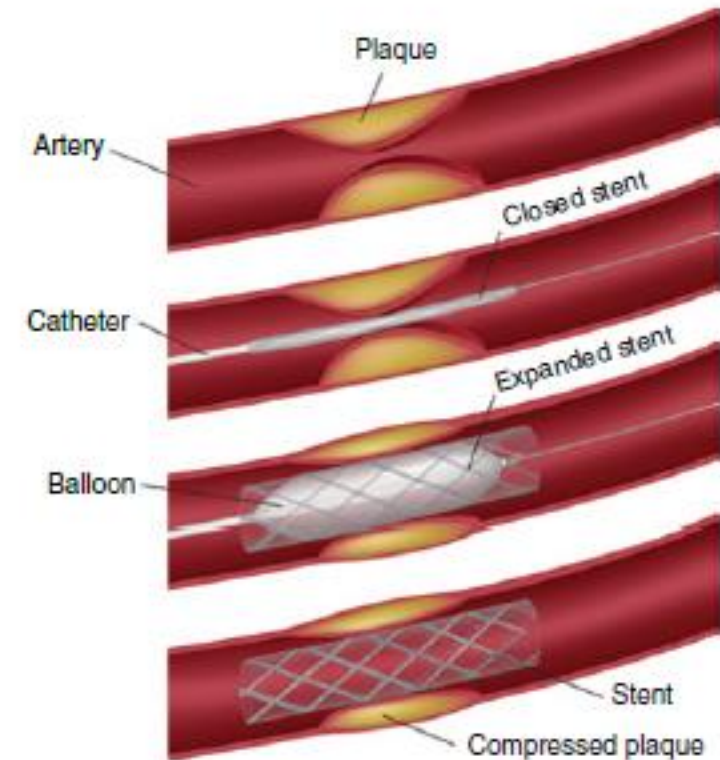
Inadequate tissue perfusion. Blood pools in the capillaries to increase the blood volume of the patient, which then decreases its flow to vital organs (Figure 6.26).

Instrument that measures arterial blood pressure.

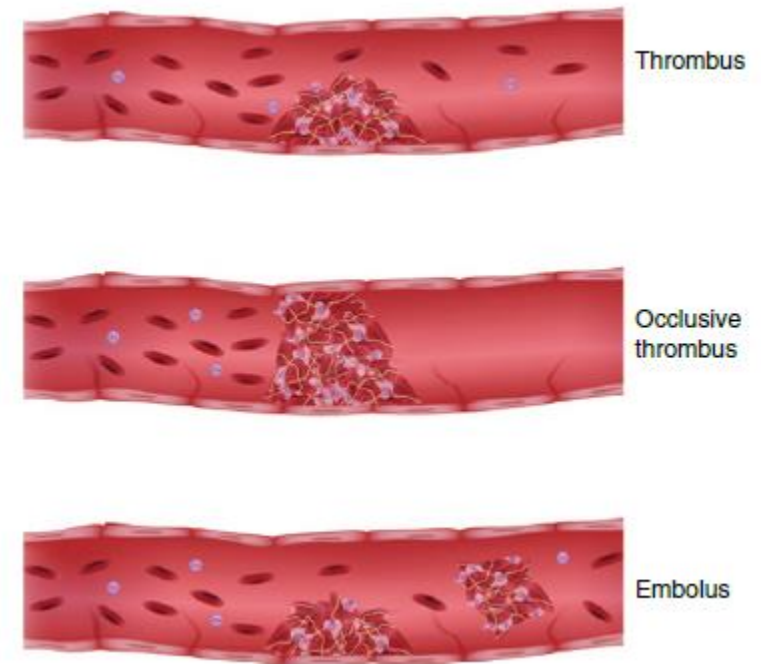
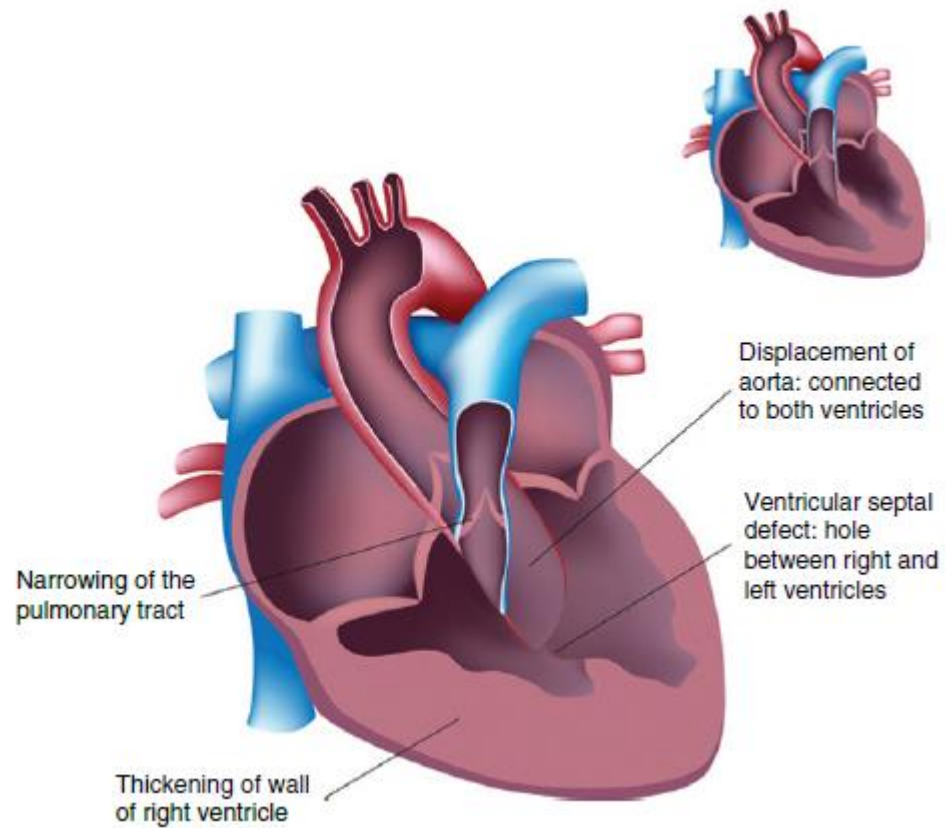


Pathology and procedures

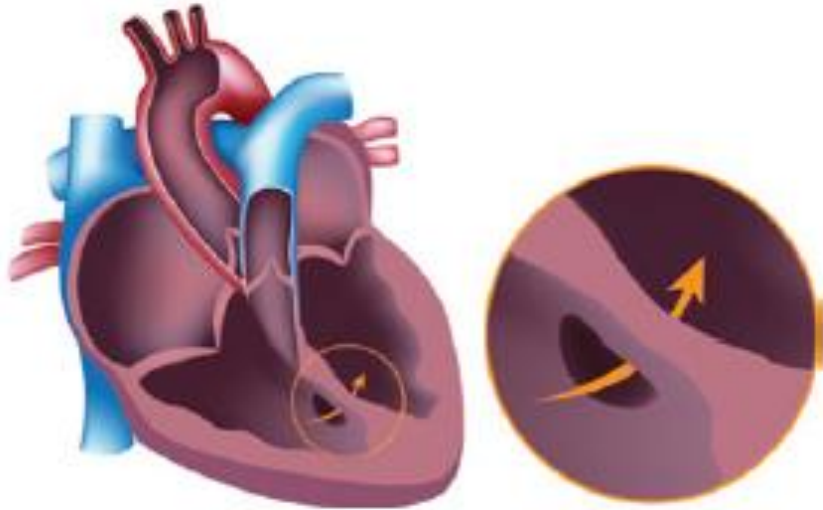
Stent	Small expander inserted into tubular structures such as vessels to provide support and prevent collapse (Figure 6.27).
Stethoscope	Instrument used to listen to sounds within the body (Figure 6.28).
Tetralogy of Fallot	Congenital malformation of the heart that combines four structural defects: pulmonary artery stenosis, ventricular septal defect, aortic right shift, and right ventricular hypertrophy (Figure 6.29).
Thrill	Vibration felt on palpation of the chest. Usually caused by turbulence in the heart.
Thrombus (plural: thrombi)	Stationary clot attached to the wall of a vessel (Figure 6.30).
Ventricular septal defect (VSD)	Small hole(s) in the interventricular septum. Causes shunting of the blood and therefore deoxygenated blood is pumped to the rest of the body (Figure 6.31).
Vasoconstriction	Narrowing of a vessel (Figure 6.32).
Vasodilation	Expansion of a vessel (Figure 6.32).



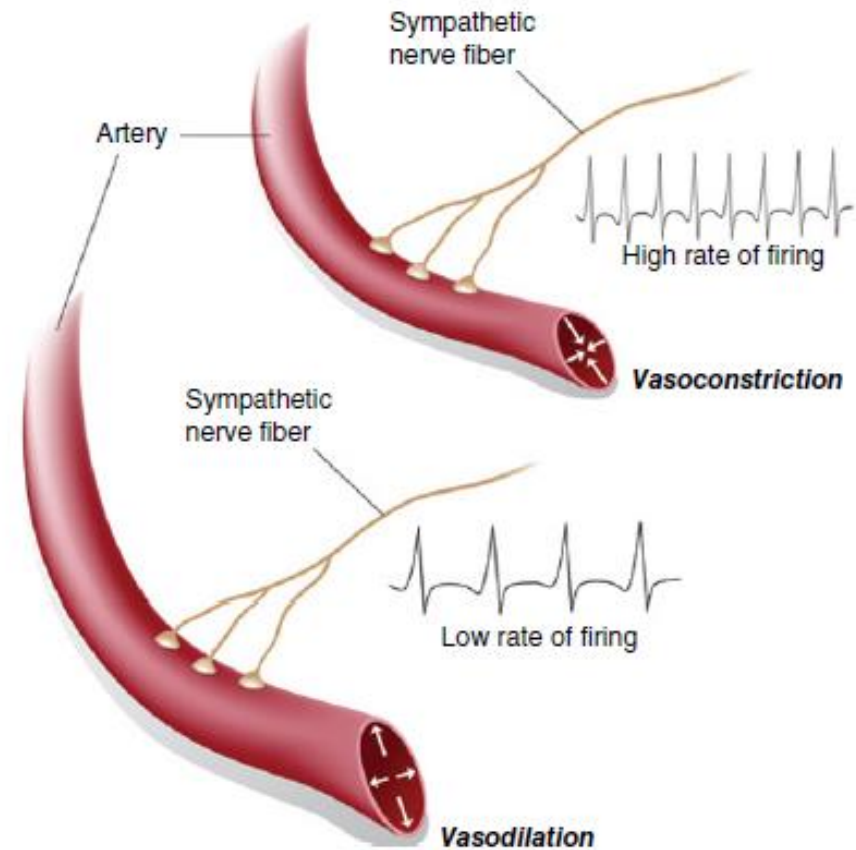
Pathology and procedures



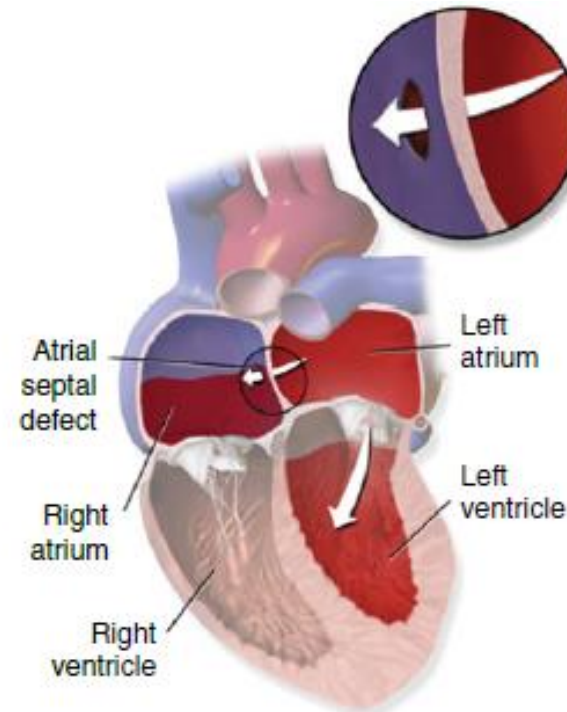
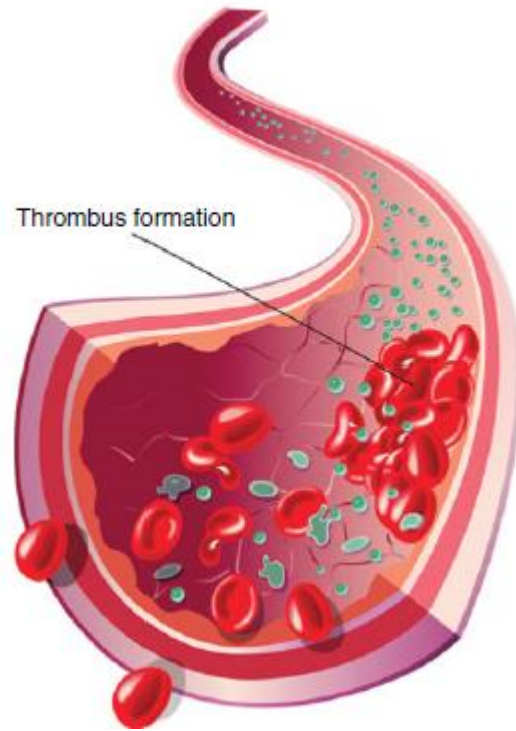
Pathology and procedures



Ventricular septal defect.

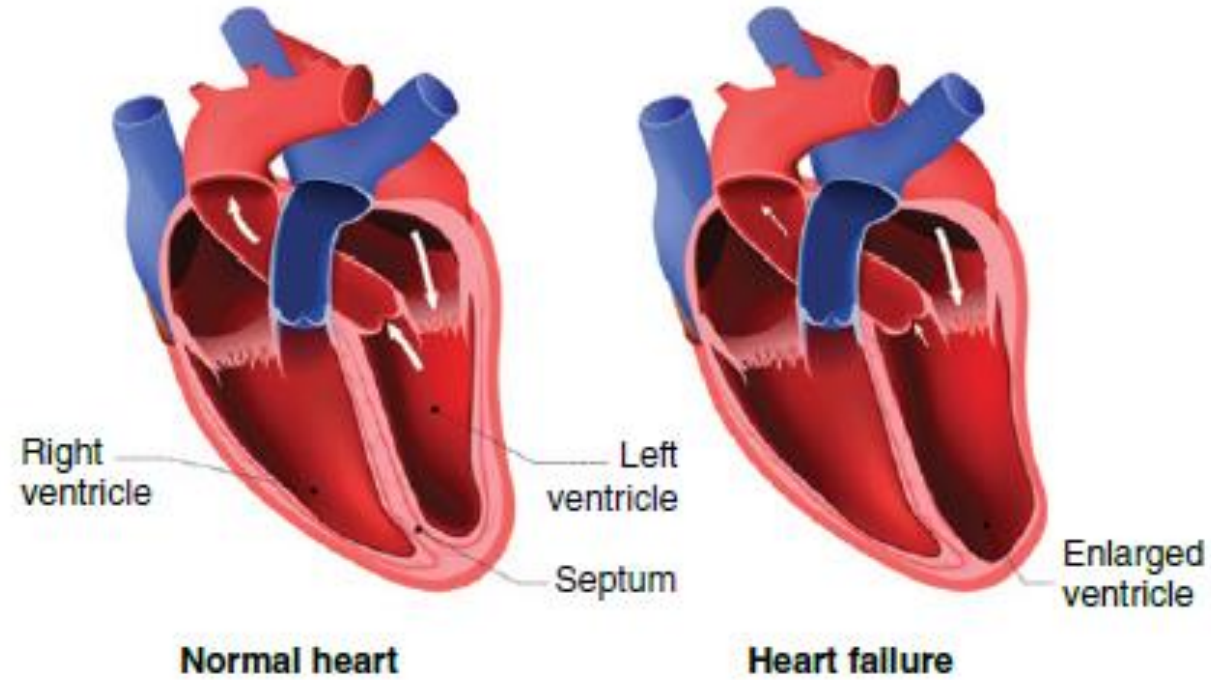


Pathology and procedures



Atrial septal defect.

Pathology and procedures



Congestive heart failure

