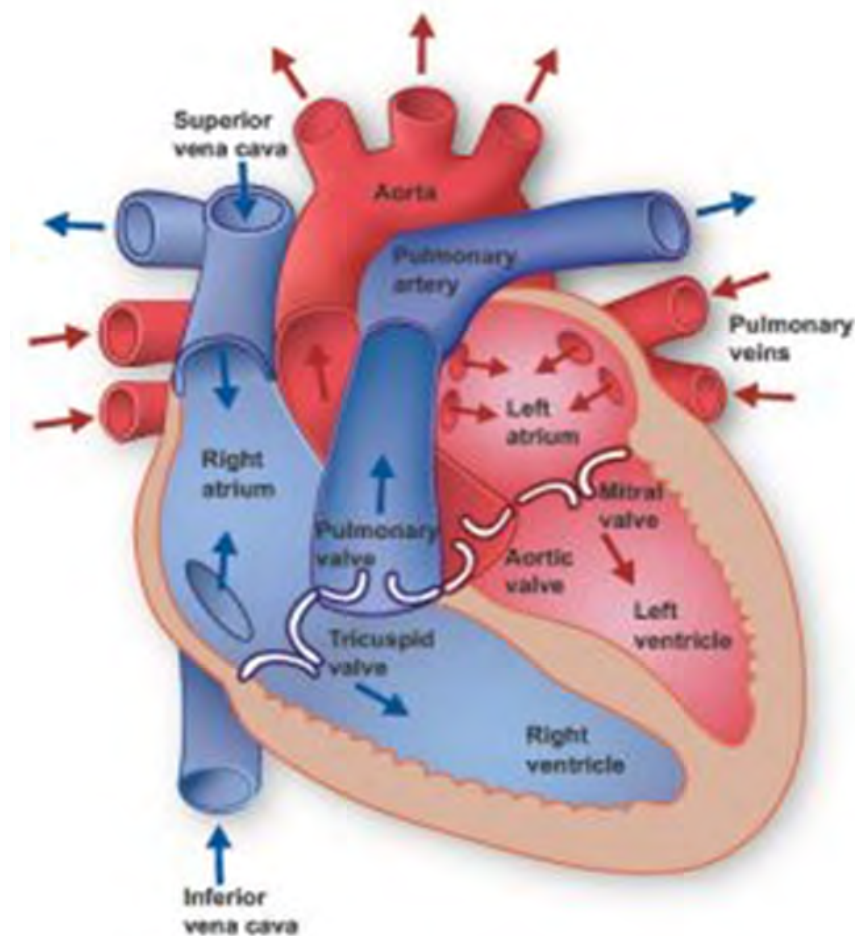


The Heart Of The Matter

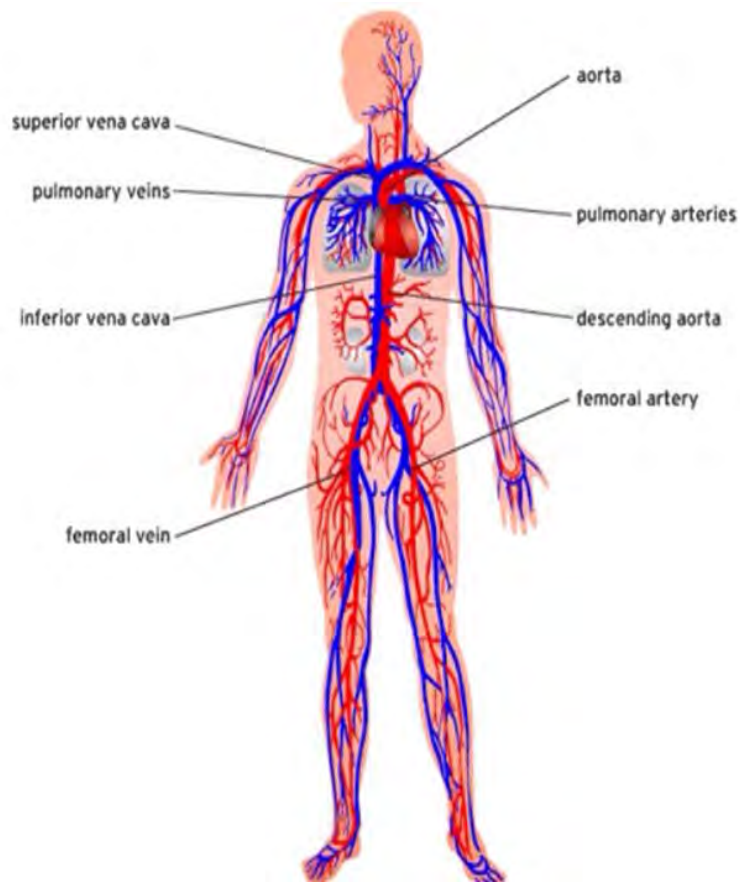
Cardiovascular Assessment

Anatomy

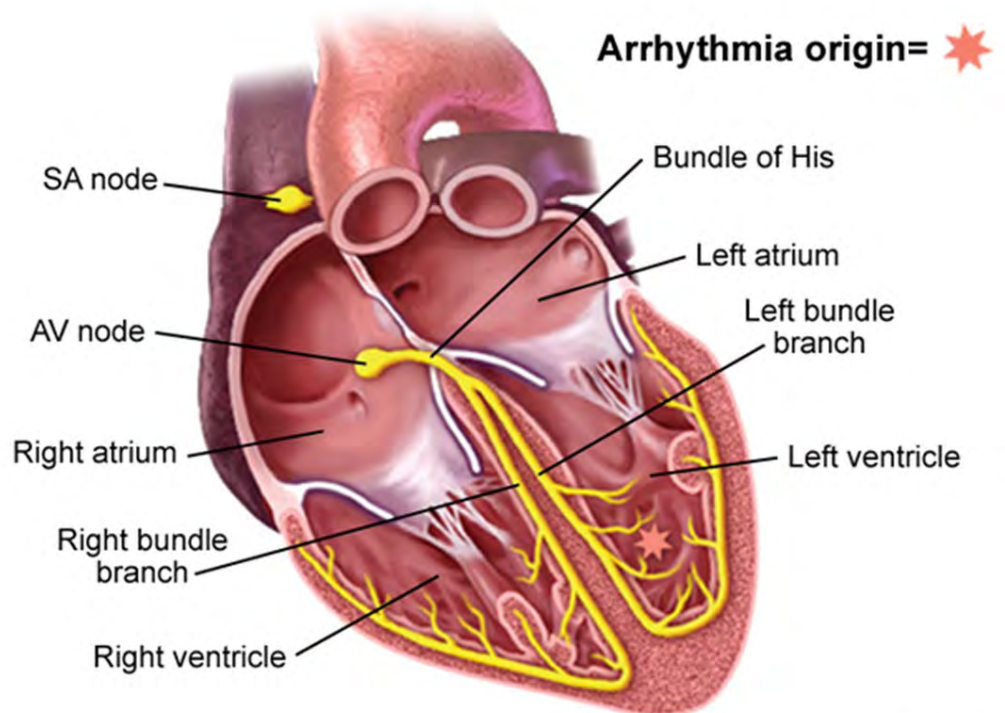
► Heart



► Vascular

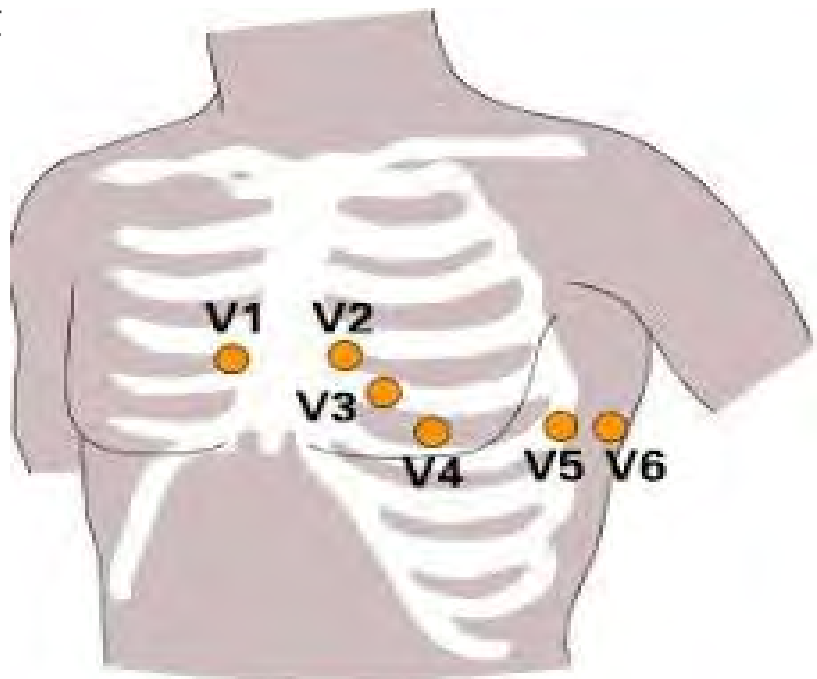


Physiology Electrical

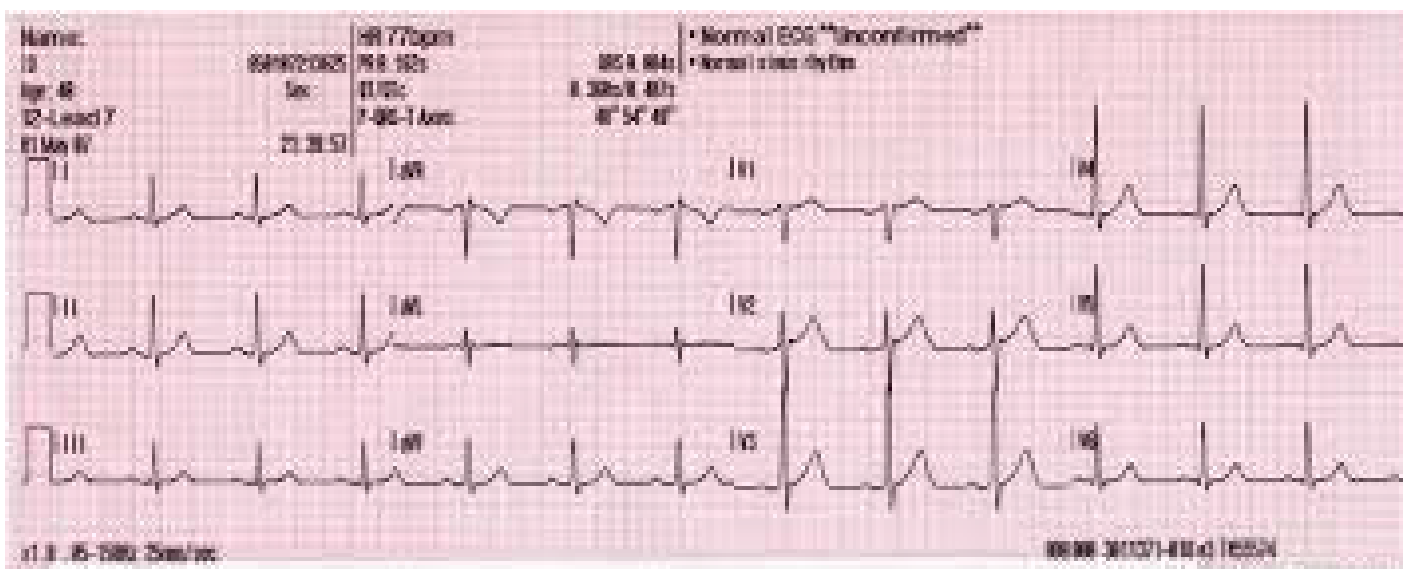


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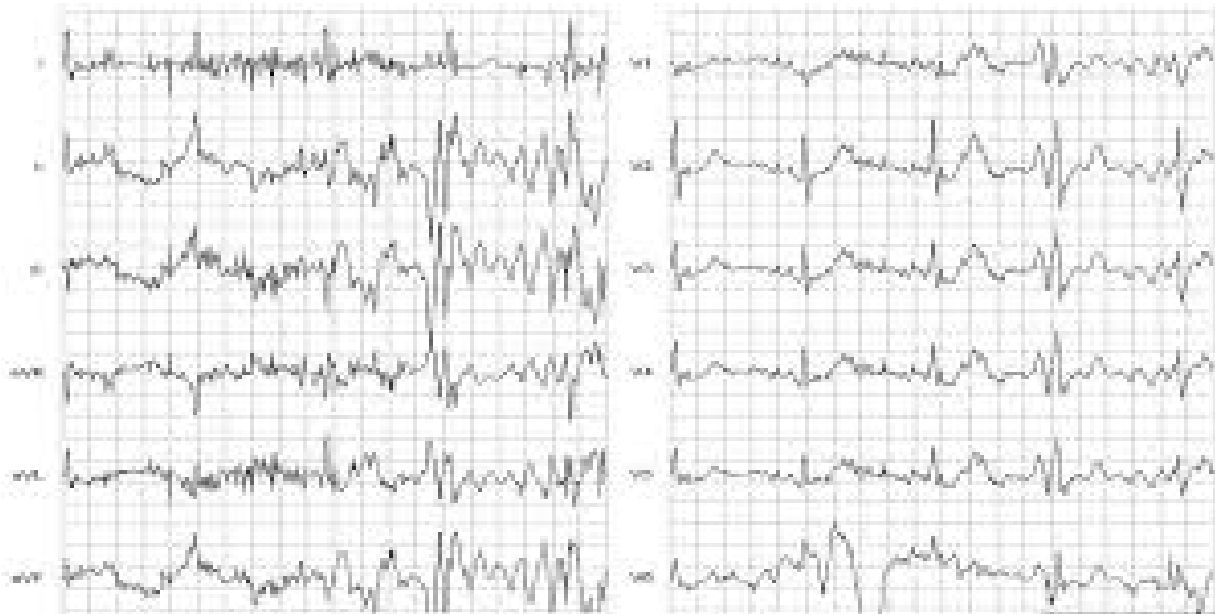
► 12 Lead Placement






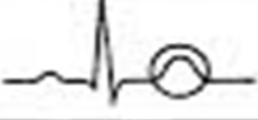

► 12 Lead Tracing



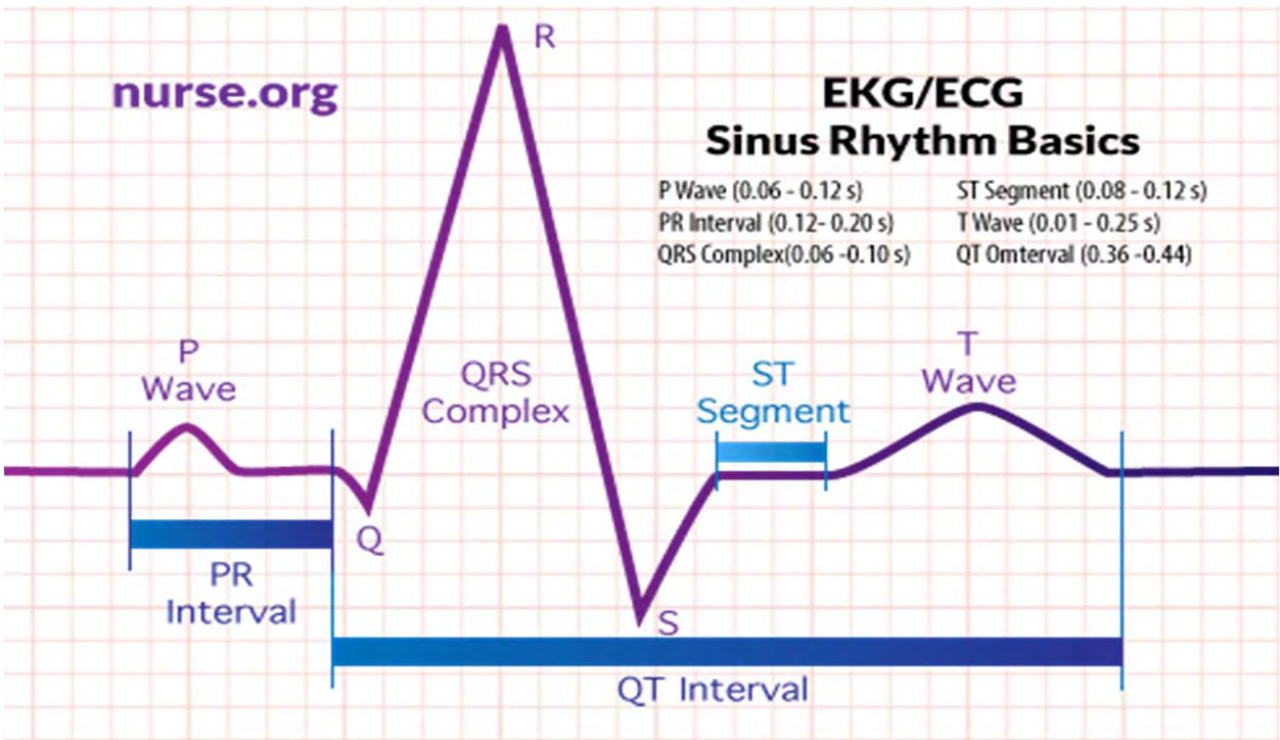
► 12 Lead With Artifact



EKG

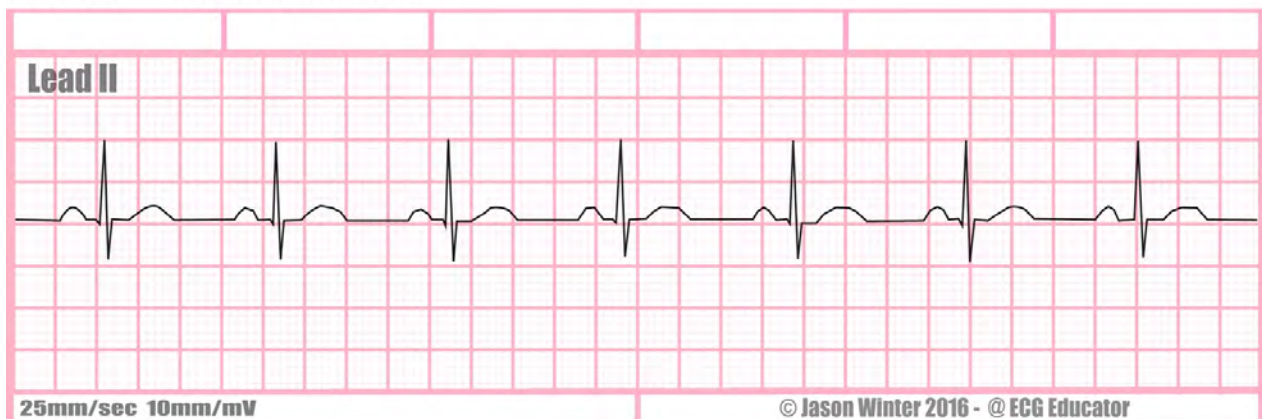
Electrical Activity	Graphic Depiction	Associated Pattern
Atrial Depolarization		P Wave
Delay at AV Node		PR Segment
Ventricular Depolarization		QRS Complex
Ventricular Repolarization		T Wave
No electrical activity		Isoelectric Line

► Normal Values EKG Tracing



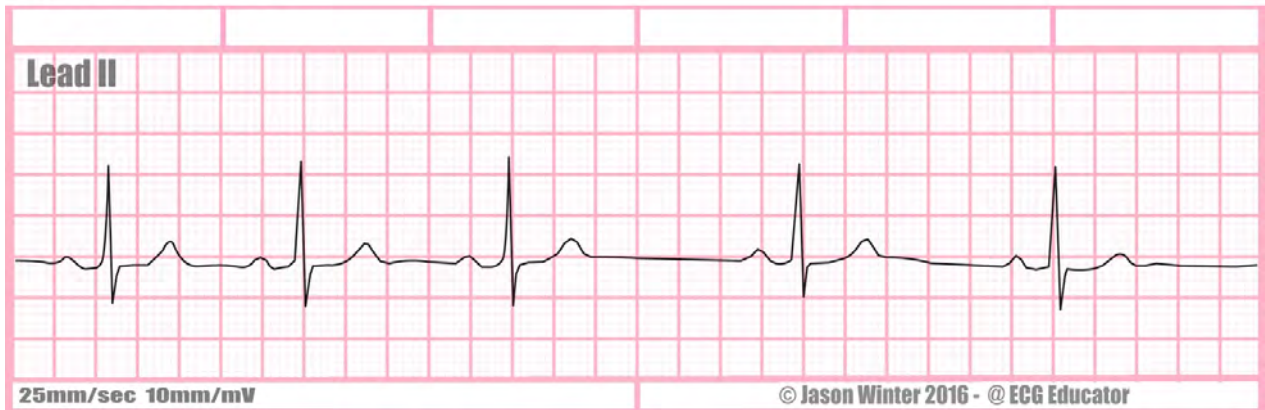
► Sinus Rhythm

Normal Sinus Rhythm (NSR)

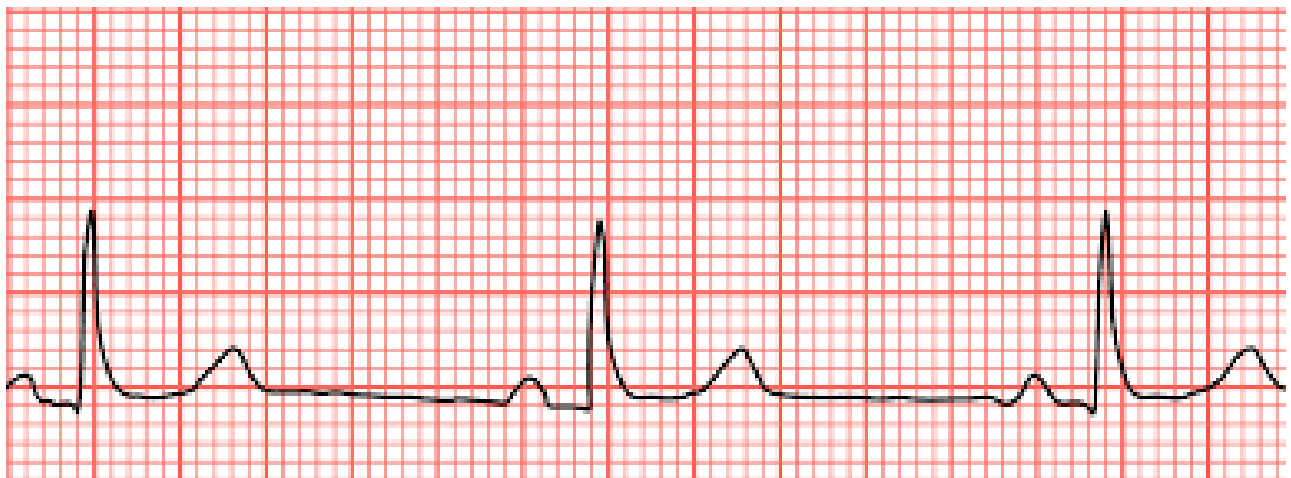


► Sinus Arrhythmia

Sinus Arrhythmia



► Sinus Bradycardia



► Supraventricular Tachycardia



► Sinus Rhythm First Degree Block



► Second Degree Heart Block

Mobitz I or Wenckebach



Mobitz II



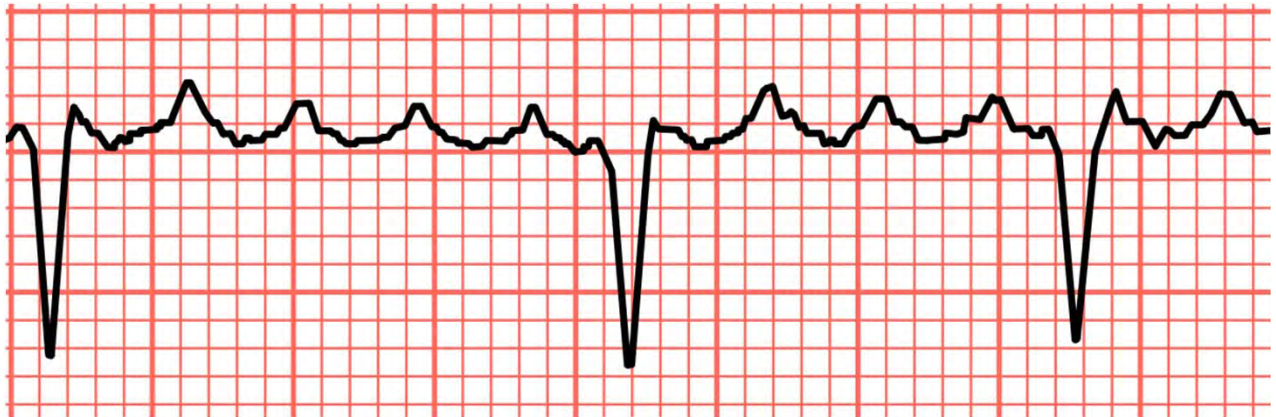
2:1 block



► Third Degree Heart Block



► Atrial Flutter

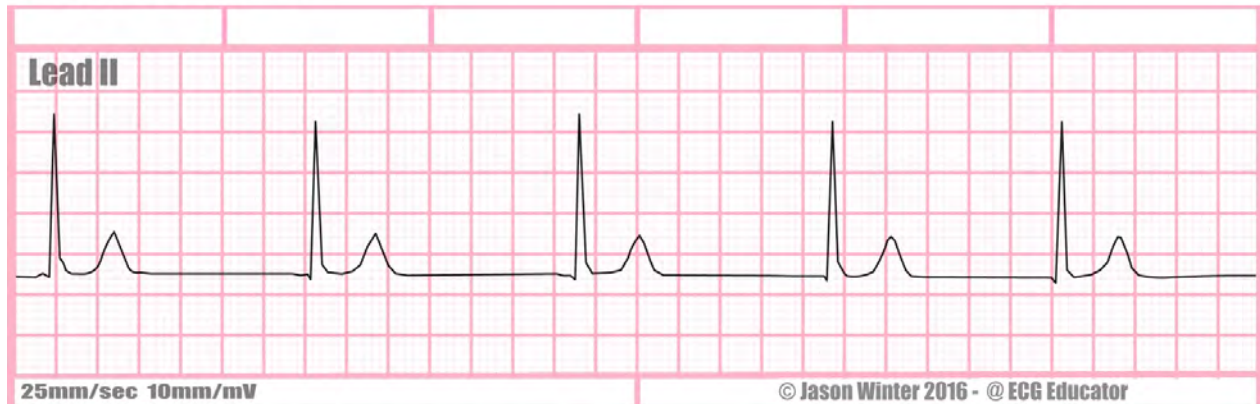


► Atrial Fibrillation

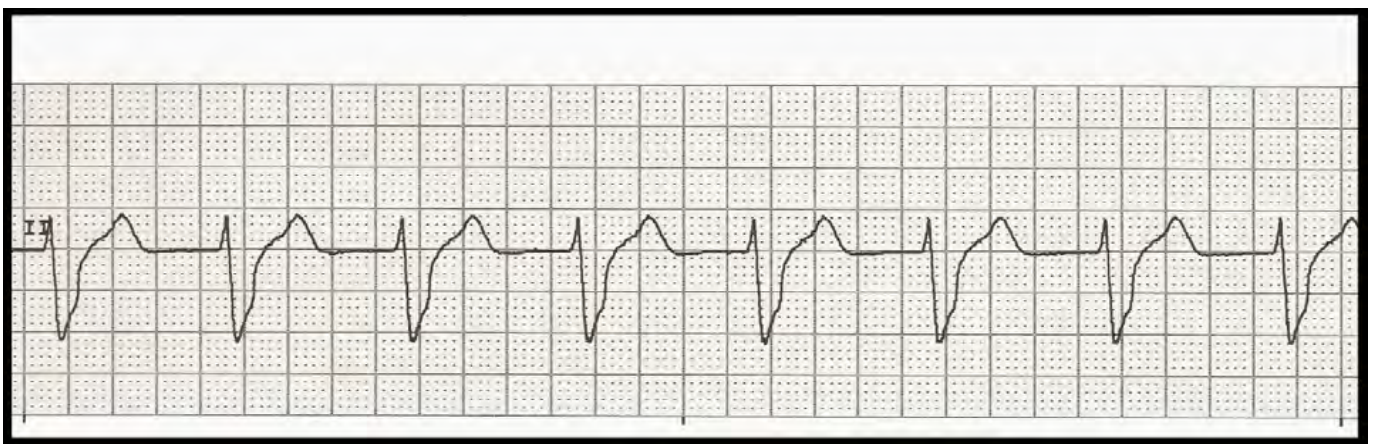


► Junctional Rhythm

Junctional Rhythm



Ventricular Rhythm



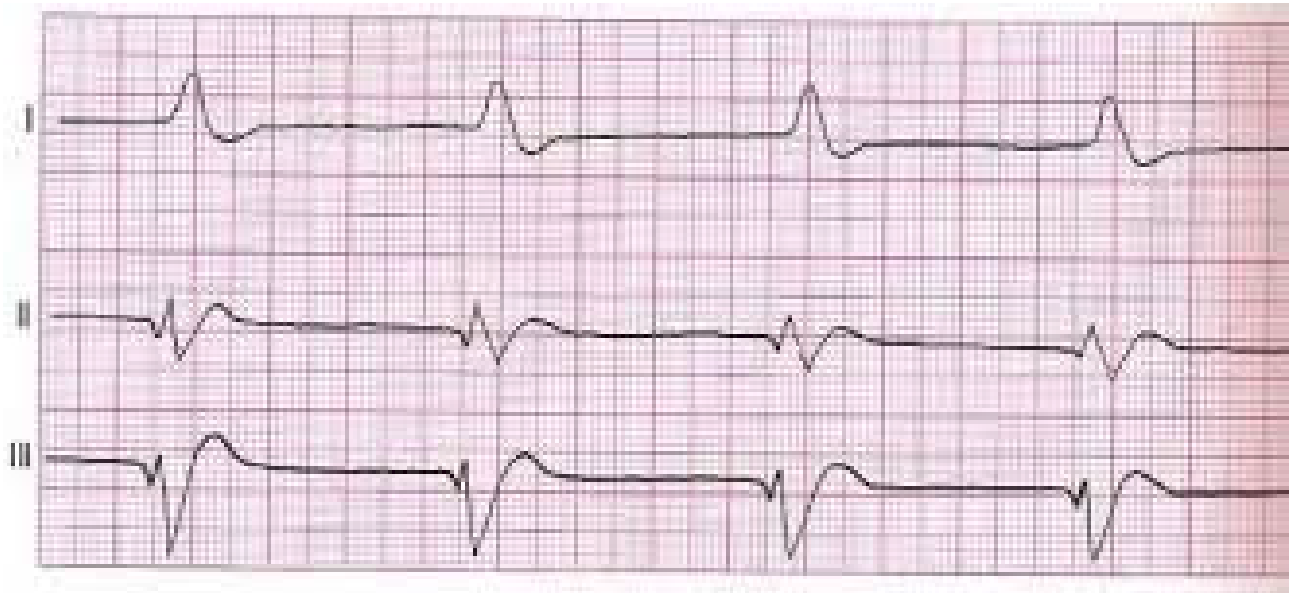
► Ventricular Tachycardia



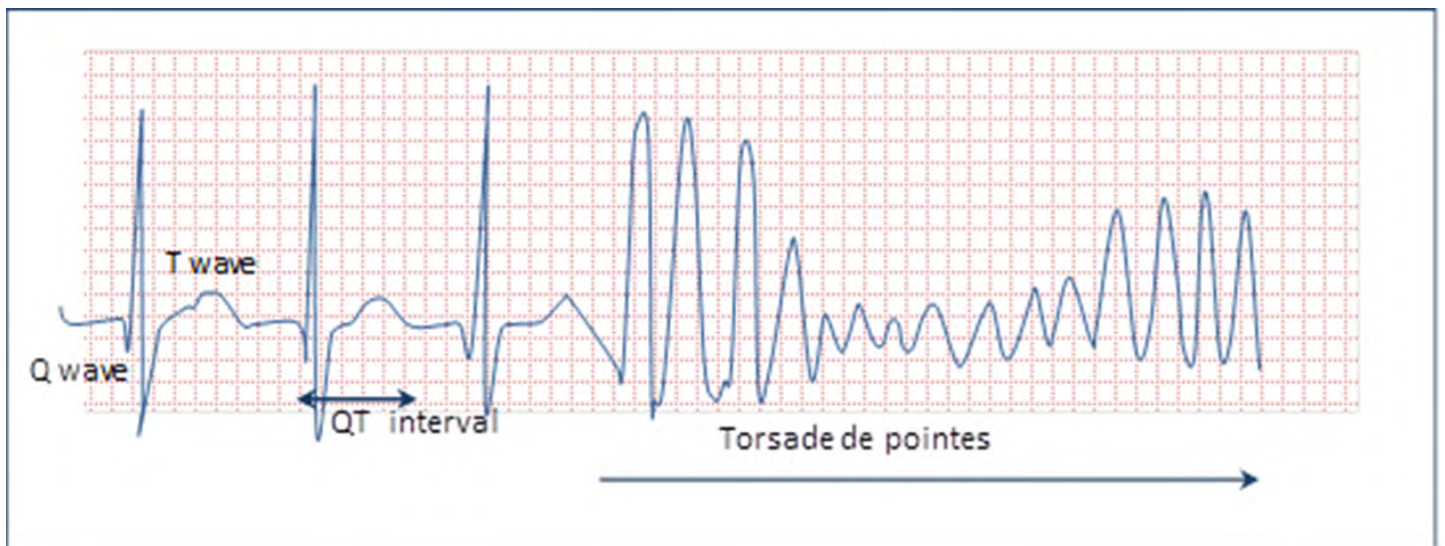
► Ventricular Fibrillation



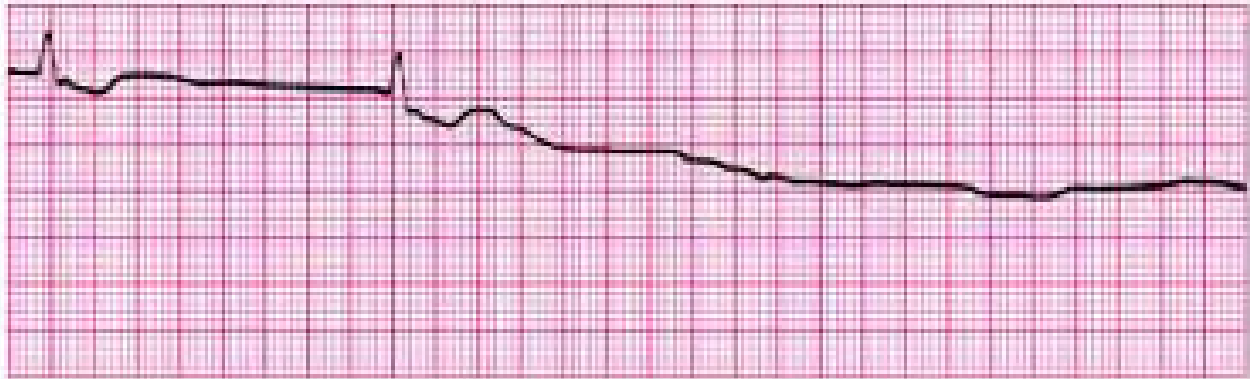
► Ventricular Escape



► Q on T



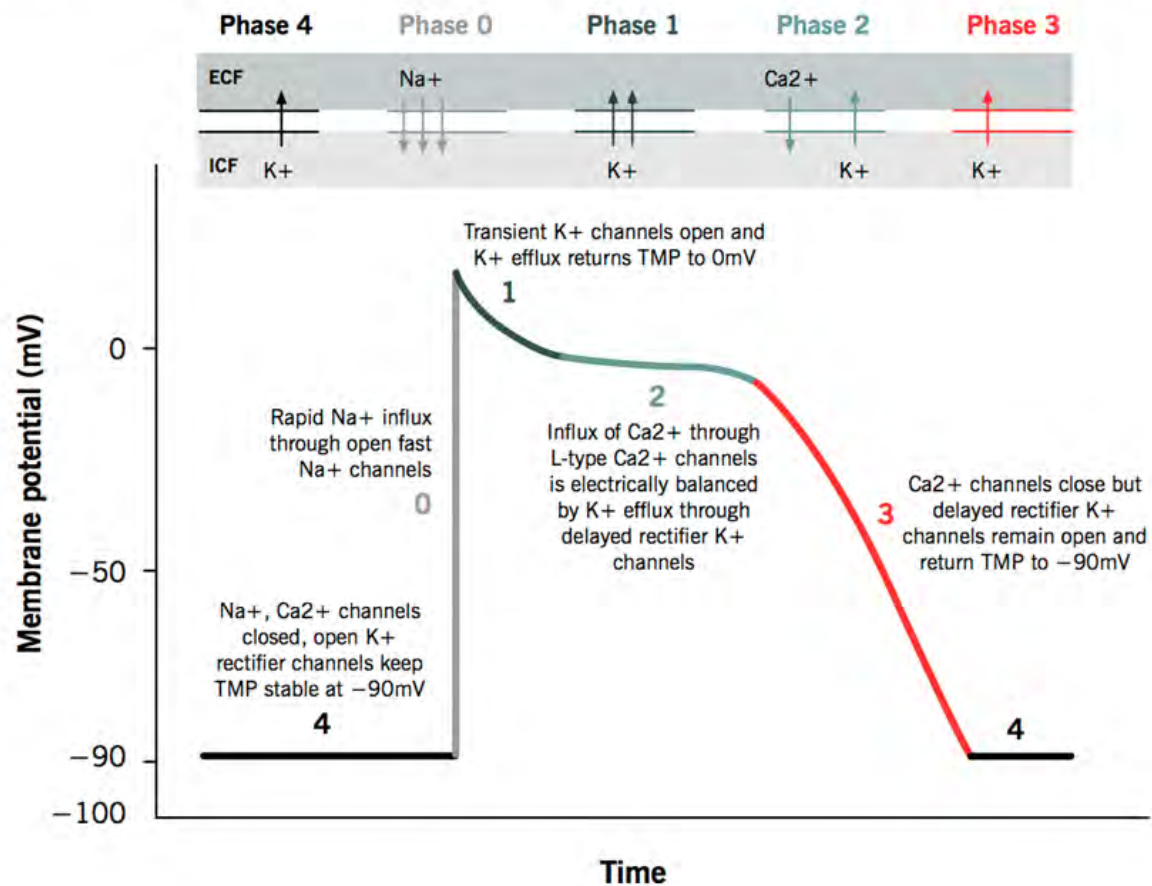
► Asystole



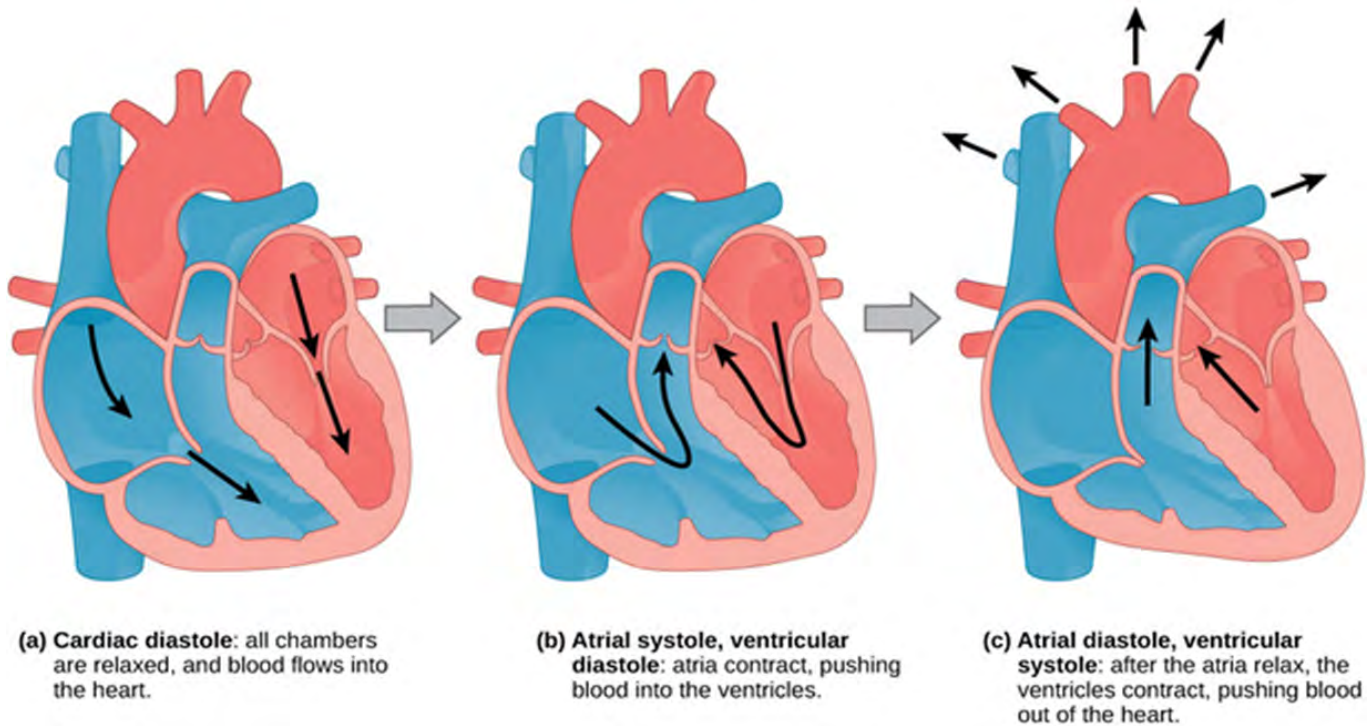
► Chemical

Action potential of cardiac muscles

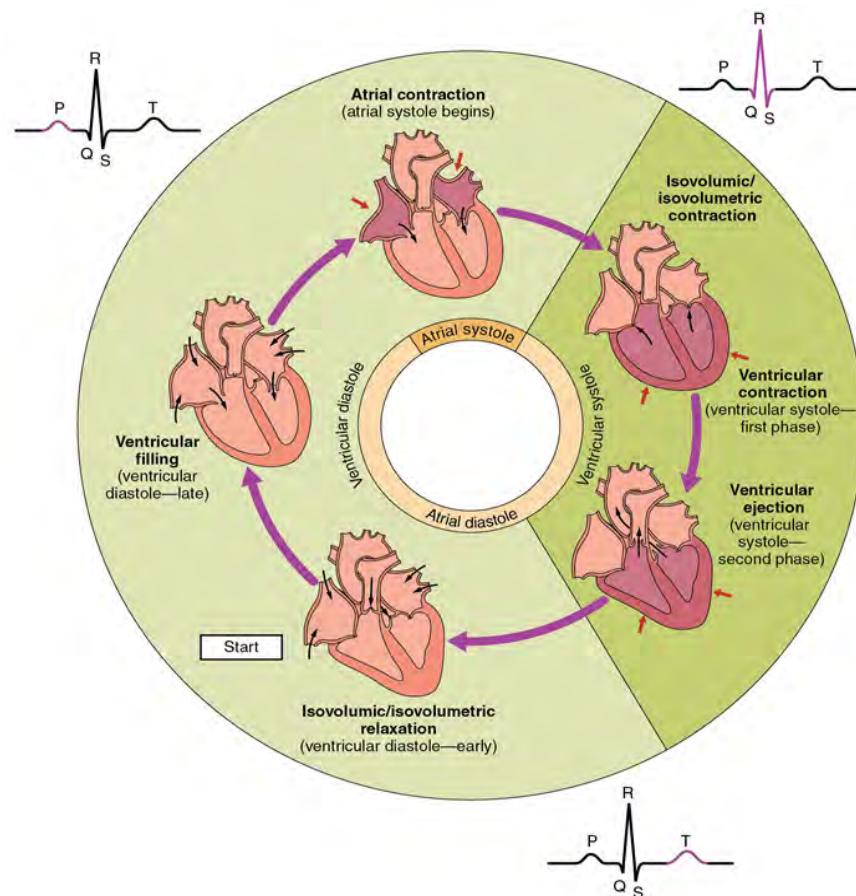
Grigoriy Ikonnikov and Eric Wong

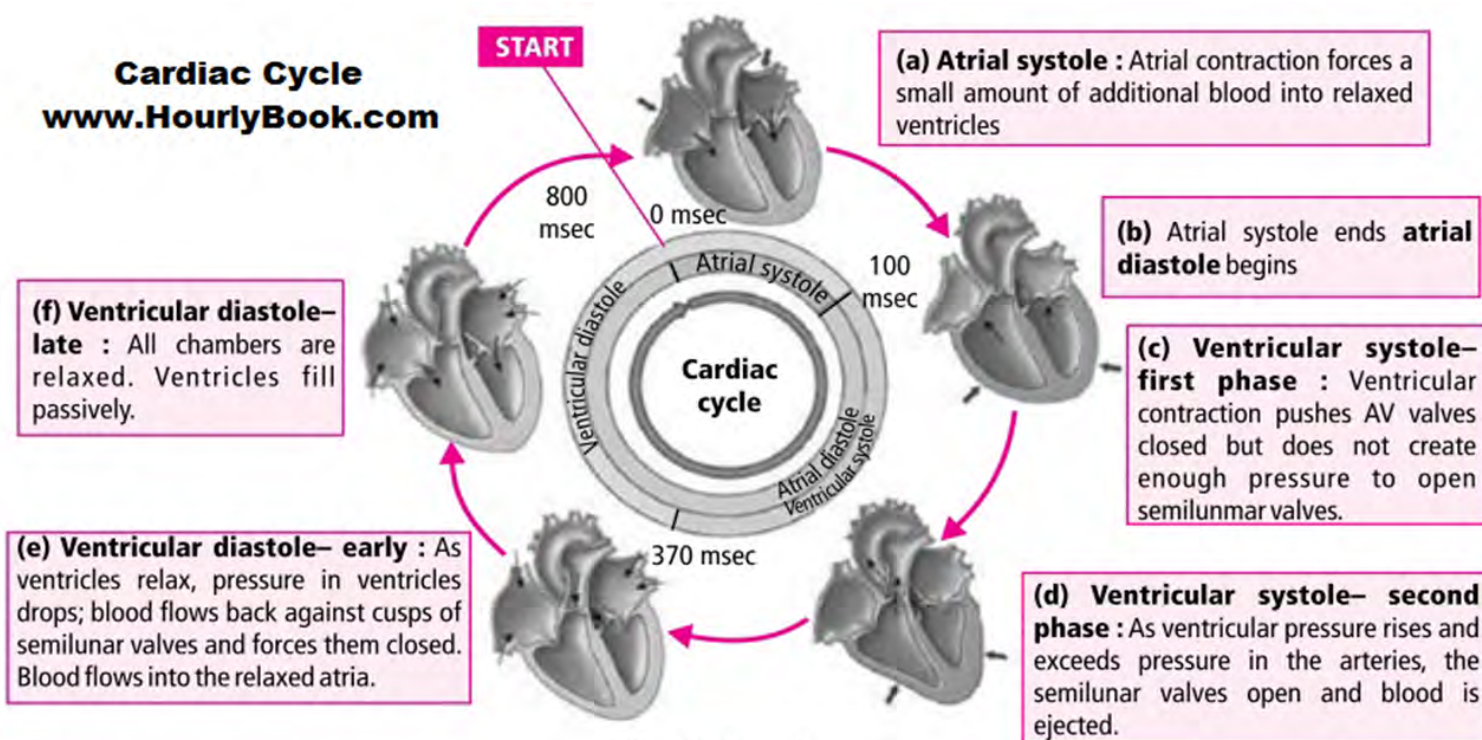


► Mechanical



► Cardiac Cycle





Assessment: 2 Components

- History: What is said and chart review
- Physical: What you see and feel and hear

History

- ▶ Medical History:
- ▶ -Medications: prescribed, supplements
- ▶ -Allergies
- ▶ -Medical diagnosis
- ▶ -Hospitalizations, ER visits, surgery
- ▶ Imaging, procedures, lab results
- ▶ -Treatments: prescribed, complementary
- ▶ -Family history

▶ Chief Complaint:

- ▶ -Onset
- ▶ -Signs and symptoms
- ▶ -Previous episodes
- ▶ -Timing
- ▶ -What makes better/ worse
- ▶ -Therapies/ things tried and effect
- ▶ -Associated signs and symptoms

▶ Physical:

- ▶ Inspection: Train the eye to see general appearance, State of nutrition, habitus, symmetry, movement, speech, orientation, engagement can all be evaluated.
- ▶ Auscultation: Listening to internal organs and structures which include the heart, lungs, abdomen, carotids, esophagus and trachea.
- ▶ Palpation: Use of touch to evaluate the organs and structures. Some examples are liver, spleen, stomach, muscle, joint integrity and thyroid
- ▶ Percussion: Sound and feeling produced by a sharp blow

Physical Exam:

- ▶ -General appearance:
- ▶ -energy level, ease of movement, guarding
- ▶ -habitus, grooming
- ▶ -speech, affect

▶ Vital Signs:

- ▶ -pulse
- ▶ -respiratory rate
- ▶ -blood pressure
- ▶ temperature
- ▶ -weight, height, BMI

▶ Blood Pressure

- ▶ Size of Cuff:
- ▶ -Width of the bladder should be 40% of the upper arm
- ▶ -Length of the bladder should be 80% of upper arm
- ▶ -If the cuff is too short or narrow gives a false high reading
- ▶ -Loose cuff or bladder than balloons outside the cuff can give a false high reading

► Technique:

- -Have patient sit quietly for 5 min. with feet on the floor and arm at heart level
- -Center the bladder over the brachial artery and secure snugly on upper arm that is free of clothing
- Palpate the radial artery and inflate the cuff until it disappears then add 30 mm Hg (to avoid auscultatory gap)
- -Slowly deflate the cuff at a rate of 2-3 mm Hg/sec.

► Orthostatic Blood Pressure

- -Measurement of blood pressure and heart rate in 2 positions
- -Have patient laying for 5 min. before the initial set of VS.
- -SBP drop \geq 20 mm Hg or DBP drop of 10 mm Hg or heart rate increase $>$ 20 beats/ min. within 3 min. of position change is orthostatic

- -If the brachial artery is much below the level of the heart can get false high reading
- -Auscultatory gap is associated with arterial stiffness/ atherosclerotic disease
- -Muffling and disappearance point can be far apart but normally is 10-20 mm Hg apart but can be greater as a normal variant
- -If the sounds never disappear and can indicate aortic regurgitation
- -A difference of more than 10-15 mm Hg between arms suggests aortic compression or obstruction, aortic stenosis

► Pulse

- -Rate: If regular check for 15 sec. If fast or variable check for 60 secs.
- -Rhythm: Regular, regularly irregular (PAC's, PVC's, 2nd degree heart block), totally irregular (atrial fib.), irregularity that varies with inspiration (pericardial effusion)
- With variability in heart rate check peripheral pulse as well as auscultate heart and compare bilaterally.

► Temperature

- Fever can be caused by a number of factors:
 - infective process
 - medications
 - environmental
 - dehydration
 - disease
 - Substance use
 - alcohol withdrawal

► Effect Of Elevated Temperature

- peripheral dilatation
- increased cardiac output
- decreased renal flow
- increased breakdown of protein
- insensible water loss

- ▶ Respiratory:
- ▶ -inspection rate, rhythm, pulse oximetry
- ▶ cough
- ▶ -auscultation breath sounds
- ▶ -percussion
- ▶ -palpation

- ▶ Breath Sounds

- ▶ <https://www.easyauscultation.com/cases?coursecaseorder=8&courseid=201>

- ▶ Skin:

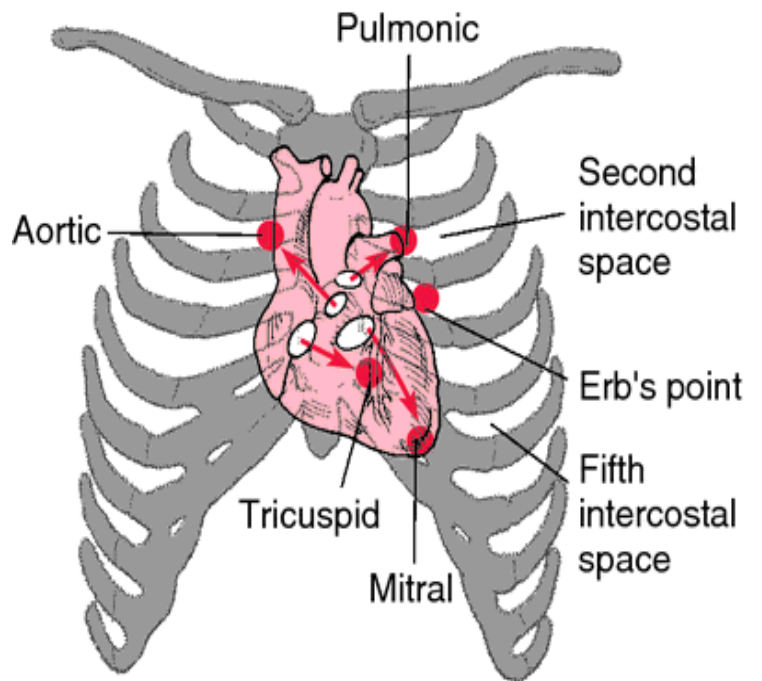
- ▶ -inspection color, integrity,
- ▶ -palpation temperature, turgor



- ▶ Peripheral Neurovascular:
- ▶ -inspection evidence of arterial or venous insufficiency
- ▶ -palpation peripheral pulses nail bed
- ▶ capillary refill time edema
- ▶ -sensation



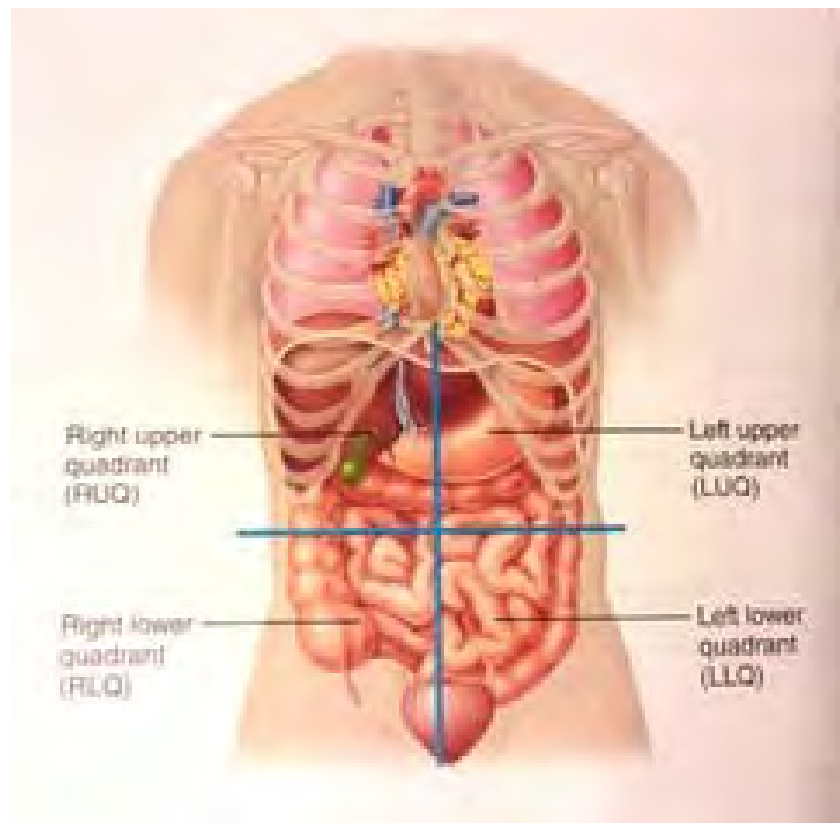
- ▶ Cardiac:
- ▶ -inspection heave
- ▶ -auscultation rate,
- ▶ rhythm, heart tones, carotid
- ▶ -palpation PMI



- ▶ Heart Tones
- ▶ <https://www.easyauscultation.com/heart-lung-sounds-reference-guide>

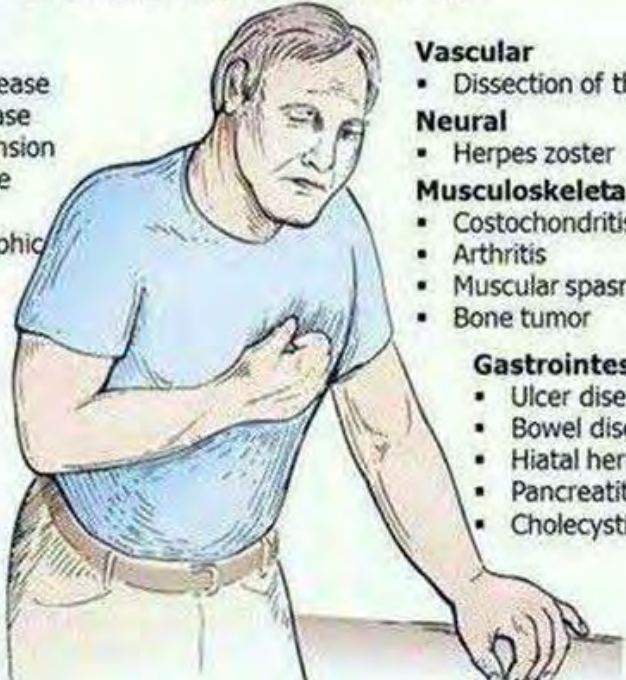
► Abdomen:

- inspection
- auscultation
- palpation
- Percussion



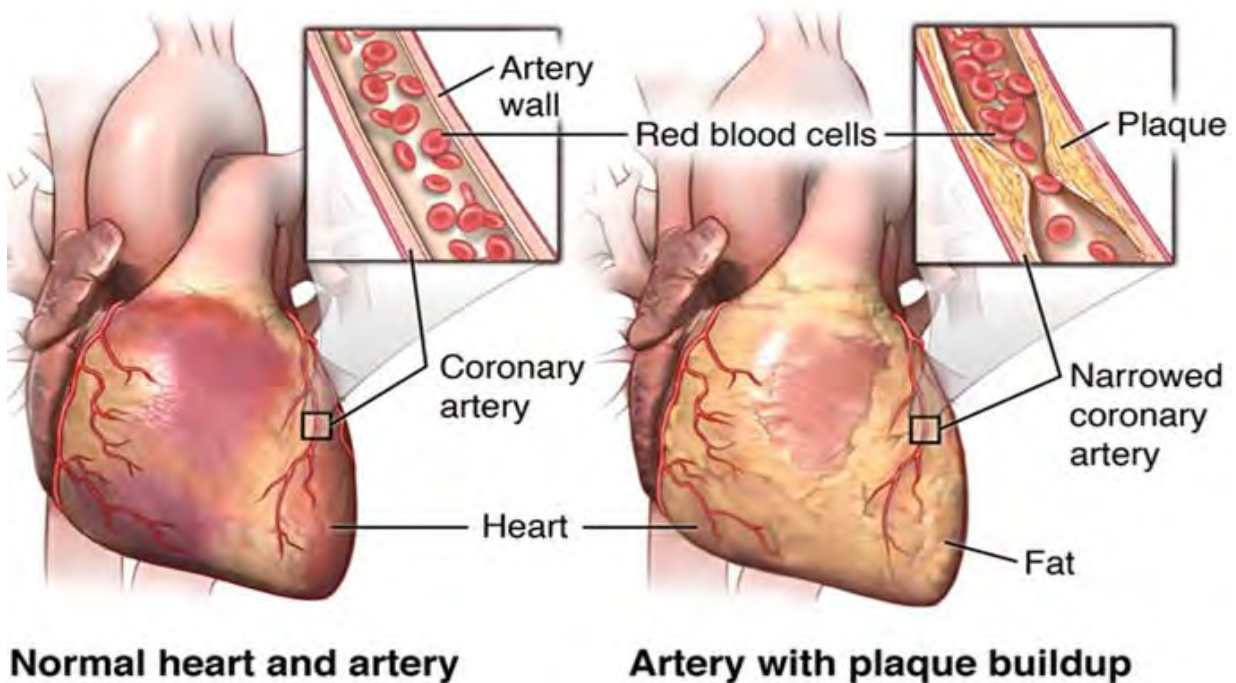
Chest Pain:

Common Causes of Chest Pain

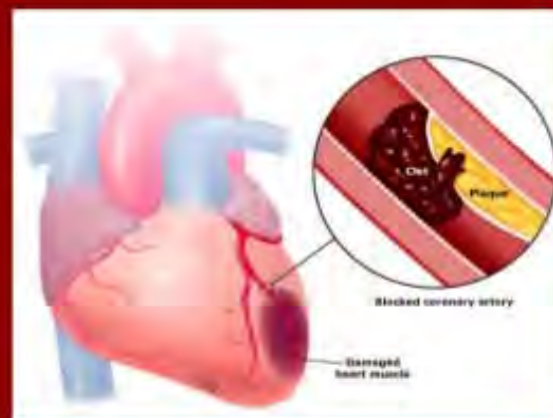
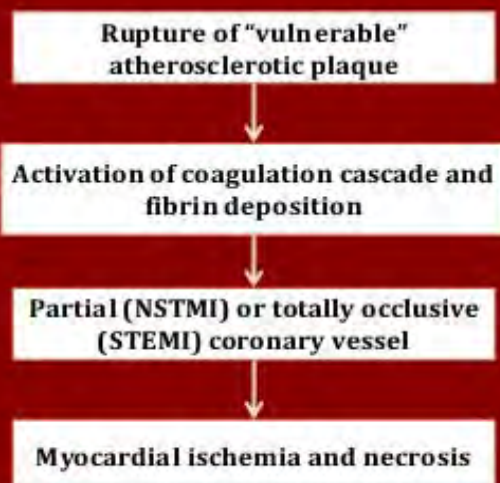


Cardiac <ul style="list-style-type: none">▪ Coronary artery disease▪ Aortic valvular disease▪ Pulmonary hypertension▪ Mitral valve prolapse▪ Pericarditis▪ Idiopathic hypertrophic subaortic stenosis	Vascular <ul style="list-style-type: none">▪ Dissection of the aorta
Pulmonary <ul style="list-style-type: none">▪ Pulmonary embolism▪ Pneumonia▪ Pleuritis▪ Pneumothorax	Neural <ul style="list-style-type: none">▪ Herpes zoster
Emotional <ul style="list-style-type: none">▪ Anxiety▪ Depression	Musculoskeletal <ul style="list-style-type: none">▪ Costochondritis▪ Arthritis▪ Muscular spasm▪ Bone tumor
	Gastrointestinal <ul style="list-style-type: none">▪ Ulcer disease▪ Bowel disease▪ Hiatal hernia▪ Pancreatitis▪ Cholecystitis

► Myocardial Infarction



PATHOPHYSIOLOGY



http://pmtwww.uprodate.com/contents/image?imageKey=PI/6/394&topicKey=PI/6/2F3428&source=online_link

► Symptoms:

SIGNS of a HEART ATTACK

- Sweating
- Nausea or throwing up
- Shortness of breath
- Dizziness
- Fainting
- Chest pain or discomfort
- Pain moving down the left arm
- Pain moving up to the left side of the jaw
- Pain or discomfort in your back or stomach