



Cardiac Emergency

S

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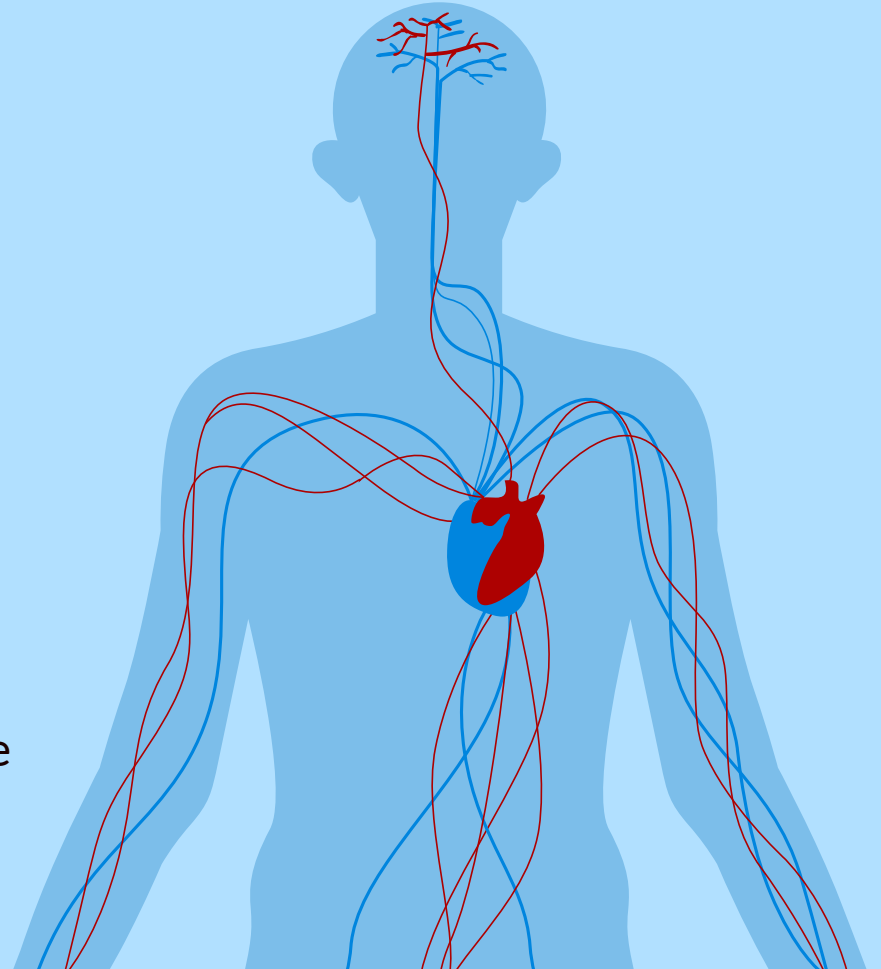
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KAHOOT!!!!

01

Cardiac Anatomy

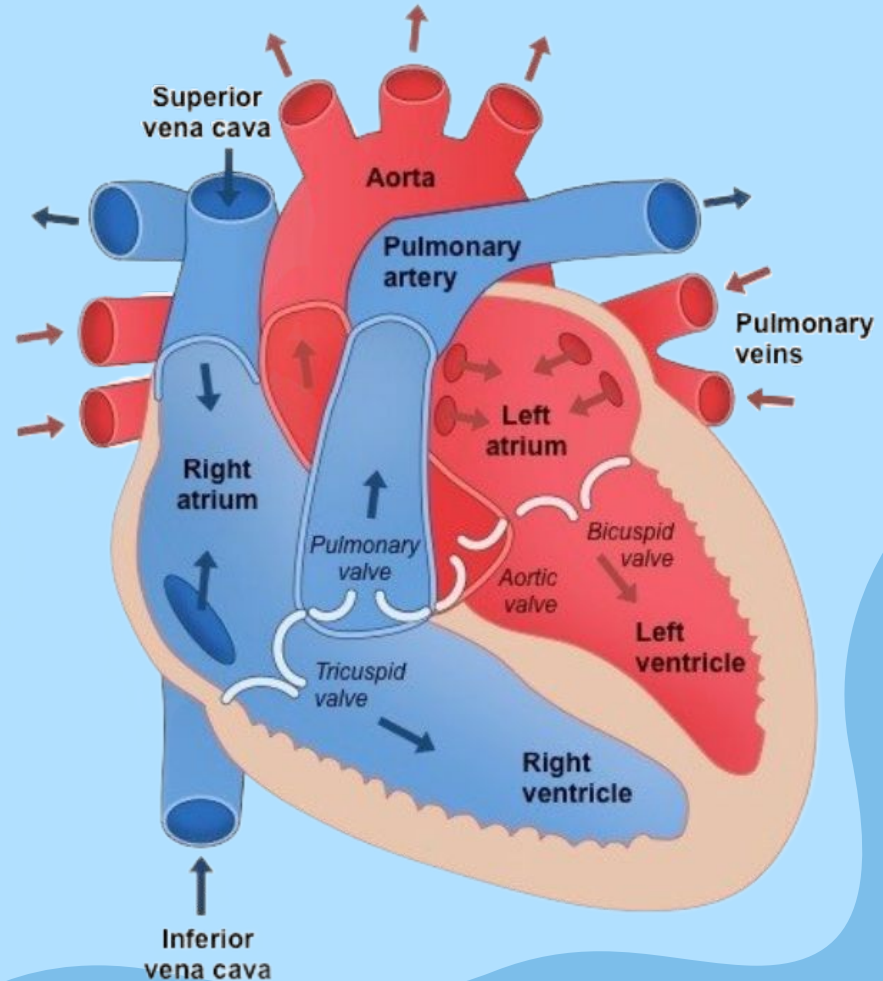
Heart Structure, Electrical Impulse
Structure, and Great Vessels



HEART STRUCTURE

Flow of blood (starting with deoxygenated blood coming from body):

1. Superior/inferior vena cava
2. Right atrium
3. Right ventricle (RA -> RV through tricuspid valve)
4. Pulmonary artery (via pulmonary valve)
5. Lungs
6. Pulmonary veins (one per lung)
7. Left atrium
8. Left ventricle (LA -> LV through bicuspid valve)
9. Aorta (via aortic valve)
10. Rest of body! (and then we start over...)

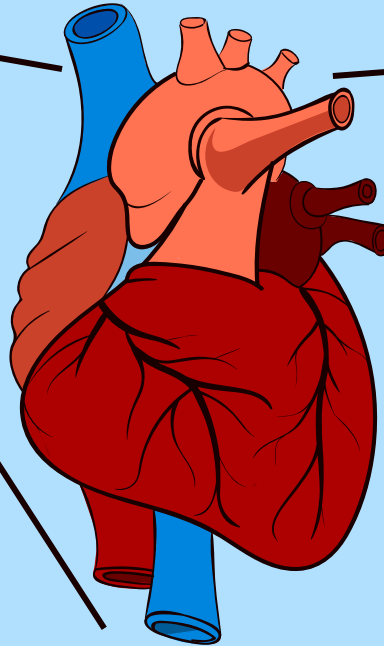


THE GREAT VESSELS

Vena Cava

Inferior/Superior

return deoxygenated
blood to the right
atrium from the upper
and lower parts of the
body

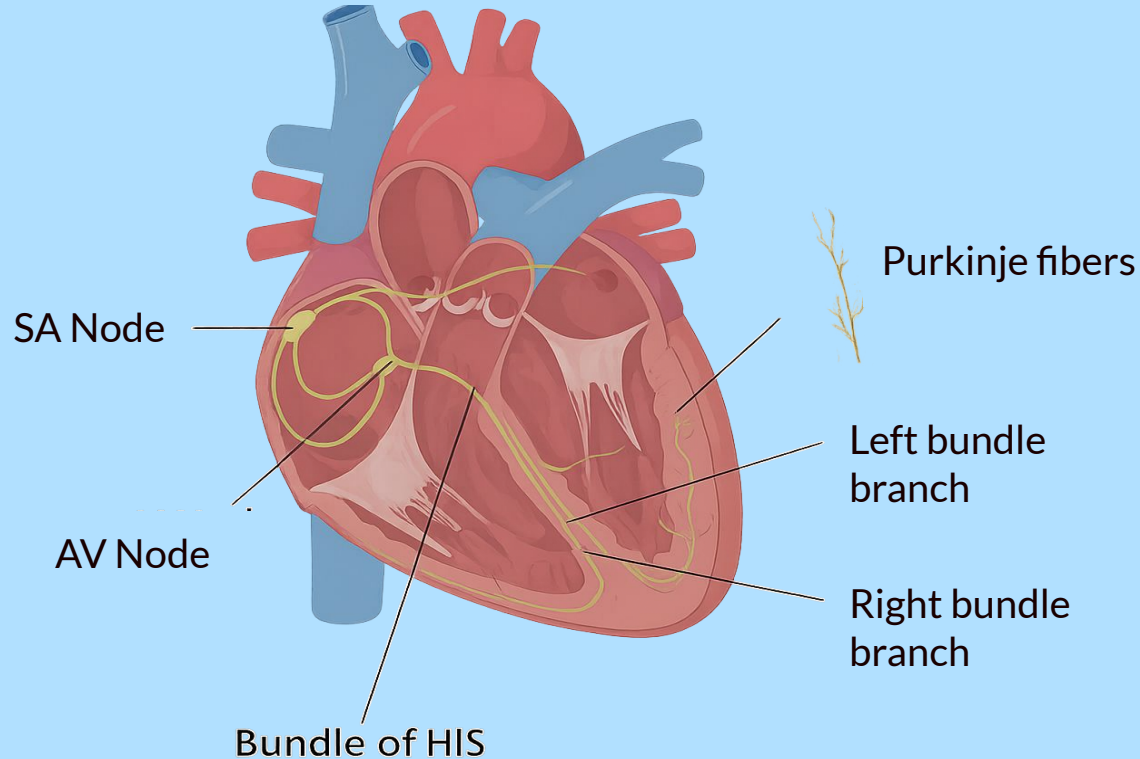


Aorta

Largest Artery

carries oxygenated
blood from the left
ventricle to the
body

ELECTRICAL IMPULSE STRUCTURE



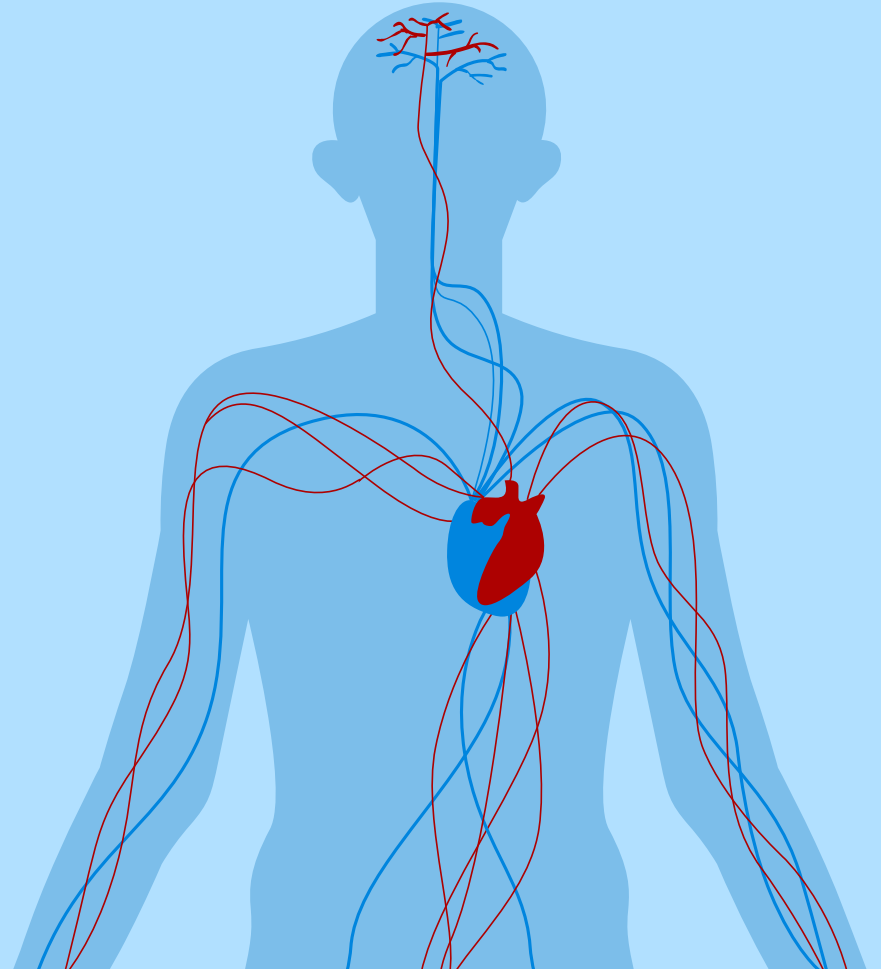
Heartbeat Impulse:

1. **Sinoatrial node:** "the heart's pacemaker" - in right atrium; impulse contracts atria
2. **Atrioventricular node:** the SA node signal reaches the AV node, pausing briefly to allow for ventricles to fill.
3. **Bundle of His**
4. **Right/left bundle branches**
5. **Purkinje fibers** - causes coordinated contraction of both ventricles

02

Common Cardiac Emergencies

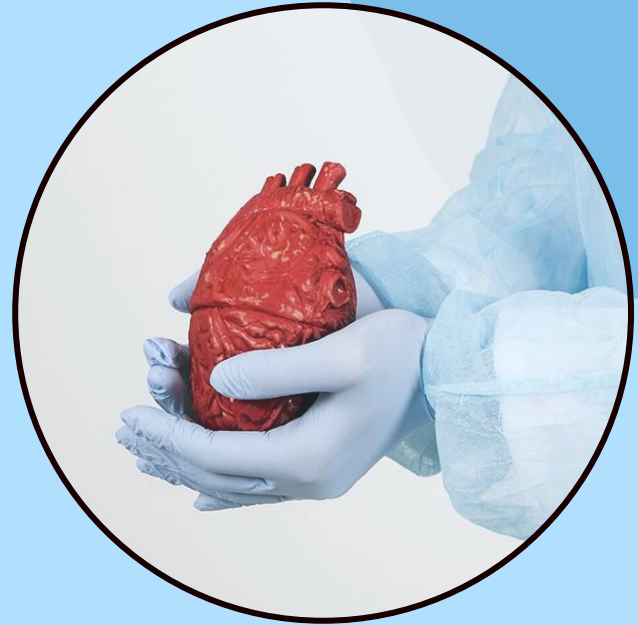
S/S and Treatments



Acute Coronary Syndrome

Description

A group of heart conditions that occur when blood flow to the heart muscle is reduced or blocked.



Acute Myocardial Infarction / Heart Attack

A blockage of blood flow to the heart muscle.

Men

- More crushing or heavy chest pain

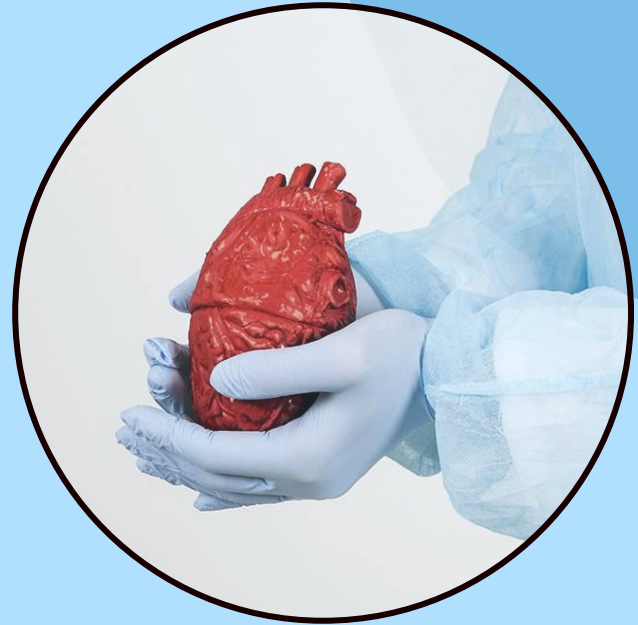
- chest pain

- SOB

- lightheadedness

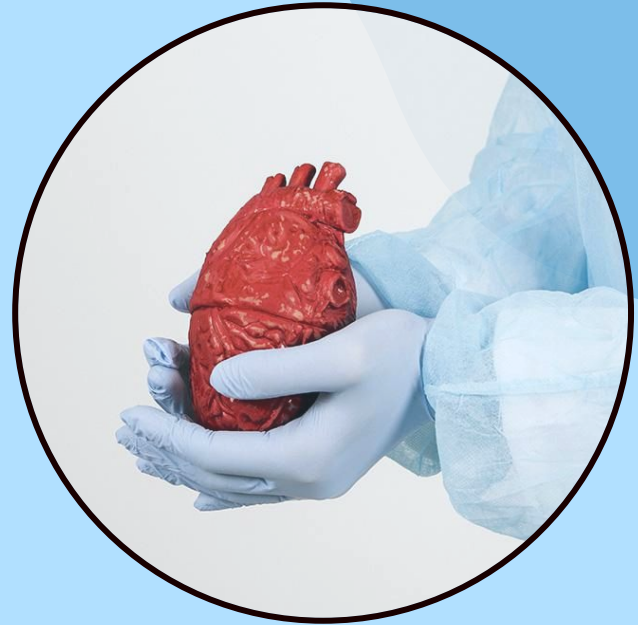
Women

- Fatigue
- Nausea
- Pain in back, neck, or jaw



Angina vs MI

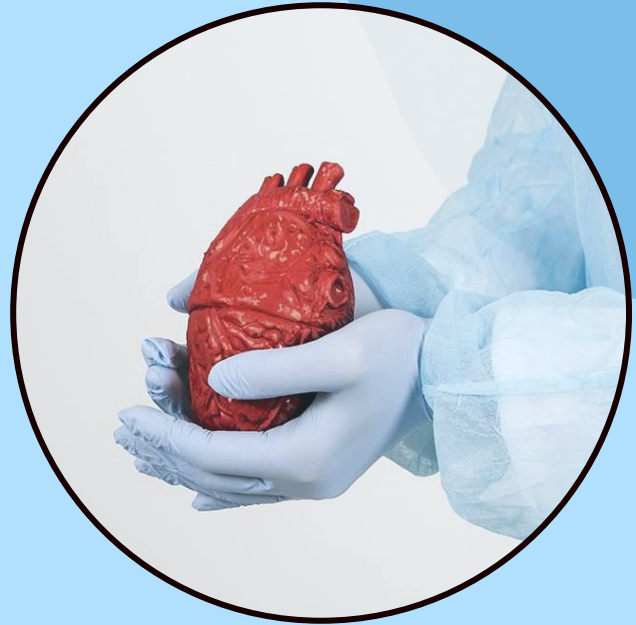
- Temporary reduction of blood flow → can be relieved by medication or rest
 - Lasts only a few minutes
-
- Complete blockage of coronary artery that needs medical intervention
 - Pain doesn't subside with rest or medication



Commotio Cordis

Description

A rare, life-threatening condition that occurs when a sudden, blunt impact to the chest causes the heart to stop beating irregularly

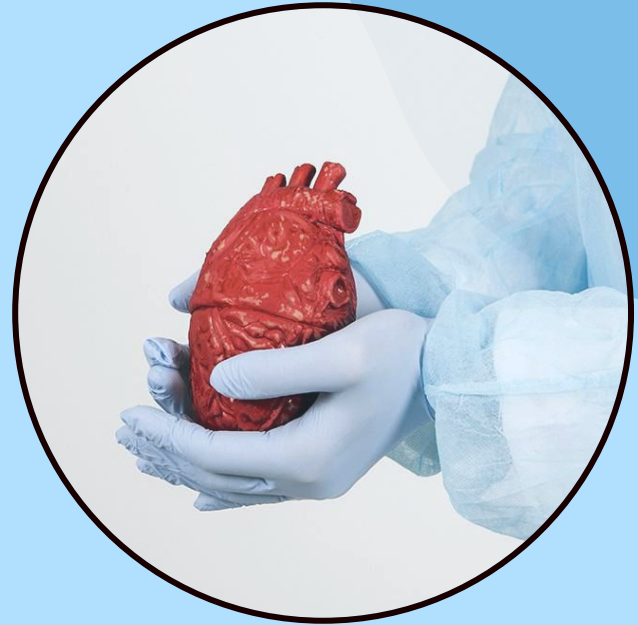


Cardiac Tamponade

Description

A life-threatening emergency caused by fluid buildup in the pericardial sac (the sac around the heart), compressing the heart and preventing it from pumping blood effectively

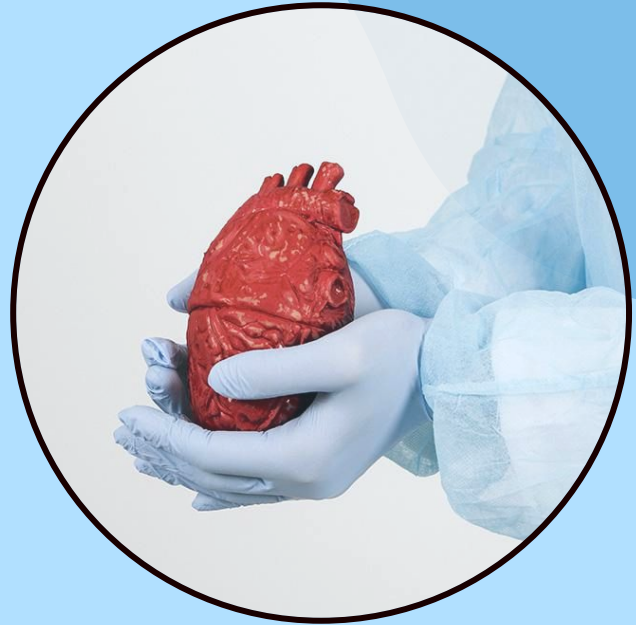
Beck's Triad - JVD, muffled heart sounds, narrowing pulse pressure



Cardiogenic Shock

Description

Severe form of cardiac compromise where the heart can't pump enough blood to the body's organs and tissues

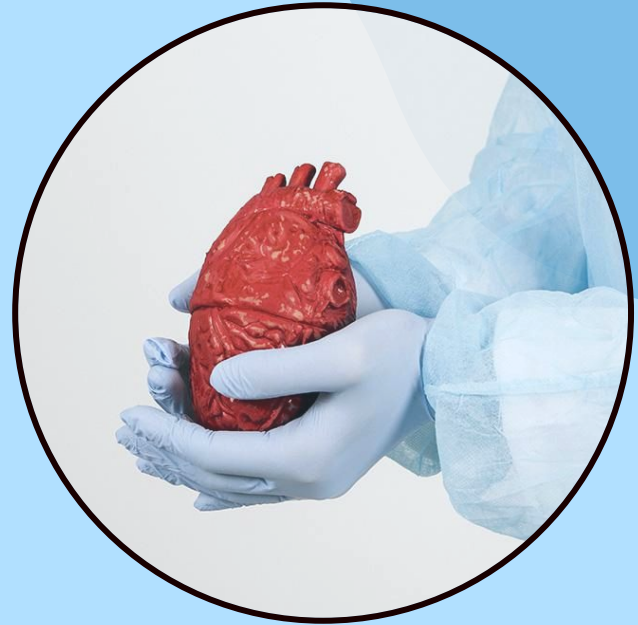


Arrhythmia & Dysrhythmia

Description

Dysrhythmia: A general term for any abnormality in the heart's rhythm.

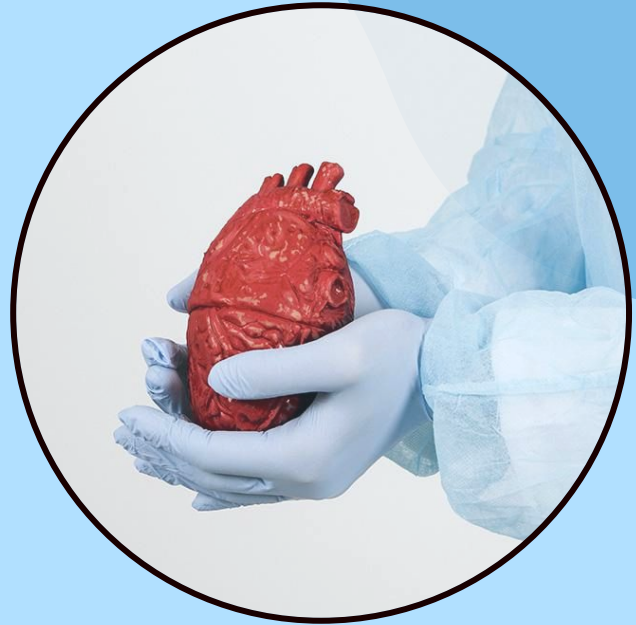
Arrhythmia: A more specific term for an irregular heartbeat that is typically significant and requires medical attention.



Aortic Dissection, Abdominal Aortic Aneurysm

Description

A life-threatening condition where the inner layer of the aorta, the main artery that carries blood from the heart to the rest of the body, tears and separates from the other layers.



Aortic Dissection, Abdominal Aortic Aneurysm

01

Signs/Symptoms

- Abdominal pain, often described as a dull ache or throbbing sensation
- Back pain, especially in the lower back
- A pulsating mass in the abdomen that can be felt through the skin
- Sometimes rapid onset of pain on one side of the body.

02

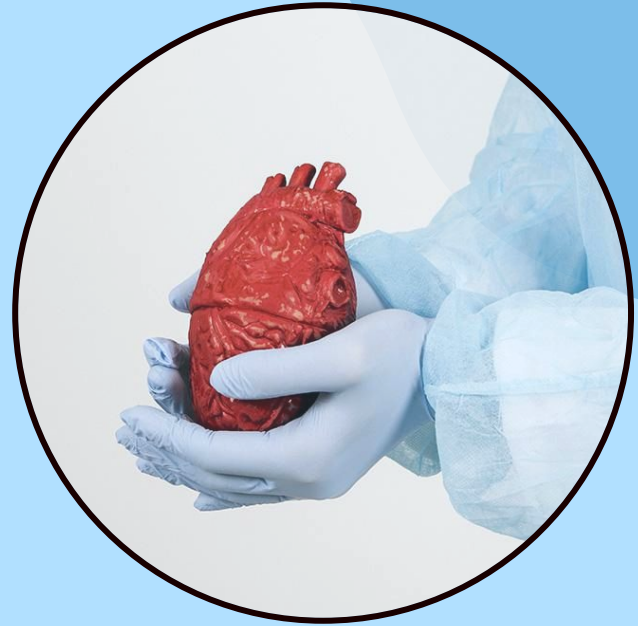
Treatments

- Provide oxygen
- Rapid transport
- B-con if necessary

Left vs Right Sided Heart Failure

Description

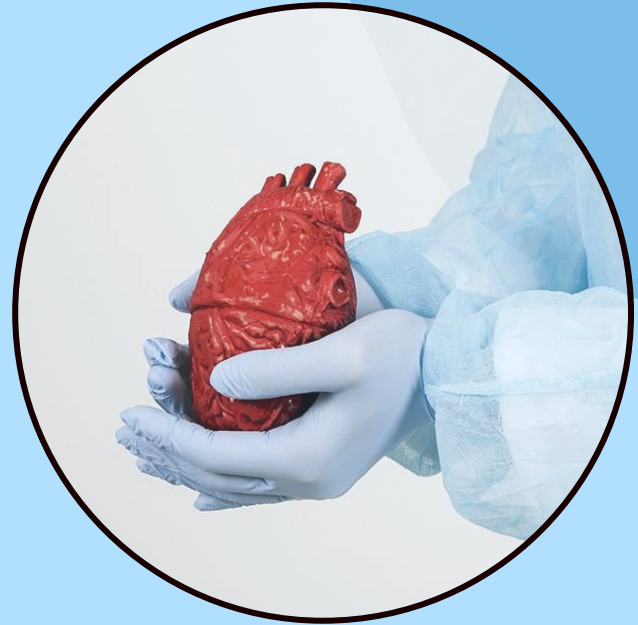
Occurs when the left or right ventricle are not able to pump blood efficiently, causing circulatory dysfunction.



Congestive Heart Failure

Description

A condition where the heart cannot pump blood effectively enough to meet the body's needs. This leads to a buildup of fluid in the lungs, legs, and other organs.



Left vs Right Sided Heart Failure → CHF

01

Signs/Symptoms

Left Sided:

- Shortness of breath, especially during exertion or lying down
- Orthopnea (shortness of breath when lying flat)
- Cough, often with frothy or pink-tinged sputum
- Wheezing

Right Sided:

- Shortness of breath: Especially when lying down or during physical exertion
- Swelling in the feet, ankles, legs, and abdomen
- JVD

Left vs Right Sided Heart Failure → CHF

02

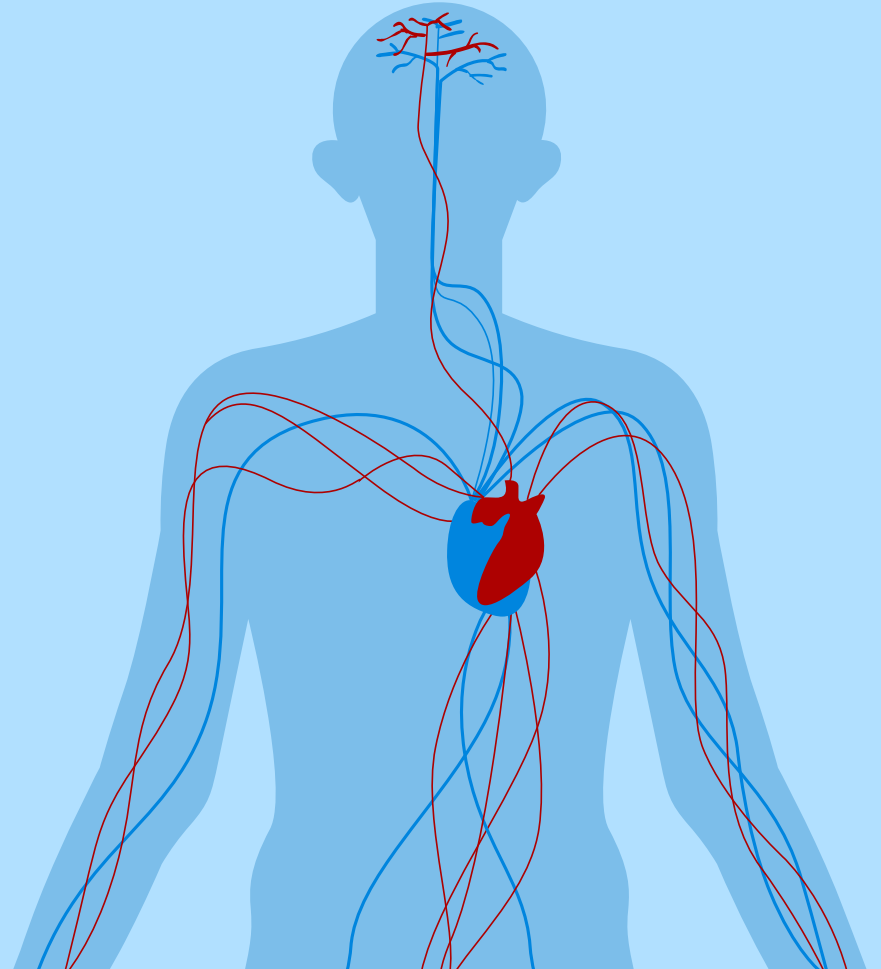
Treatments

Though EMT's scope of practice usually entails oxygen and rapid transport in these situations, some common forms of definitive treatment/care include:

- lifestyle changes (like diet and exercise),
- medications
- in severe cases, devices such as pacemakers or LVADs
- surgery, including heart transplant, CABG, etc

03

Assessment, Vitals, and Techniques



Levine Sign

Description

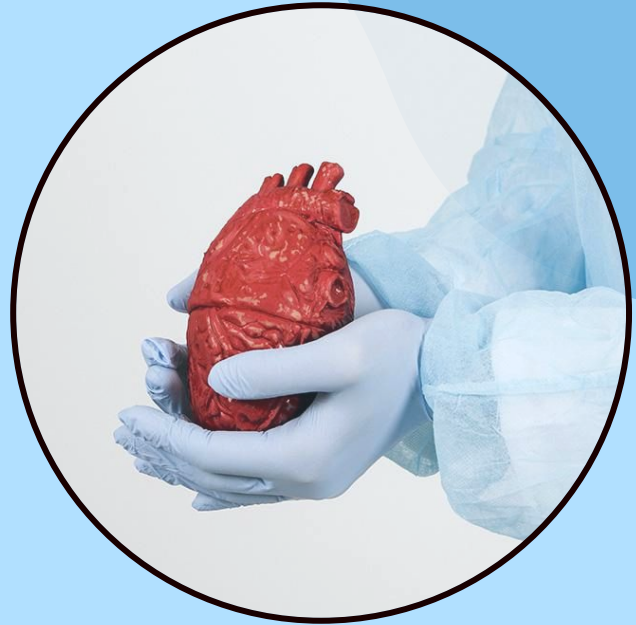
The gesture of clenching a fist over the sternum (breastbone) to describe chest pain, and it is a sign of ischemic (reduced blood flow) chest pain, such as from a heart attack or angina.



General Cardiac Assessment

Description

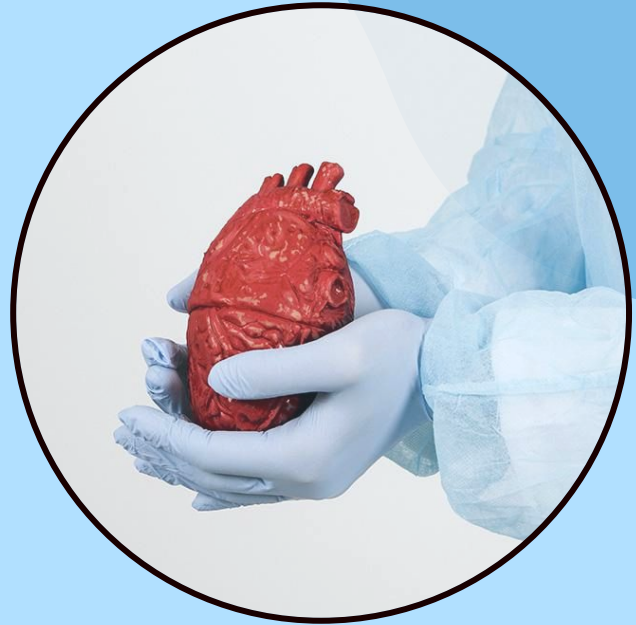
Requires a physical exam (ex: ABCs), diagnostic exam (ex: EKG), and patient history (ex: previous heart attack, hypertension, etc). The general cardiac assessment should entail both a primary and secondary assessment.



Impending Sense of Doom

Description

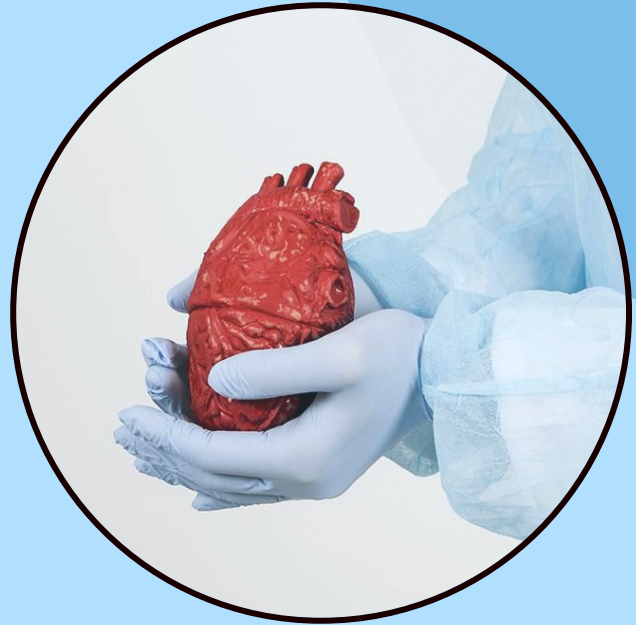
A feeling of impending doom when paired with physical symptoms is a potential warning sign for a life-threatening medical event. Many times, this feeling could arise before any other symptoms do.



Typical Circulation Vital Signs

Description

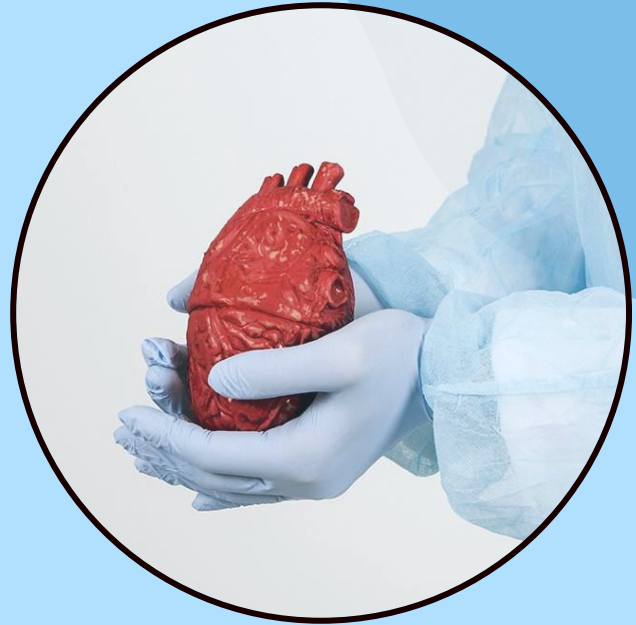
- Heart rate: 60 to 100 beats per minute (bpm).
- Blood pressure: 90/60 mmHg to 120/80 mmHg.
- Oxygen saturation: 95% to 100%.
- Respiratory rate: 12 to 18 breaths per minute.



OPQRST and PASTE for Cardiac Events

Description

These components can help identify the cardiac episode at hand and can allow the EMT to provide faster, more effective care.



OPQRST and PASTE

01

OPQRST

- O - Onset
- P - Provocation/Palliation
- Q - Quality
- R - Radiation/Region/Referred
- S - Severity
- T - Time

02

PASTE

- P - Provocation
- A - Associated Chest Pain
- S - Sputum
- T - Talking Tiredness
- E - Exercise Tolerance

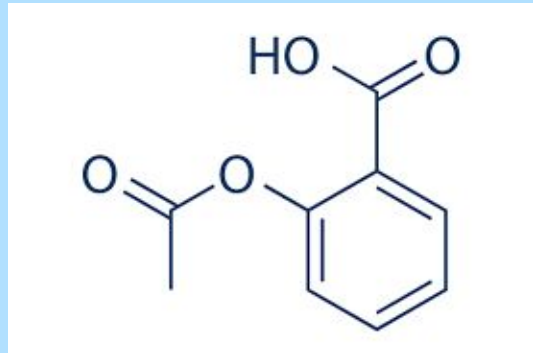
Treating and Recognizing Cardiac Emergencies



Aspirin

Aspirin Function

- Over the counter medication
- A nonsteroidal anti-inflammatory drug (NSAID)
- Blocks COX-1 enzyme used for blood clotting and is a platelet aggregation inhibitor



Indications for Administration

- Acute chest pain

Contraindications:

- Allergy to aspirin
- Currently bleeding/recent ulcer/gastrointestinal bleeding
- History of bleed disorders(ex. hemophilia)
- Already taken aspirin within 24 hours
- Prescribed anticoagulants
- Possible aortic aneurysm

**Nitroglyceri
n**

Function

- Vasodilator

Indications

- Acute Chest Pain
- Hypertension
- CHF exacerbation



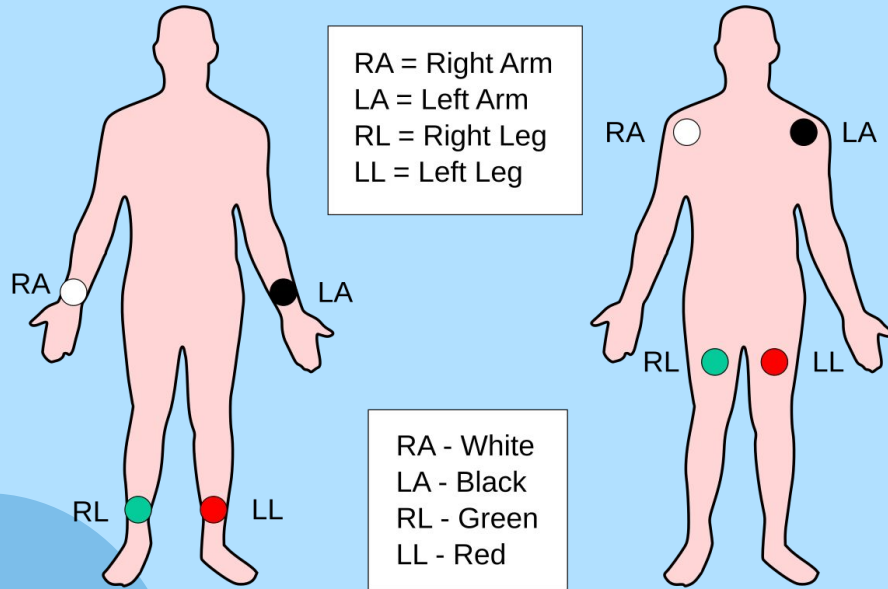
Contraindication (53 BASH)

- 5 minutes have not passed between doses
- 3 doses taken
- B-Systolic blood pressure less than 100
- ALOC (Altered Level of Consciousness)
- S-Sexual enhancement drugs within 48-72 hrs
- Head trauma

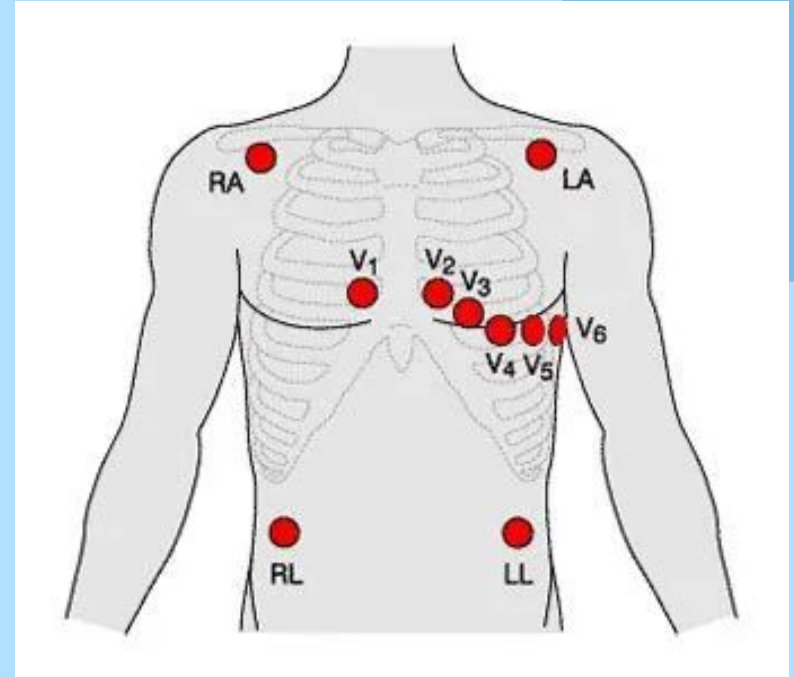


The background is a light blue color with several large, soft-edged, wavy shapes in a slightly darker shade of blue. These shapes are positioned in the corners and along the edges, creating a modern, organic feel. In the center of the image, the text "EKGs" is written in a bold, teal-colored, sans-serif font.

EKGs

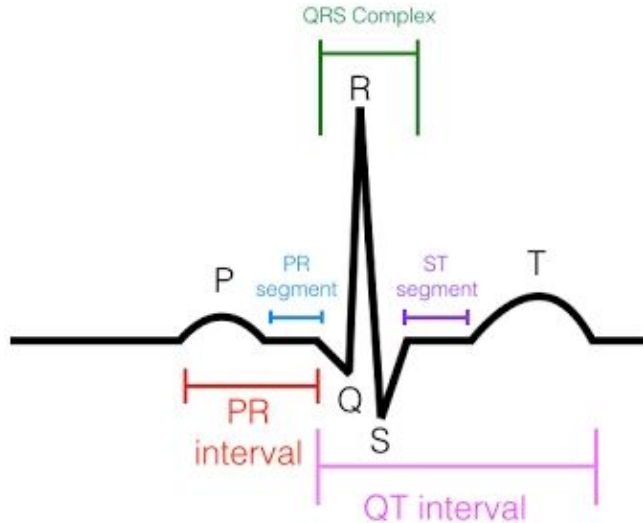


4 Lead



12 Lead

Segments and Intervals



P-wave-atrial depolarization

PR-interval-The time between the start of atrial depolarization and onset of ventricular depolarization

QRS Complex-ventricular depolarization

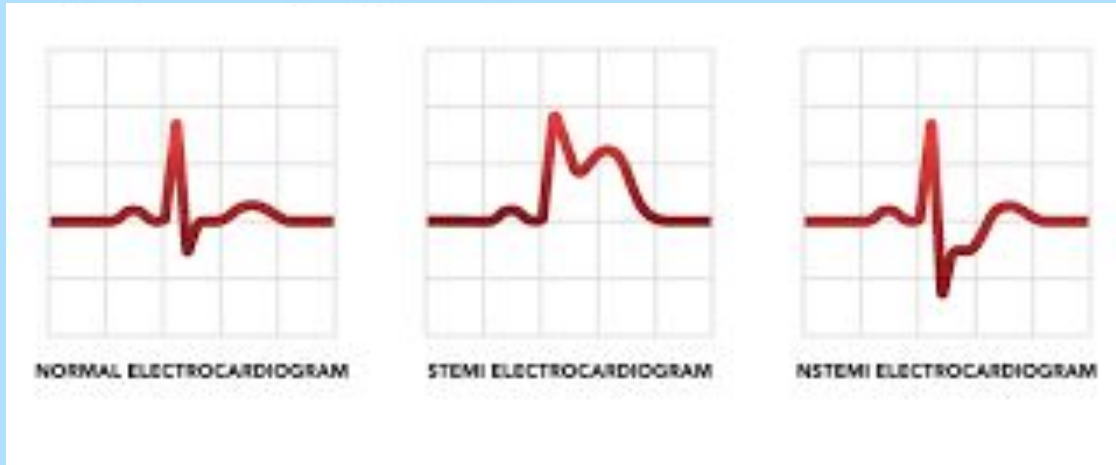
ST segment-completion of depolarization and return to baseline

T wave-ventricular repolarization

ST-Segment Elevation Myocardial Infarction(STEMI)

A myocardial infarction that is caused by a complete blockage in a coronary artery
-Causes a distinct rise of the ST-segment

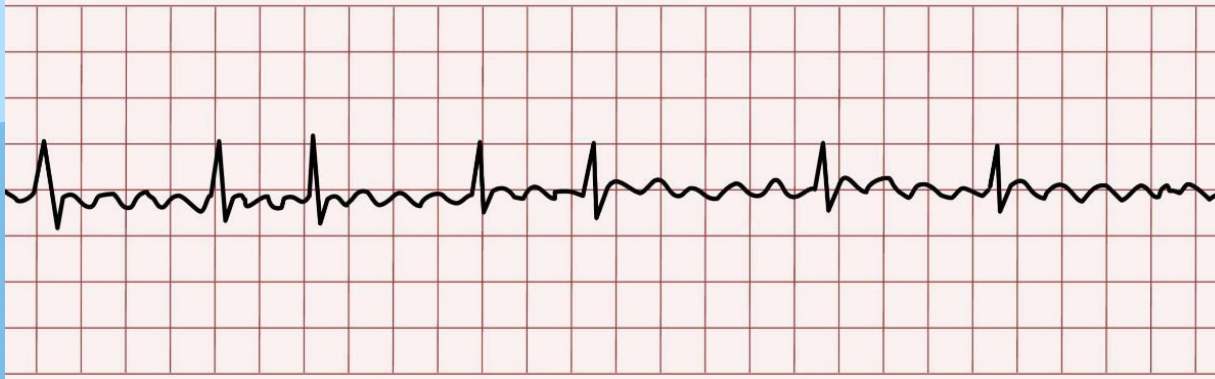
Potential Causes: Atherosclerosis, blood clot, plaque buildup





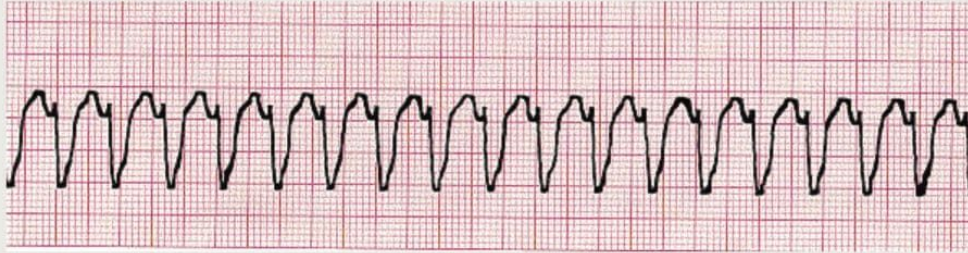
Sinus rhythm

- Normal EKG reading
- Consistent and regular intervals



Atrial fibrillation

- Rapid and irregular heart rhythm, primarily in the atria



Ventricular Tachycardia

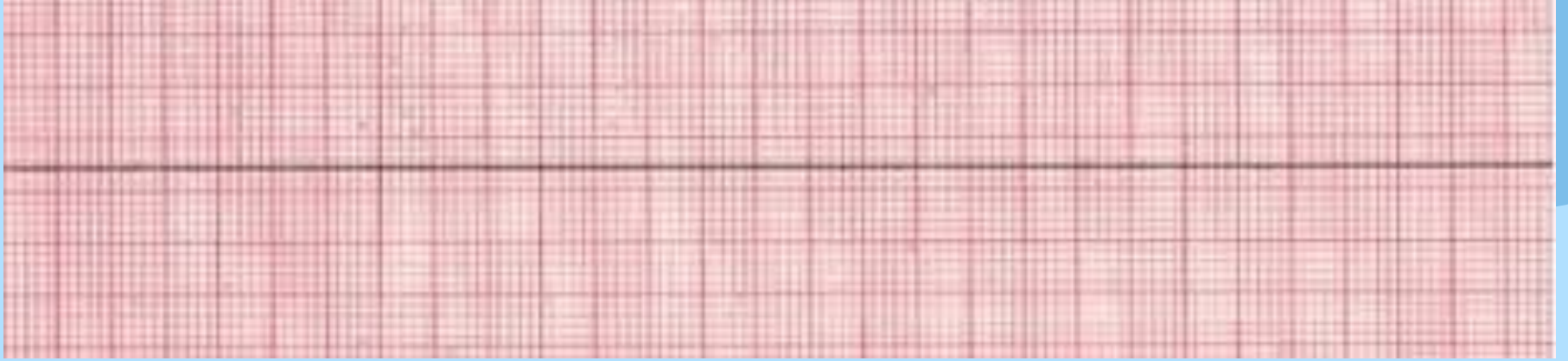
- Heart beats quickly
- Ventricles don't have time to completely fill, not enough blood pumped to body



Ventricular Fibrillation

Irregular and inconsistent heart rhythm

- Occurs when ventricles contract rapidly
- Ventricle contraction is uncoordinated



Asystole

No electrical/mechanical activity of the heart

-No pumping or circulation of blood from heart to body

Kahoot!!!