



Cardiac Emergencies

Aaron J. Katz, AEMT-P, CIC

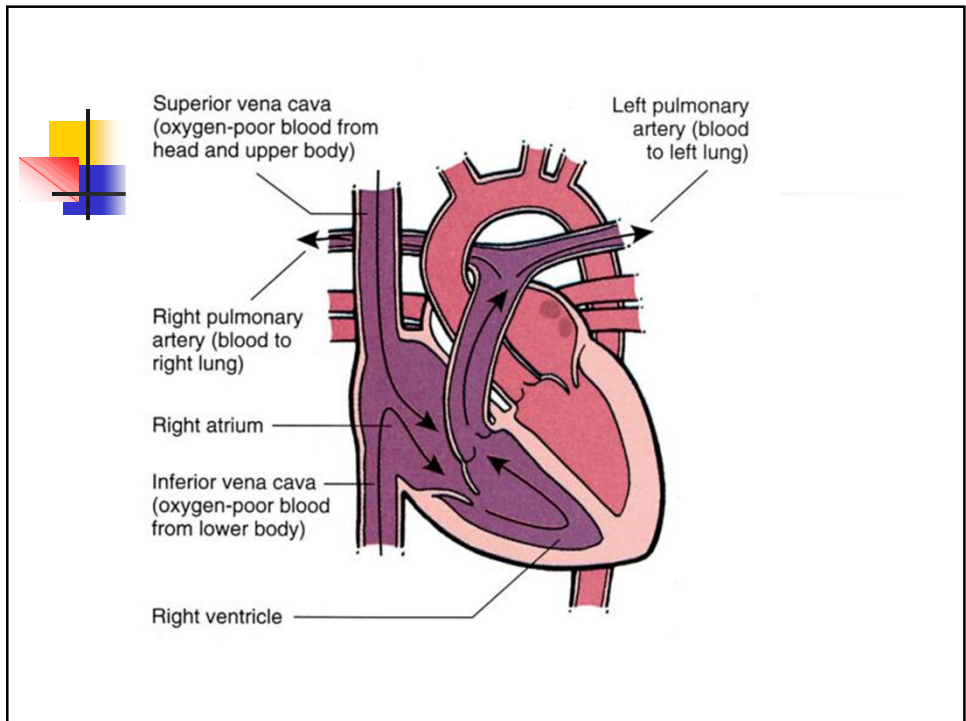
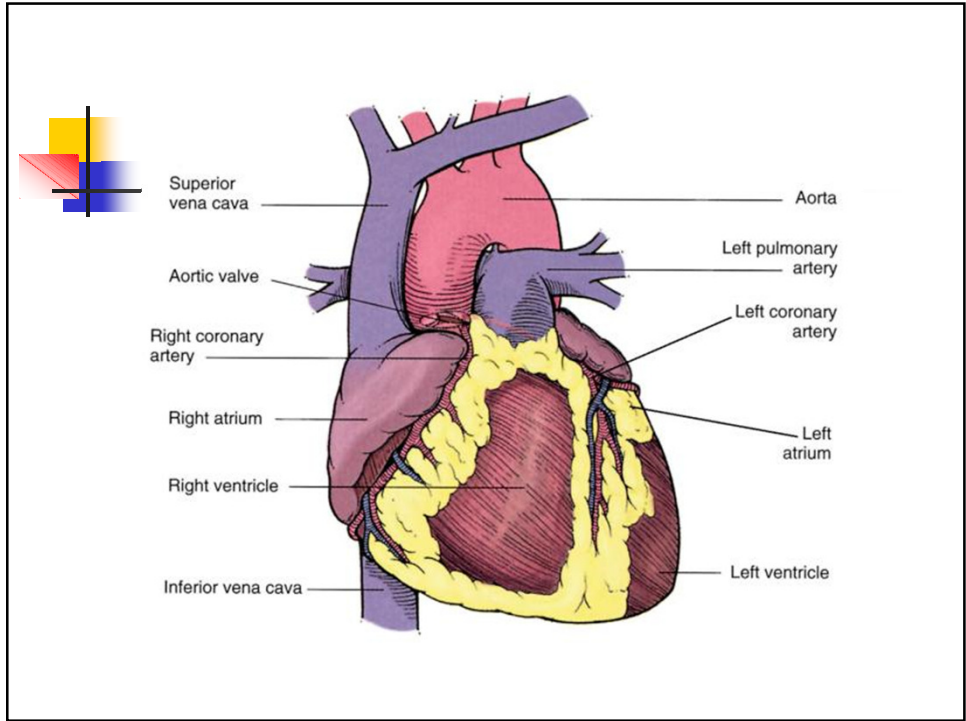
www.es26medic.net

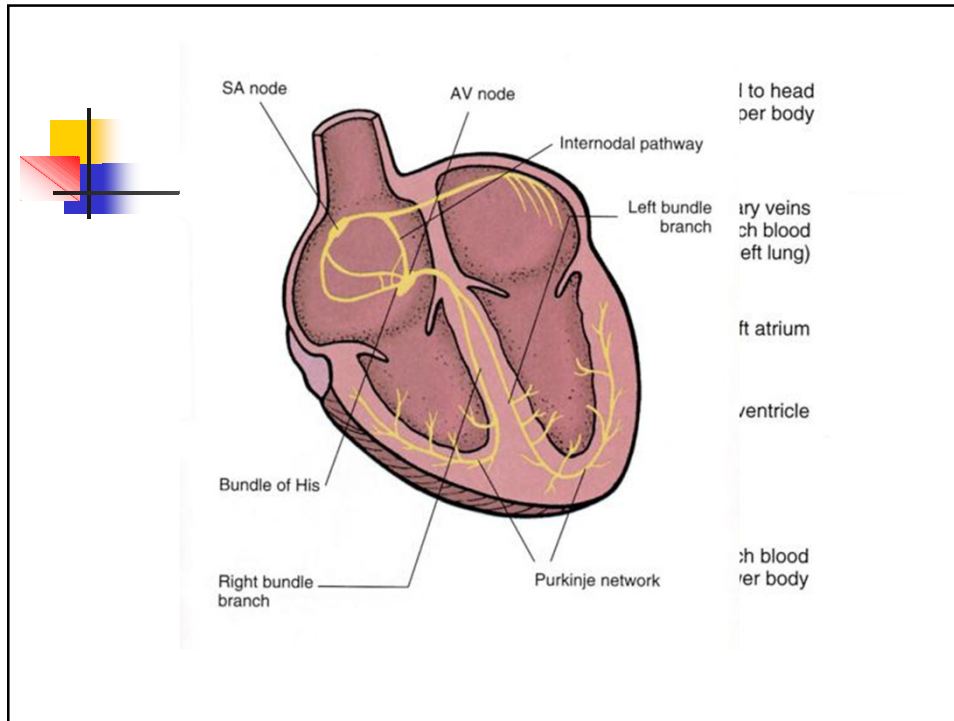
2013



Mechanical structure

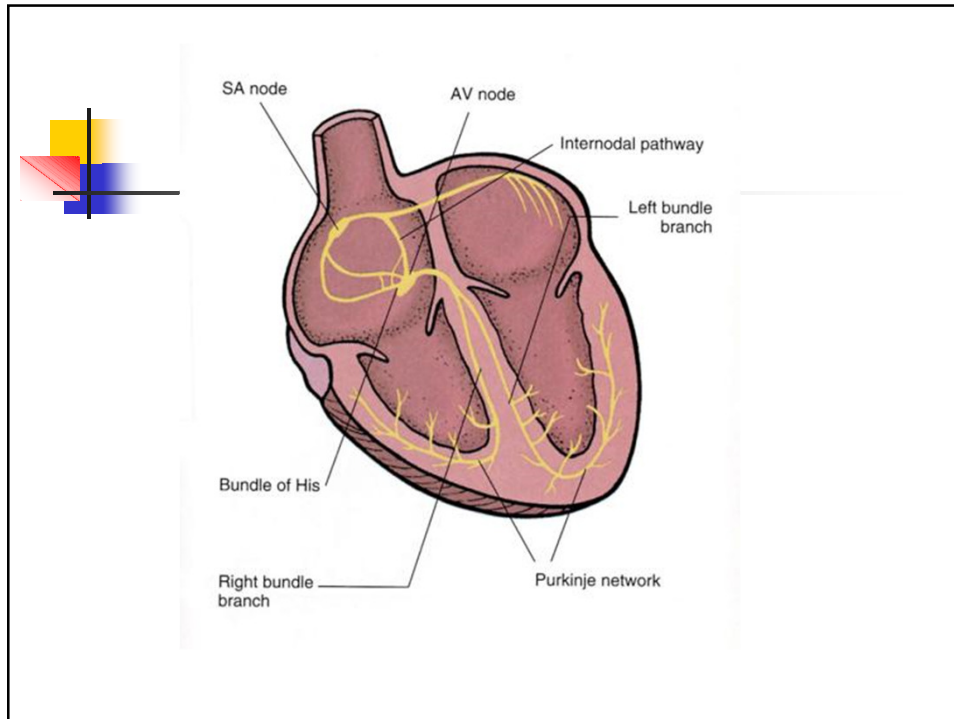
- Atria
- Ventricles
- One way valves
- Pulmonary arteries
- Pulmonary veins
- Aorta
- **Coronary arteries**
 - Provide O₂ and nutrients to the heart muscle
- **Myocardium – the heart muscle**





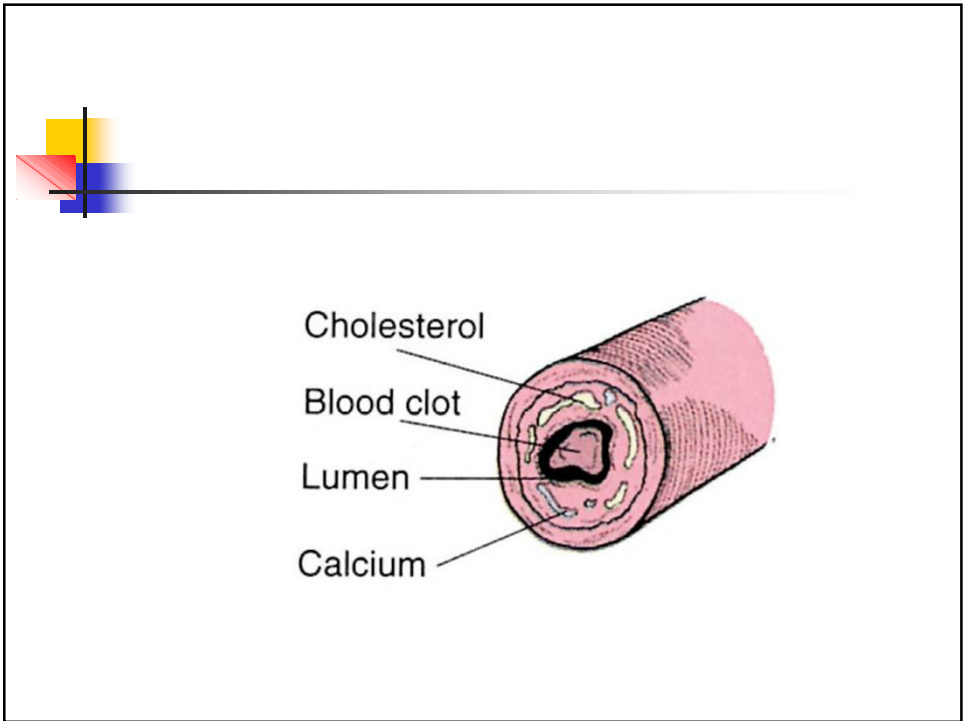
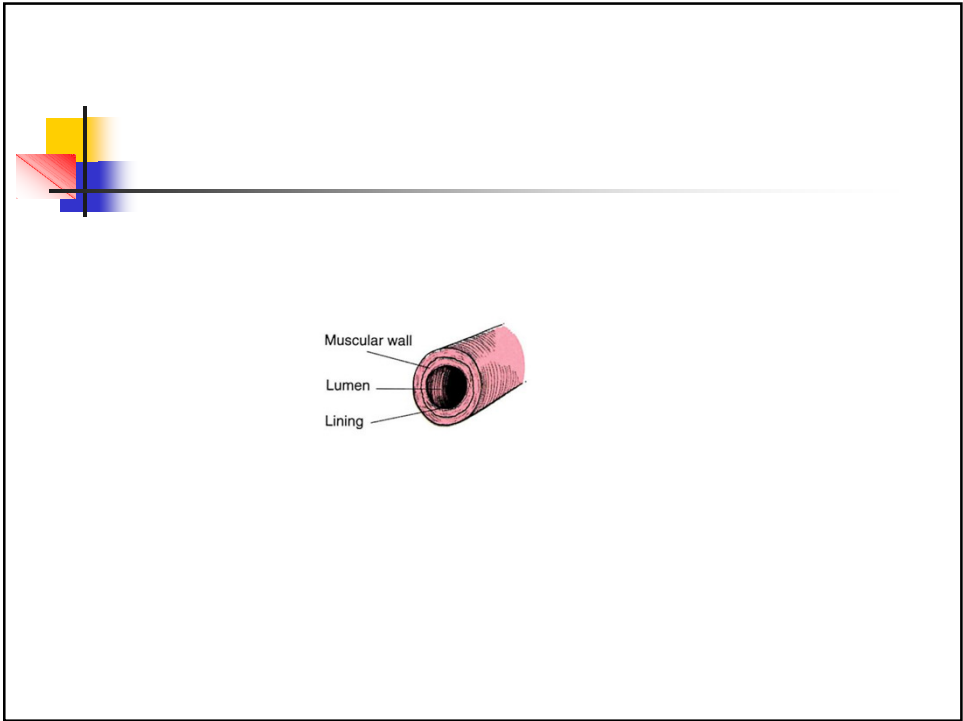
Electrical structure

- SA Node
 - The "dominant pacemaker"
- Internodal pathways
- AV Node
- Bundle of HIS
- Bundle branches
- Purkinje Fibers/Network



Cardiovascular abnormalities

- Atherosclerosis
 - Cholesterol/calcium deposit buildup
- Arteriosclerosis
 - Hardening of the arteries
- **Ischemia**
 - **Temporary** interruption of O₂ to tissues
- **Infarction**
 - **Death of tissue** after "a period of uncorrected ischemia"





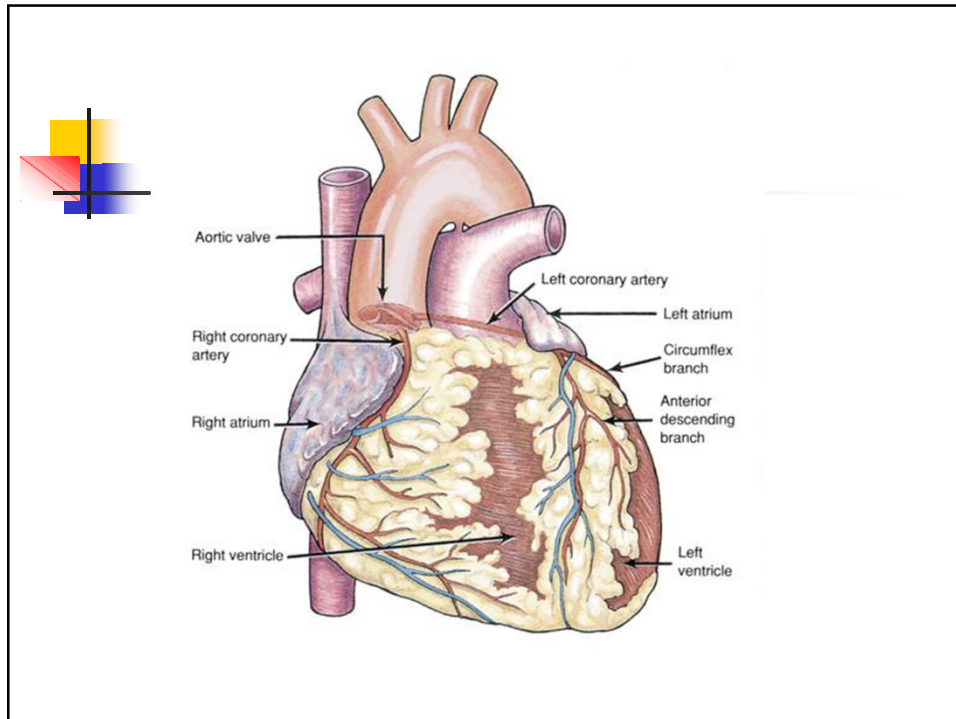
Risk factors

- Controllable
- Uncontrollable



Angina pectoris

- Chest pain
- Supply of O₂ does not meet hearts requirement
- **Partial blockage**
- Spasm?



Angina -- triggers

- Exercise
- Emotion
- Fear
- Cold
- Large meal
- elimination



Angina -- presentation

- Crushing/squeezing pain in midchest, under sternum ("substernal")
- Radiation to jaw, arms, midback
- Nausea
- Dyspnea
- Diaphoresis
- **Rarely lasts more than 15 minutes**

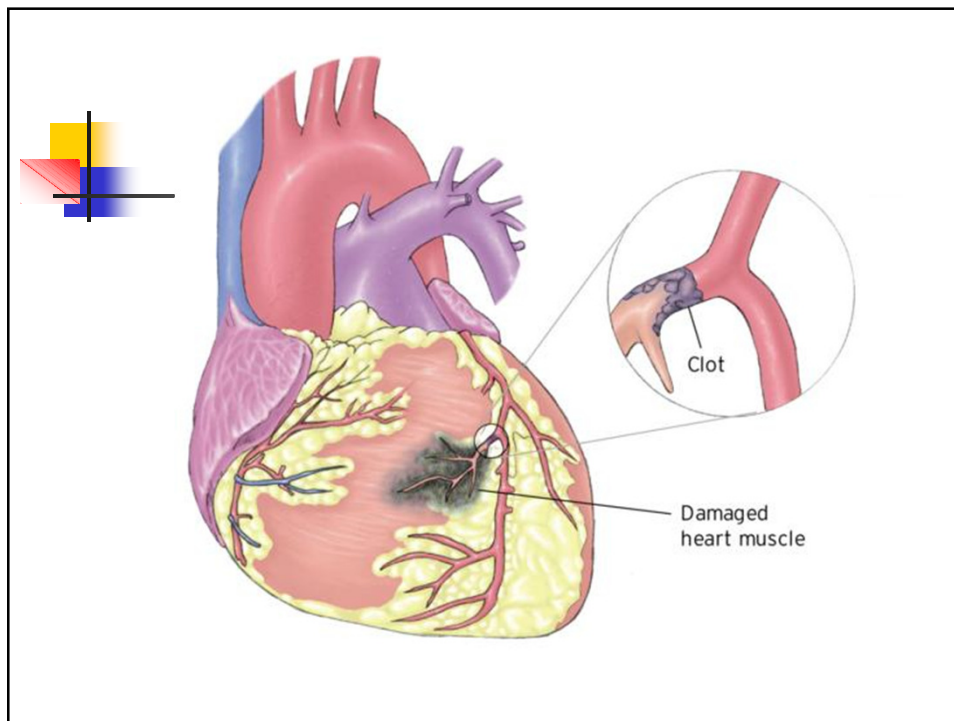


Angina-**promptly** relieved by

- Rest
- **Oxygen**
- **Nitroglycerine**
 - **Dilates blood vessels**
 - **Increases blood flow to heart muscle**

Acute myocardial infarction

- “AMI”, “MI”, “Heart attack”
- May have same S/S as angina, but
 - Longer in duration
 - Often **not** relieved with rest, O₂, nitro
 - **May be onset at rest with no “triggers”**
- → **Treat angina as AMI**





Complications of AMI

- Sudden death
 - 40% never “make it” to the hospital
- **Arrhythmias**
 - **Most frequent cause of death in early hours following AMI**
- Congestive Heart Failure (“CHF”)
- Cardiogenic shock
 - At least 40% of the heart is infarcted



Sad facts

- Unfortunately, the left ventricle is the portion of the heart most often infarcted
- The left ventricle is the highest powered portion of the heart
- Pumping power of the heart may be severely reduced



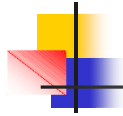
Classical S/S of AMI

- All, some or none of the following:
- Sudden onset of weakness, nausea, sweating
- Crushing chest pain – does not change with breathing
- Pain **radiating** to jaw, arms, neck
- Sudden arrhythmias causing syncope
- Acute Pulmonary Edema
- Cardiac Arrest



Classical S/S of AMI -- 2

- Vital signs -- commonly:
 - Pulse:
 - Increased or decreased or WNL
 - Irregular?
 - BP: Usually normal; dropping in cardiogenic shock
 - RR: Usually normal, elevated in APE
- Feeling of doom
- Looks frightened
- **Denial**
- → **Diabetics, women and the elderly** ←



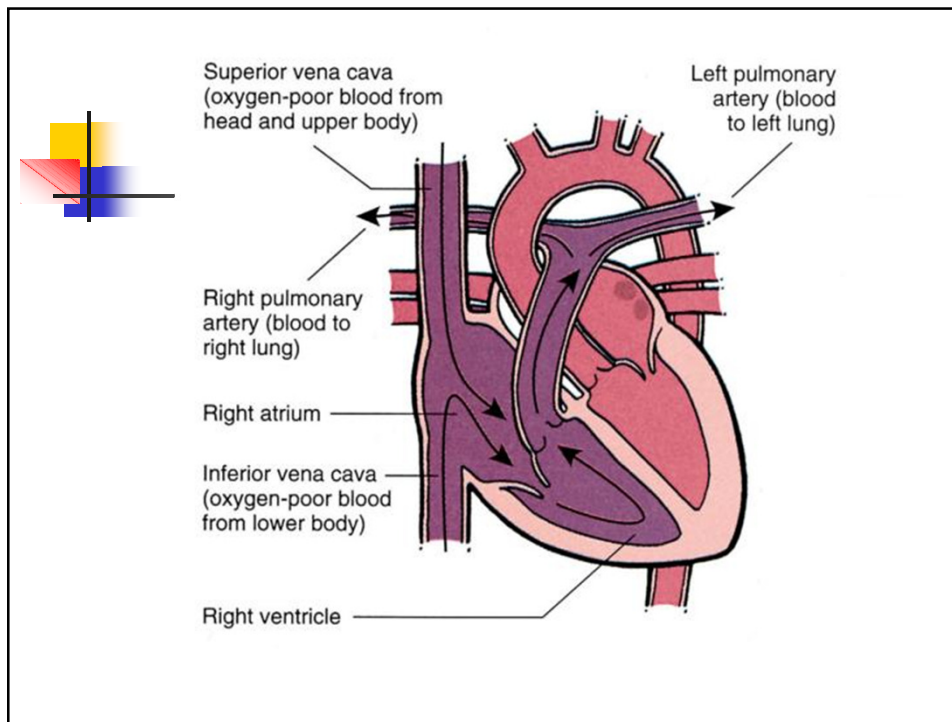
Congestive Heart Failure

- Pathophysiology
- Right sided CHF
- Left sided CHF



Right sided CHF

- Dependent edema
 - **Pedal edema**, sacral edema
- Enlarged liver
- **JVD**
- Due to back-pressure from damaged **right** ventricle
- **Chronic condition**
 - **People often live with it for years**
- Controlled by:
 - Medication (Lasix, Digitalis)
 - Salt free diet

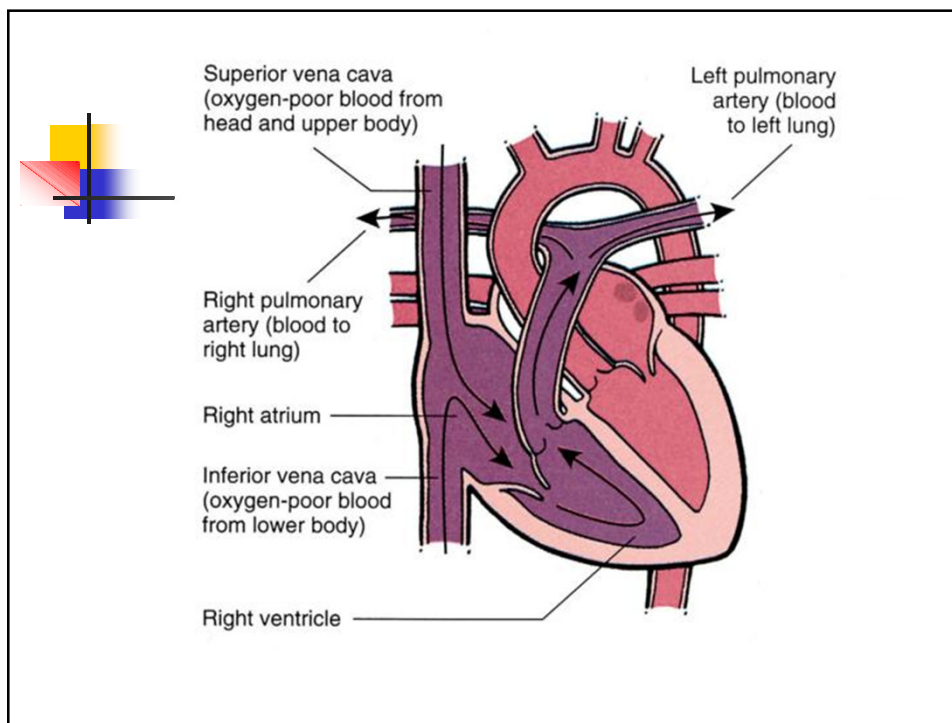


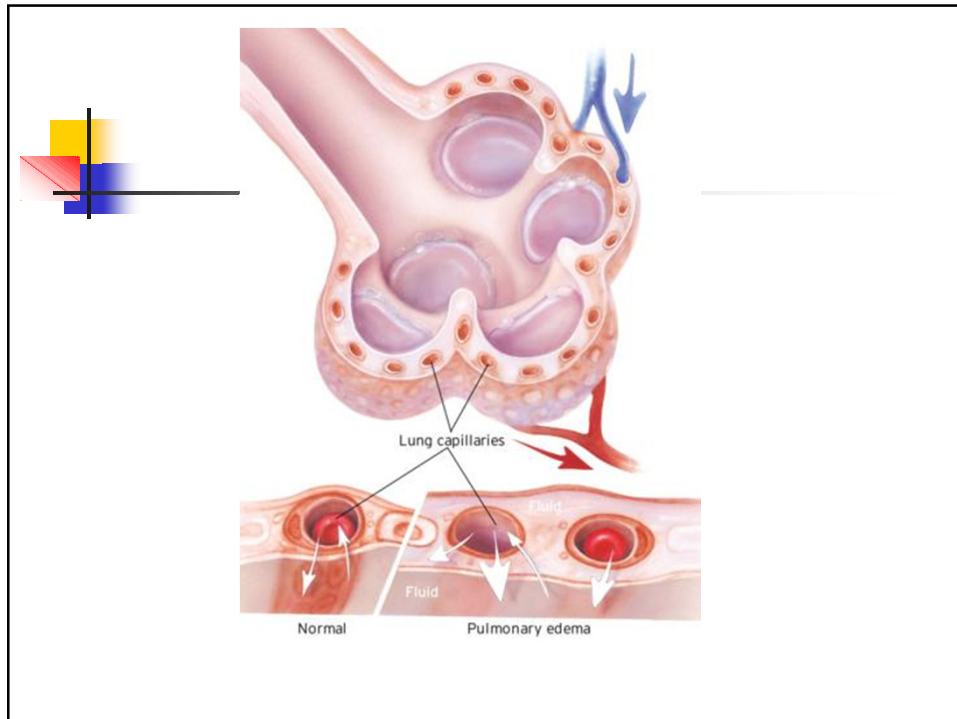
Left sided CHF

- "APE"
- Fluid in the lungs due to back pressure from damaged **left** ventricle
- **Patient feels like they are drowning**
- Acute condition
- Frequent recurrences
- Often results in death
- Controlled by:
 - Medication (Lasix, Bumex, Digitalis)
 - Salt free diet
- Often a result of long-standing HTN

APE Calls

- Most of them are due to either:
 - Poor diet control
 - They eat too much sodium filled foods
 - Poor compliance with medications
 - Lasix is a diuretic
 - VERY annoying side effects





Cardiogenic Shock

- Heart muscle is so damaged that it can no longer pump enough to meet bodily demands
- **Very** high mortality rates
 - **Even with the best treatment**
- S/S of shock immediately after or within hours or days of AMI



Treating the patient with "CP"

- **Calm reassuring approach**
- Cardiac arrest – CPR/AED
- High-con Oxygen
 - **NRB or BVM PRN**
- **Request ALS**
 - **For any cardiac/respiratory problem**
- Position of comfort
 - Usually sitting upright (dyspnic patient)
 - **NEVER** let an APE pt lie down!



Treating the patient with "CP"

- Focused history
 - OPQRST – and in addition
 - Previous MI history
 - Previous "heart problems"
 - Family history / risk factors
- Monitor vital signs
- Other interventions
 - **Assist pt with prescribed nitro – SL**
 - **If systolic BP > 120**
 - **** Must know if patient has taken Viagra or other "ED" medications "recently"!**

