
بسم الله الرحمن الرحيم

Screening for cardiovascular system

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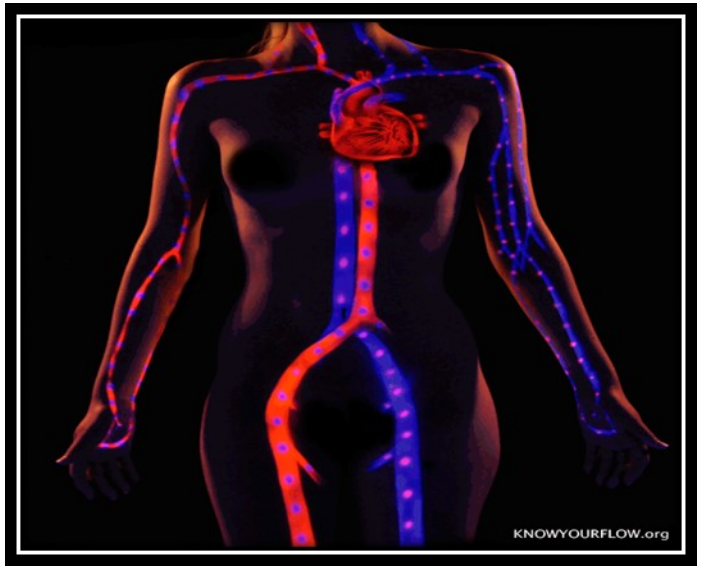
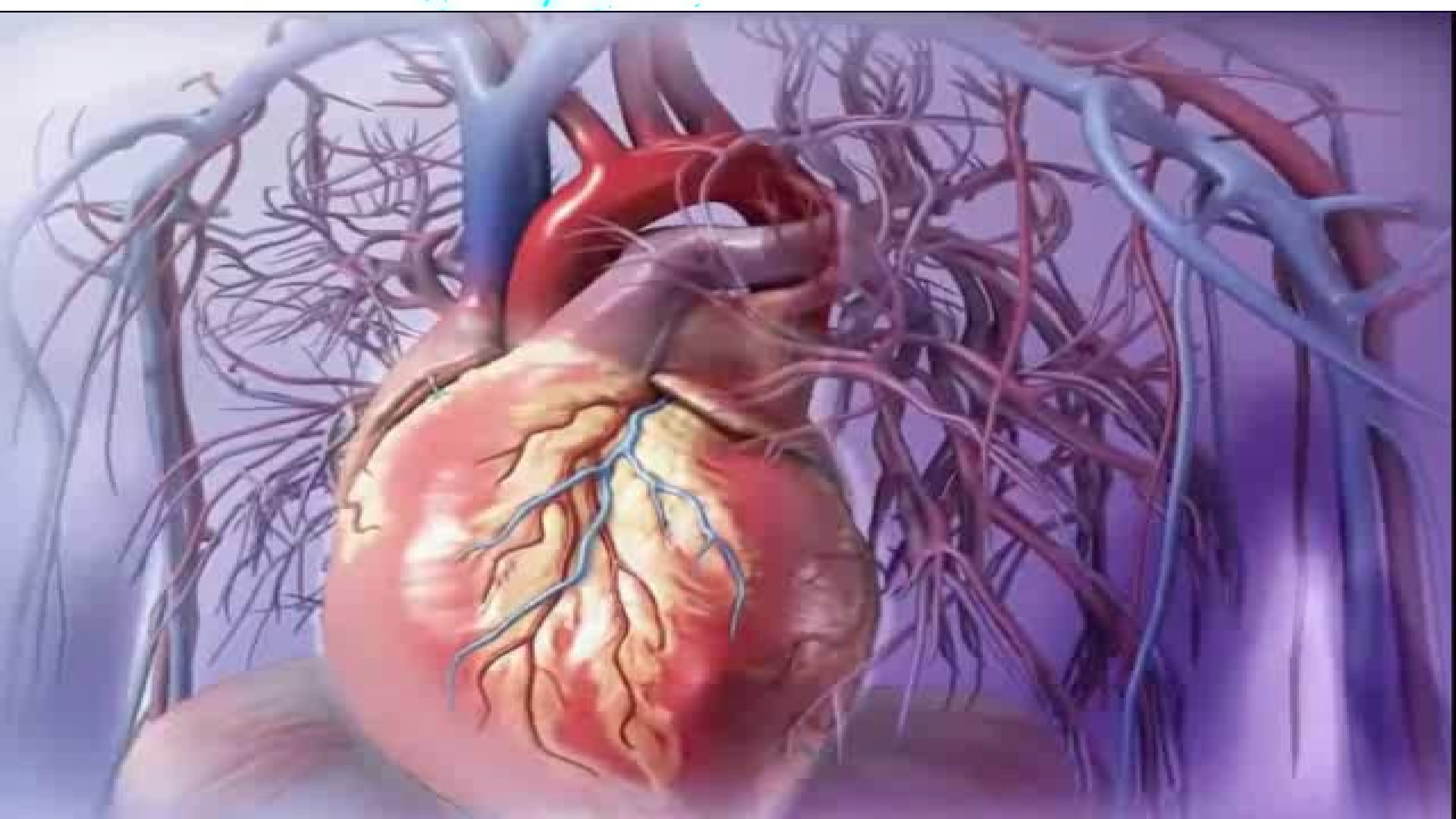




CARDIOVASCULAR SIGNS AND SYMPTOMS

GENERAL WEAKNESS
- ✓ FATIGUE
- ✓ WEIGHT CHANGE
- ✓ POOR EXERCISE TOLERANCE
- ✓ PERIPHERAL EDEMA

INTEGUMENTARY
- ✓ PRESSURE ULCERS
- ✓ LOSS OF BODY HAIR
- ✓ CYANOSIS (LIPS AND NAIL BEDS)

CENTRAL NERVOUS SYSTEM
- ✓ HEADACHES
- ✓ IMPAIRED VISION
- ✓ DIZZINESS

PULMONARY
- ✓ LABORED BREATHING, DYSPNEA
- ✓ PRODUCTIVE COUGH

Genitourinary
- ✓Urinary frequency
- ✓Nocturia
- ✓Concentrated urine
- ✓Decreased urinary output

Musculoskeletal
- ✓Chest, shoulder, back, neck, jaw or arm pain
- ✓Myalgia
- ✓Muscular fatigue
- ✓Muscle atrophy
- ✓Edema

Claudication

GIT
- ✓Gastrointestinal Nausea and vomiting
- ✓Ascites (abdominal distention)

CARDIAC SIGN AND SYMPTOMS

CHEST PAIN

- CHEST PAIN OR DISCOMFORT
- NECK, JAW, UPPER TRAPEZIUS, MUSCLE, UPPER BACK, SHOULDER, OR ARMS.
- HEART IS SUPPLIED BY THE C3-T4 SPINAL SEGMENTS.
- HEART AND THE DIAPHRAGM SUPPLIED BY THE C5-6

- CARDIAC-RELATED CHEST PAIN MAY ARISE SECONDARY TO ANGINA, MYOCARDIAL INFARCTION, PERICARDITIS, ENDOCARDITIS, MITRAL VALVE PROLAPSE, OR DISSECTING AORTIC ANEURYSM.

PALPITATION

- **Palpitations** are a perceived abnormality of the heartbeat characterized by awareness of heart muscle contractions in the chest: hard beats, fast beats, irregular beats
- Arrhythmia
- Bump, pound, jump, flop or racing sensation
- Lightheadedness or syncope
- Pulse may feel rapid or irregular
- Occasionally, "fluttering“ sensations in the neck by anxiety, random muscle fasciculation, or minor muscle strain or overuse.

Causes

- **Mitral valve prolapse.**
- **Coronary artery disease.**
- **Cardiomyopathy.**
- **Complete heart block.**
- **Ventricular aneurysm.**
- **Atrioventricular valve disease.**
- **Mitral or aortic stenosis.**
- **Overactive thyroid**
- **Side effect of some medications**
- **“Athlete's heart,"**
- **Caffeine.**
- **Anxiety.**
- **Exercise**

DYSPNEA

- CARDIOVASCULAR
- SECONDARY TO A PULMONARY PATHOLOGY
- FEVER
- CERTAIN MEDICATIONS
- ALLERGIES
- POOR PHYSICAL CONDITION
- OBESITY

- Paroxysmal nocturnal dyspnea (PND), orthopnea.
- PND + sudden unexplained episodes of shortness of breath is often CHF.
- Dyspnea relieved by specific breathing patterns (e.g., Pursed-lip breathing) or by specific body position (e.g., Leaning forward on the arms to lock the shoulder girdle) is more likely to be pulmonary than cardiac in origin.

CARDIAC SYNCOPE

- Arrhythmias (dizziness, or nausea, lightheadedness)
- Orthostatic hypotension
- Poor ventricular function
- Coronary artery disease
- Vertebral artery insufficiency
- Vasovagal syncope
- Eye nystagmus, changes in pupil size, or visual disturbances and symptoms of dizziness or lightheadedness occur in response to VERTEBRAL ARTERY COMPRESSION TEST.
- Non cardiac (anxiety, hyperventilation)

FATIGUE

- Coronary Artery Disease
- Aortic Valve Dysfunction
- Cardiomyopathy
- Myocarditis
- Secondary To A Neurologic, Muscular, Metabolic, Or Pulmonary Pathologic Condition
- Beta Blockers
- Dyspnea, Chest Pain, Palpitations, Or Headache With Fatigue Is A Probable Cardiac Cause.
- Early Sign No Rise In Blood Pressure With Increase Activity.
- Deconditioning Debate

COUGH

- Cough is usually associated with pulmonary conditions, but it may occur as a pulmonary complication of cardiovascular pathologic complex.
- In the case of CHF, cough develops because a large amount of fluid is trapped in the pulmonary tree, irritating the lung mucosa.

CYANOSIS

- Cyanosis is a bluish discoloration of the lips, and nail beds of the fingers and toes
- Primarily cyanosis can accompany hematologic or central nervous system disorders, however, it can have cardiac and pulmonary problems sometimes.

EDEMA

Gradual, continuous gain over several days resulting in swelling of the ankles, abdomen, and hands with shortness of breath, fatigue, and dizziness may be red-flag symptoms of CHF.

<u>Cardiac causes</u>

- Cardiac surgery
- Venous valve obstruction
- Cardiac valve stenosis
- Coronary artery disease
- Bicuspid valve dysfunction.

EDEMA (NON CARDIAC)

- Pulmonary hypertension
- Kidney dysfunction
- Cirrhosis
- Burns
- Infection
- Lymphatic obstruction
- Use of nonsteroidal anti inflammatory drugs (NSAIDS)
- Allergic reaction.

CLAUDICATION

- Leg pain occurs with peripheral vascular disease (PVD) (arterial or venous)
- De-bilitating
- Pitting edema
- Sciatica, anterior compartment syndrome, gout, peripheral neuropathy) must be differentiated from pain associated with peripheral vascular disease.
- The discomfort associated with pseudo-claudication is frequently bilateral and improves with rest or flexion of the lumbar spine.

VITAL SIGNS

- The therapist may see signs of cardiac dysfunction as **abnormal responses of heart rate and blood pressure** during exercise.
- Heart rate that is either too high or too low during exercise, an irregular pulse rate, a systolic blood pressure that does not rise progressively or it falls during exercise, or a change in diastolic pressure greater than 15 to 20mmhg.
- RPE

HEART DISEASES

AFFECTING HEART MUSCLE

- Coronary artery disease
- Myocardial infract
- Pericarditis
- Aneurysms

Heart valve

- Rheumatic fever
- Endocarditis
- Mitral valve prolapse
- Congenital deformities

Cardiac Nervous System

- Arrhythmias
- Tachycardia
- Bradycardia

HEART MUSCLE DISEASES

CORONARY ARTERY DISEASE

- **Coronary** heart **disease** (CHD) is a **disease** in which a waxy substance called plaque builds up inside the **coronary arteries**.

RISK FACTORS

- ✓ Old age
- ✓ Men are more likely to have one than women.
- ✓ A family history of heart disease also increases your risk.
- ✓ Smoking raises your chances of a heart attack.
- ✓ High blood pressure
- ✓ High cholesterol levels,
- ✓ Diabetes, and being obese.
- ✓ Stress, a lack of exercise, and depression

ANGINA PECTORIS

- Gripping, viselike feeling of pain or pressure behind the breast bone
- Pain that may radiate to the neck, jaw, back, shoulder, or arms (most often the left arm in men)
- Toothache
- Burning indigestion
- Dyspnea; exercise intolerance
- Nausea

MYOCARDIAL INFARCT

- May be silent (smokers, diabetics: reduced sensitivity to pain)
- Sudden cardiac death
- Prolonged or severe sub-sternal chest pain or squeezing pressure
- Pain possibly radiating down one or both arms and/or up to the throat, neck, back, jaw, shoulders, or arms
- Feeling of indigestion
- Lasting for 30 minutes or more
- Unrelieved by rest, nitroglycerin, or antacids

MYOCARDIAL INFARCT

- ❑Pain of infarct unrelieved by rest or a change in position
- Nausea
- Sudden dimness or loss of vision or loss of speech
- Pallor
- Diaphoresis
- Shortness of breath
- Weakness, numbness, and feelings of faintness

MYOCARDIAL ISCHEMIA IN WOMEN

- Heart pain in women does not always follow classic patterns
- Many women do experience classic chest discomfort
- Older female: mental status change or confusion may be common
- Dyspnea (at rest or with exertion)
- Weakness and lethargy • indigestion, heart burn, or stomach pain; mistakenly diagnosed or assumed to have gastro esophageal reflux disease (GERD)

- They may also feel very tired, light-headed, or dizzy. A couple of weeks before a heart attack, a woman might have flu-like symptoms.

MYOCARDIAL ISCHEMIA IN WOMEN

- ❑Anxiety or depression
- Sleep disturbance (woman awakens with any of the symptoms listed here)
- Sensation similar to inhaling cold air; unable to talk or breathe
- Isolated, continuous mid-thoracic or inter-scapular back pain
- **Isolated *right* biceps aching**
- Symptoms may be relieved by antacids

PERICARDITIS

- Substernal pain that may radiate to the neck, upper back, upper trapezius muscle, left supra-clavicular area, down the left arm to the costal margins
- Difficulty in swallowing
- **Pain relieved by leaning forward or sitting upright**
- Pain relieved or reduced by holding the breath
- Pain aggravated by movement associated with deep breathing (laughing, coughing, deep inspiration)

PERICARDITIS

Pain aggravated by trunk movements (side bending or rotation) and by lying down

- History of fever, chills, weakness, or heart disease
- Cough
- Lower extremity edema (feet, ankles, legs)

CONGESTIVE HEART FAILURE OR HEART FAILURE

LEFT-SIDED HEART F A I L U R E

- Fatigue and dyspnea after mild physical exertion or exercise
- Persistent spasmodic cough, especially when lying down, while fluid moves from the extremities to the lungs
- Paroxysmal nocturnal dyspnea
- Orthopnea

LEFT-SIDED HEART F A I L U R E

- ❑Tachycardia
- Fatigue and muscle weakness
- Edema (especially of the legs and ankles) and weight gain
- Irritability/restlessness
- Decreased renal function or frequent urination at night

CONGESTIVE HEART FAILURE OR HEART FAILURE

R I G H T - S I D E D HEART F A I L U RE

- Increased fatigue
- Dependent edema (usually beginning in the ankles)
- Pitting edema
- Edema in the sacral area or the back of the thighs
- Right upper quadrant pain
- cyanosis of nail beds

ANEURYSMS

- ARTERIAL OR VENOUS
- THORACIC
- ABDOMINAL
- PERIPHERAL

ANEURYSMS

Chest pain with any of the following:

- Palpable, pulsating mass (abdomen, popliteal space)
- Abdominal "heartbeat" felt by the client when lying down
- Dull ache in the mid-abdominal left flank or low back
- Groin and/or leg pain
- Weakness or transient paralysis of legs.

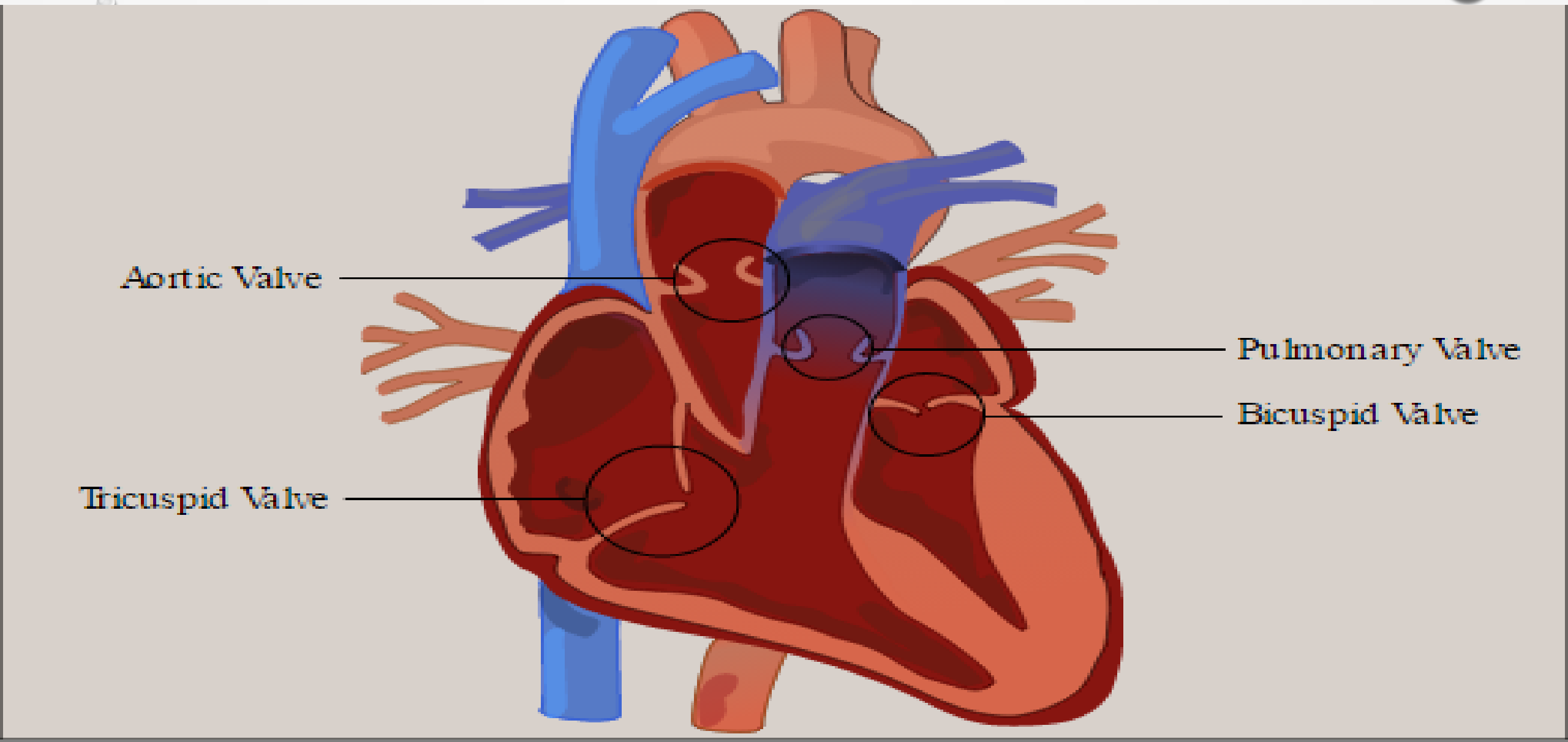
RUPTURED ANEURYSM

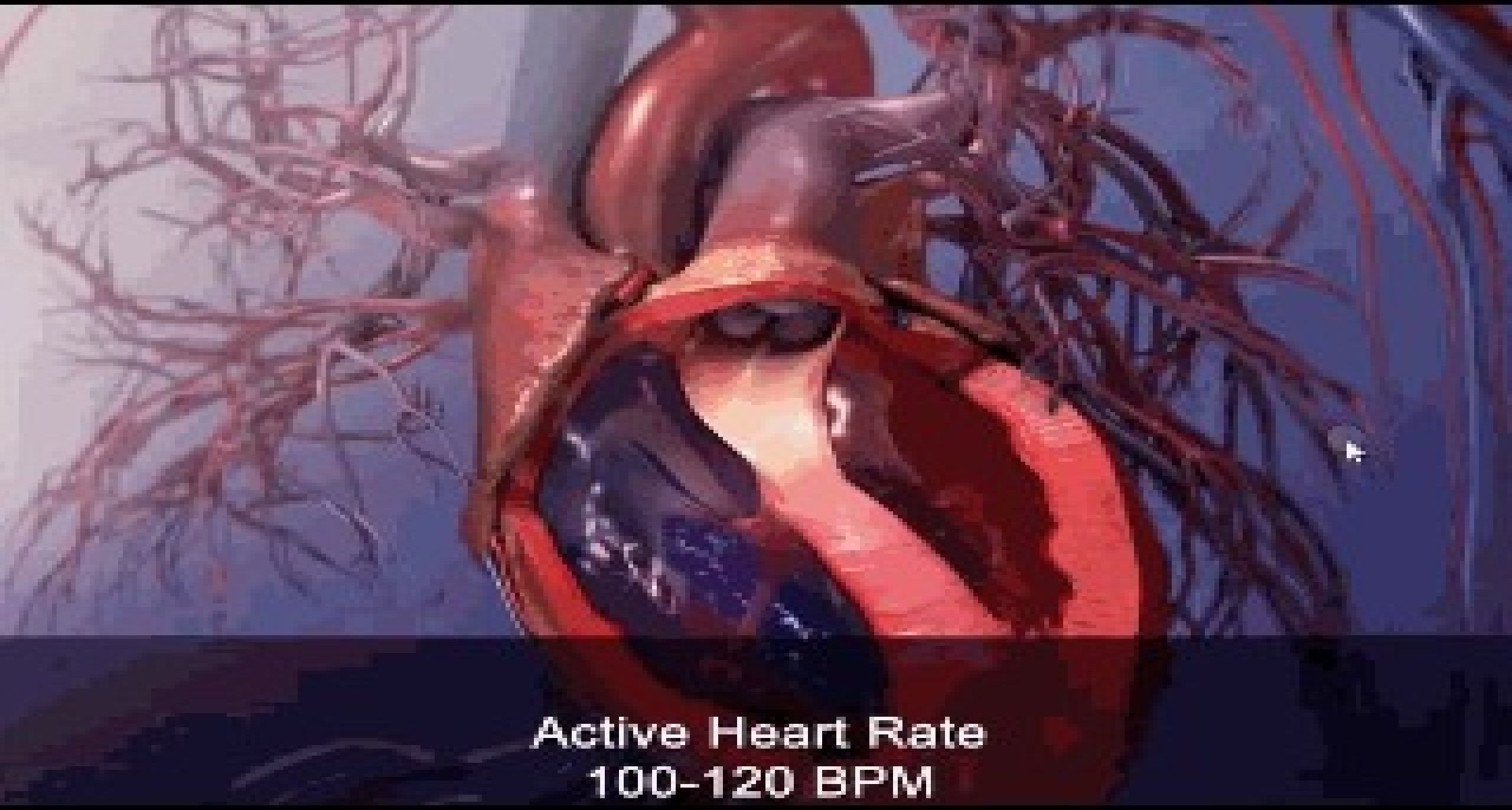
- Sudden, severe chest pain with a tearing sensation
- Pain may extend to the neck, shoulders, between the scapulae, lower back, or abdomen; **pain radiating to the posterior thighs helps distinguish it from a myocardial infarction**
- Pain is not relieved by change in position
- Pain may be described as "tearing" or "ripping"

RUPTURED ANEURYSM

- Pulsating abdominal mass
- Other signs: cold, pulseless lower extremities, BP changes (more than 10 mm hg difference in diastolic BP between arms; systolic BP less than 1OO mmhg)
- Pulse rate more than 100 beats/min indicate shock
- Bruises in the flank and peri-anal area
- Light headedness and nausea

HEART VALVES




Active Heart Rate
100-120 BPM

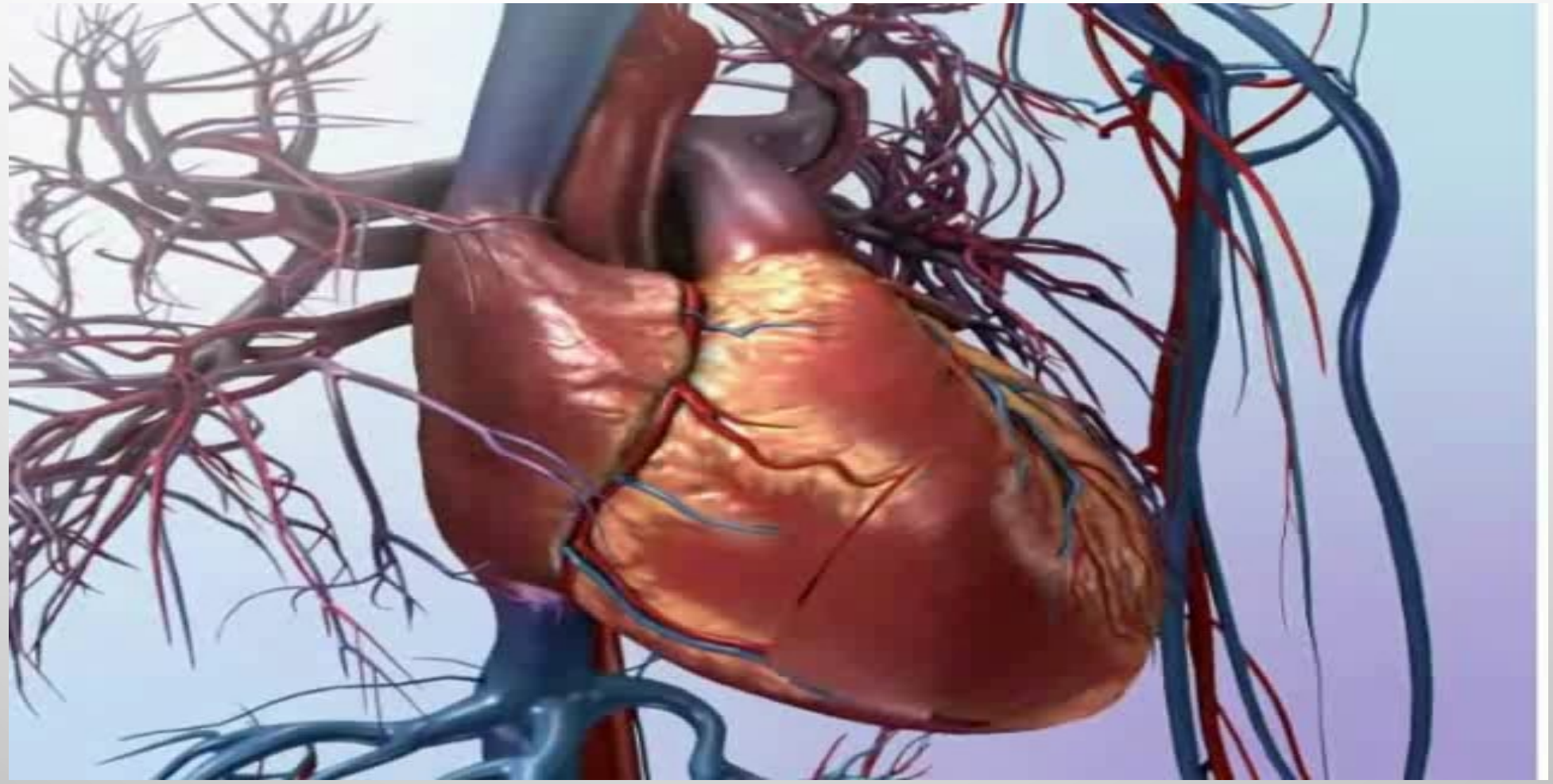
RHEUMATIC FEVER

- Streptococcal bacteria
- Fatal
- May lead to **Rheumatic Heart Disease**
- Flu & throat infection in 5-15 year children
- 50% patients heart is damaged
- 2 or 3 weeks later by sudden or gradual onset of painful migratory joint symptoms in the knees, shoulders, feet, ankles, elbows, fingers, or neck
- Diffuse, proliferative, and exudative inflammatory process.
- Fever of 37.2°C to 39.4°C (99°F to 103°F)

CONT.

- Palpitations
- Fatigue
- Malaise, weakness, weight loss, and anorexia
- Arthralgias last only 24 hours
- A rash on the skin of the limbs or trunk is present in fewer than 2% of clients
- Carditis inflammation involves heart layers and mitral and aortic valves can be involved.
- If untreated, as many as 25% of clients will have mitral valvular disease 25 to 30 years later.
- Rheumatic chorea after 1-3 months after.

Endocarditis



Endocarditis

- Inflammation of the cardiac endothelium
- Previous valvular damage

Risk factors

Injection drug users

- Post cardiac surgical patients
- Congenital heart disease
- Degenerative heart disease
- Prosthetic cardiac valve

- Invasive diagnostic procedures, such as renal shunts and urinary catheters
- Long-term indwelling catheters
- Dental treatment

SIGN & SYMPTOMS

- Arthralgias
- Arthritis
- Musculoskeletal symptoms
- Low back/sacroiliac pain

➡Osteoarticular infections in injection drug use

- Myalgia's (calf or thigh)

➡SI joint destruction

SIGN & SYMPTOMS

- Splinter hemorrhages
- Constitutional symptoms
- Dyspnea, chest pain
- Cold and painful extremities

SLE

- Is a multisystem clinical illness associated with the release of a broad spectrum of autoantibodies into the circulation
- Primary lupus cardiac involvement may include pericarditis, myocarditis, endocarditis, or a combination of the three.

CONGENITAL VALVULAR DEFECTS

- Ventricular or atrial septal defect
- Patent ductus arteriosus (shunt caused by an opening between the aorta and the pulmonary artery)
- Congenital stenosis of the pulmonary, aortic, and tricuspid valves
- Tetralogy of fallot
- **No musculoskeletal manifestations**

MITRAL VALVE PROLAPSE

- Is characterized by **mitral leaflet thickness** with increased extensibility, decreased stiffness, and strength.
- MVP appears to be due to **connective tissue abnormalities** in the valve leaflets or in response to ***abnormalities in left ventricular cavity geometry.***

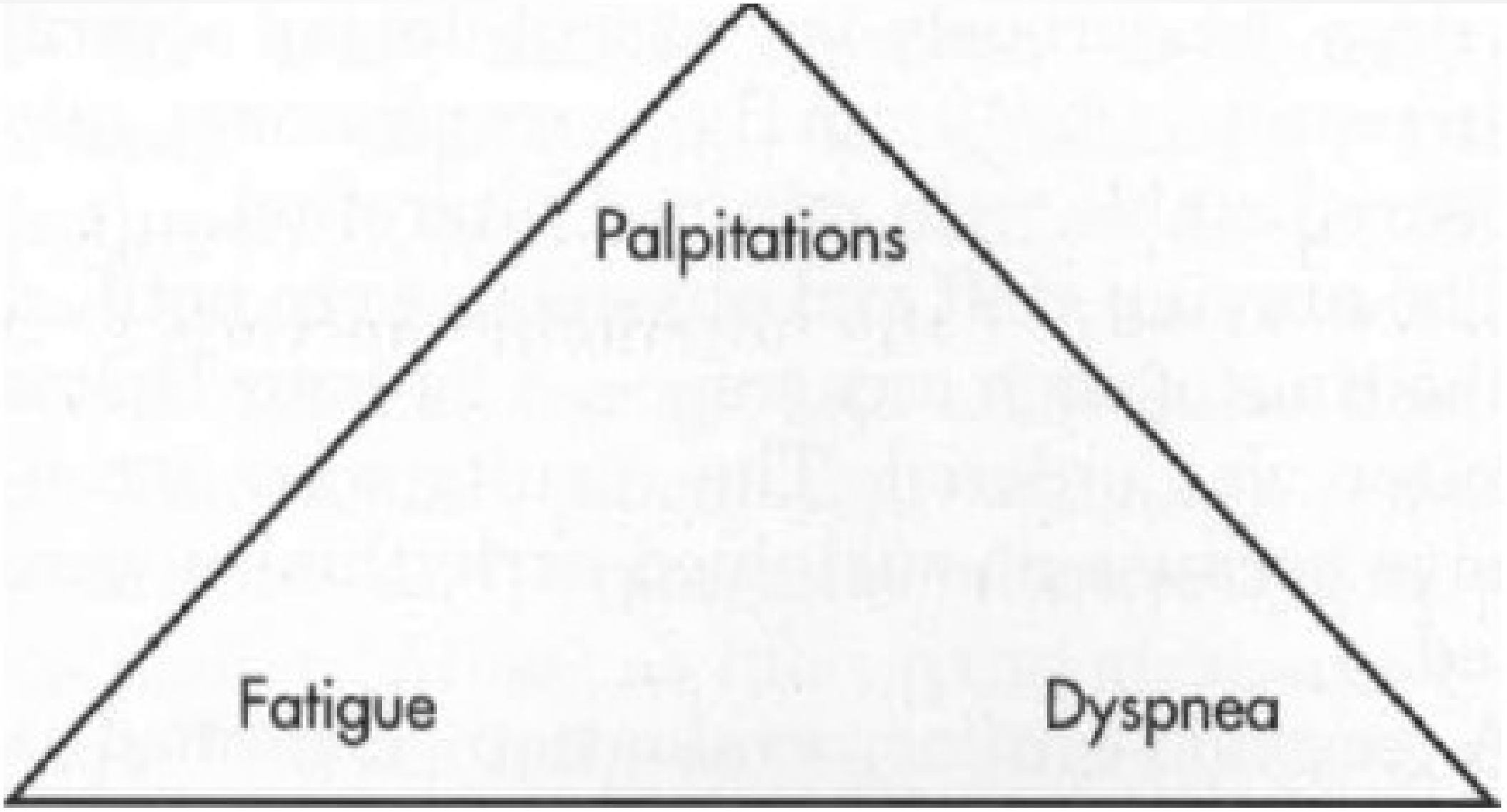
RISK FACTORS:

- Marfan Syndrome
- Osteogenesis Imperfecta
- Endocarditis, Myocarditis, Atherosclerosis, SLE, Muscular Dystrophy
- Acromegaly

SIGN & SYMPTOMS

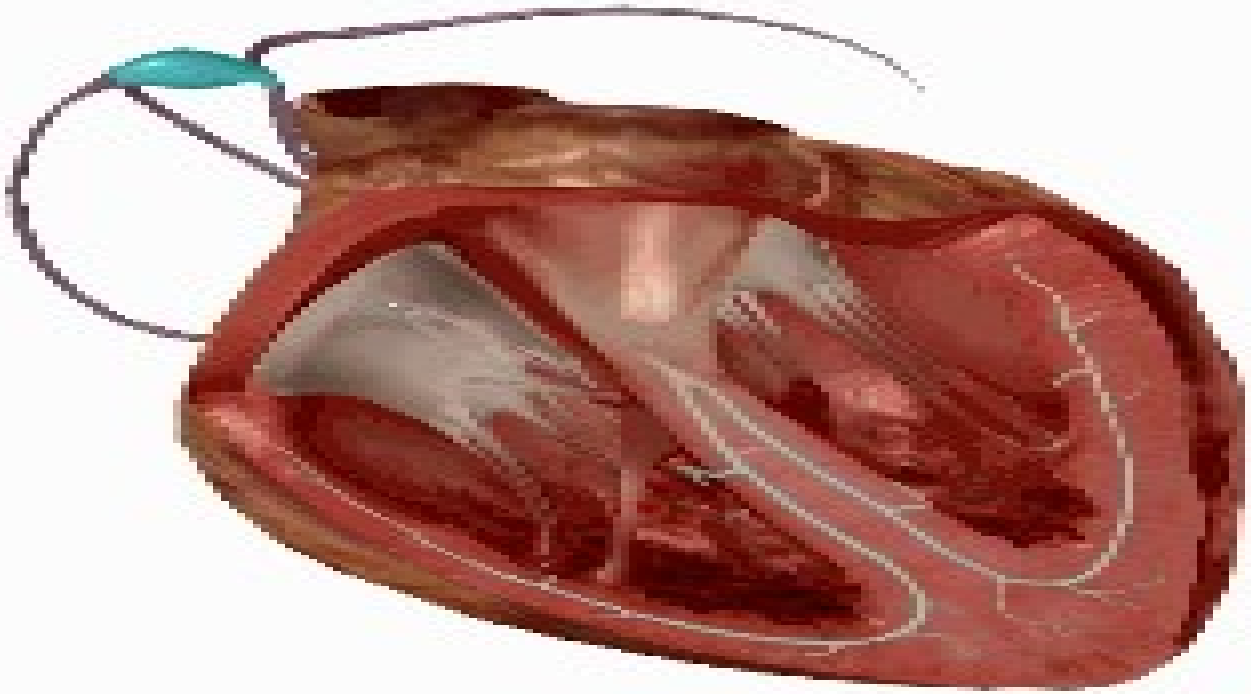
- Profound Fatigue; Low Exercise Tolerance
- Chest Pain; Arm, Back, Or Shoulder Discomfort
- Palpitations Or Irregular Heartbeat
- Tachycardia
- Migraine Headache
- Anxiety, Depression, Panic Attacks
- Dyspnea

THE TRIAD OF SYMPTOMS ASSOCIATED WITH MVP

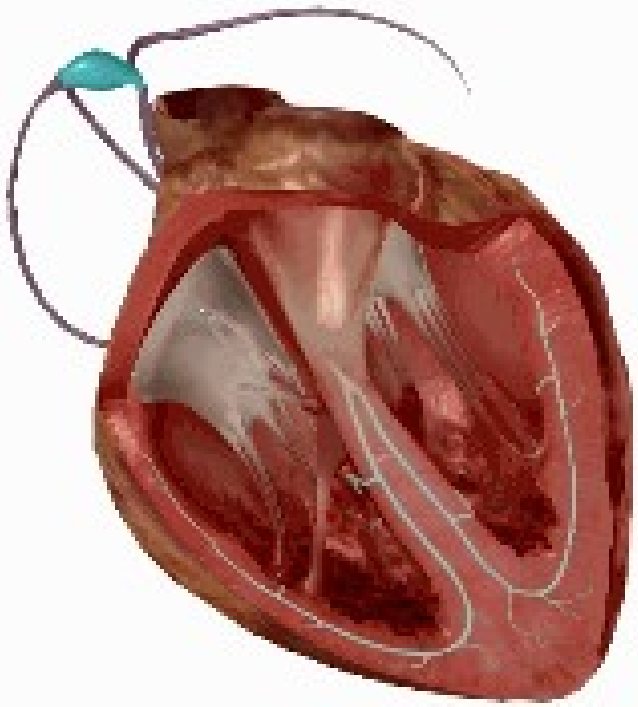


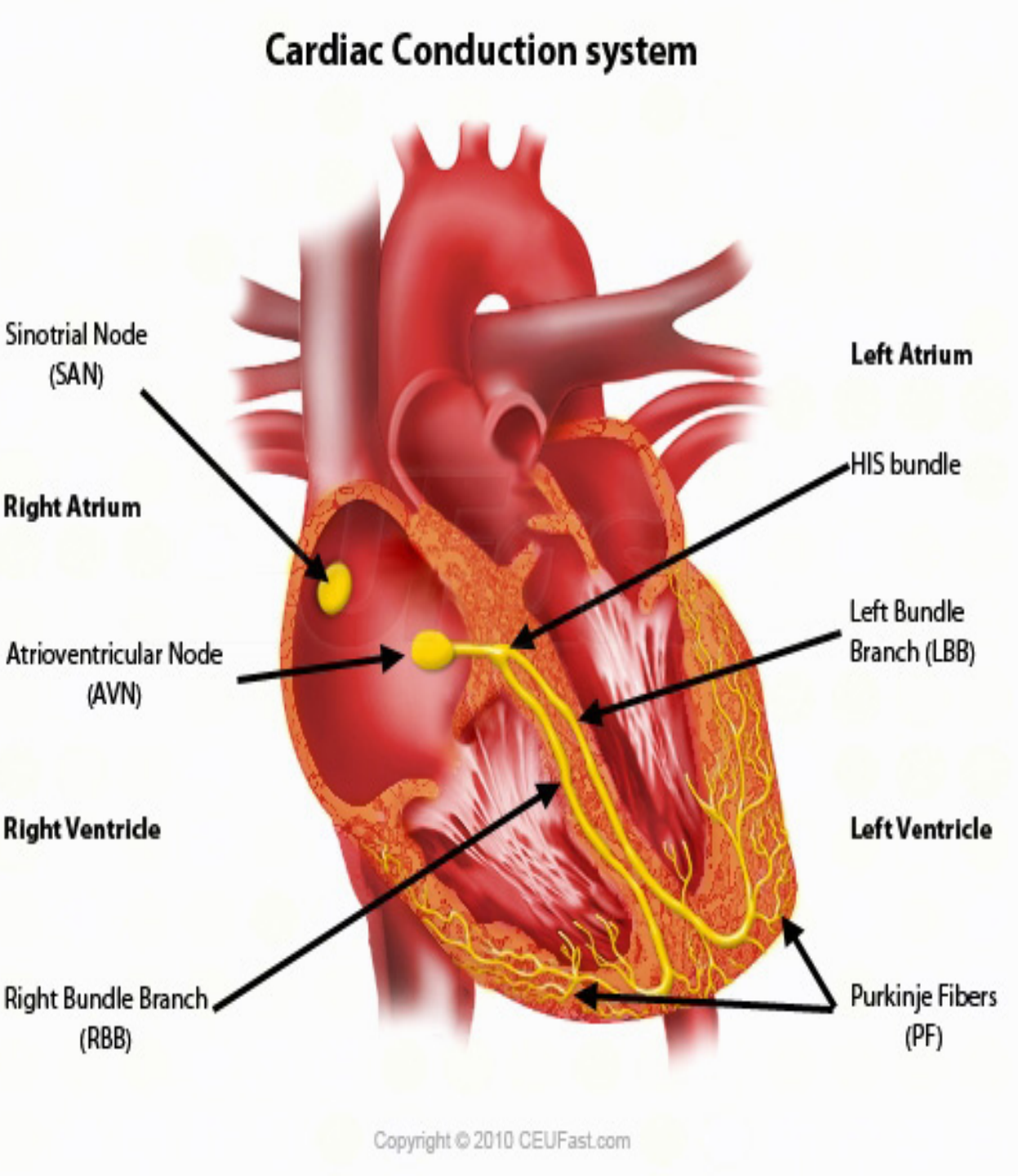
CONDITIONS AFFECTING THE CARDIAC NERVOUS SYSTEM

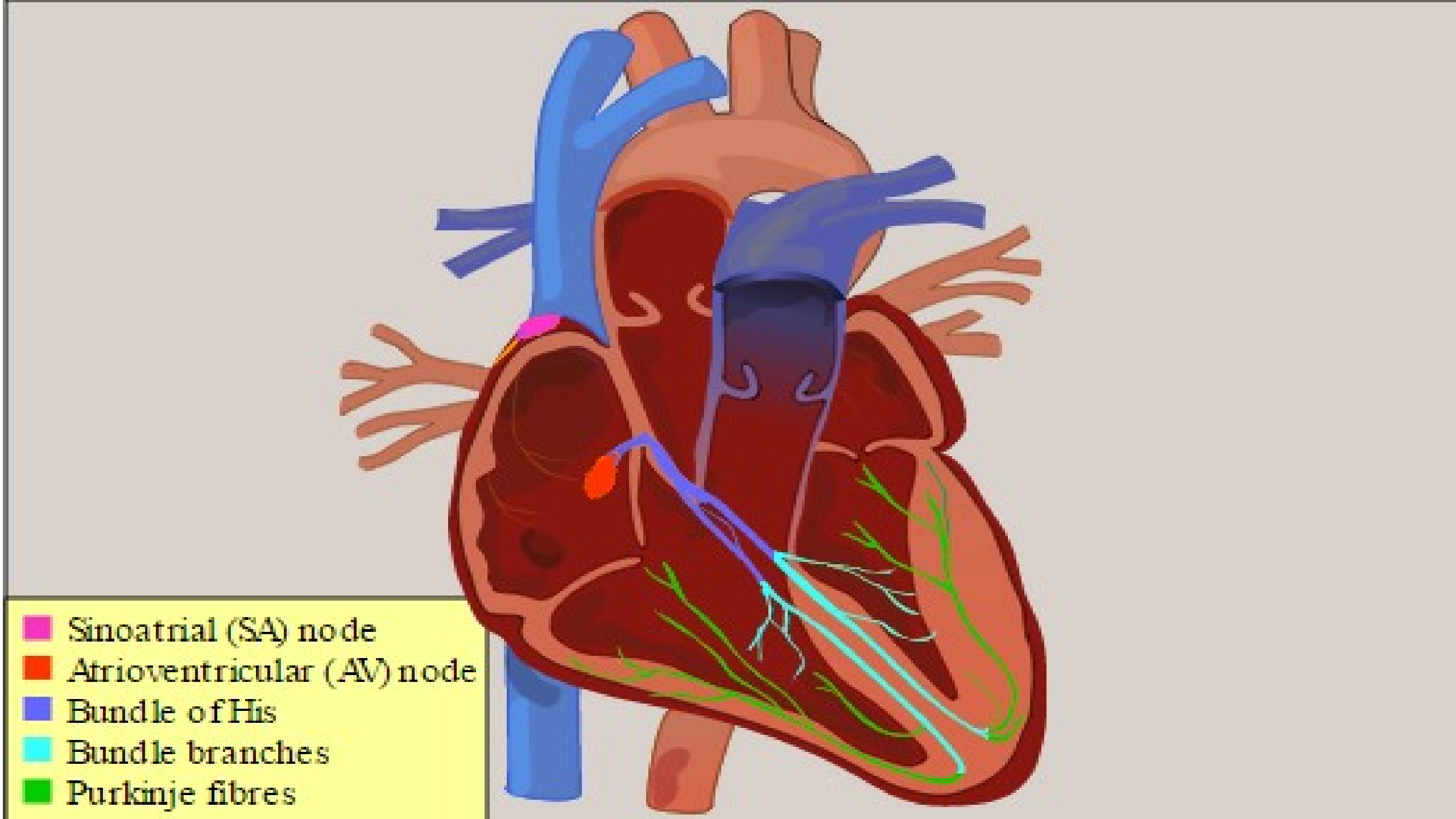
Cardiac conduction system.

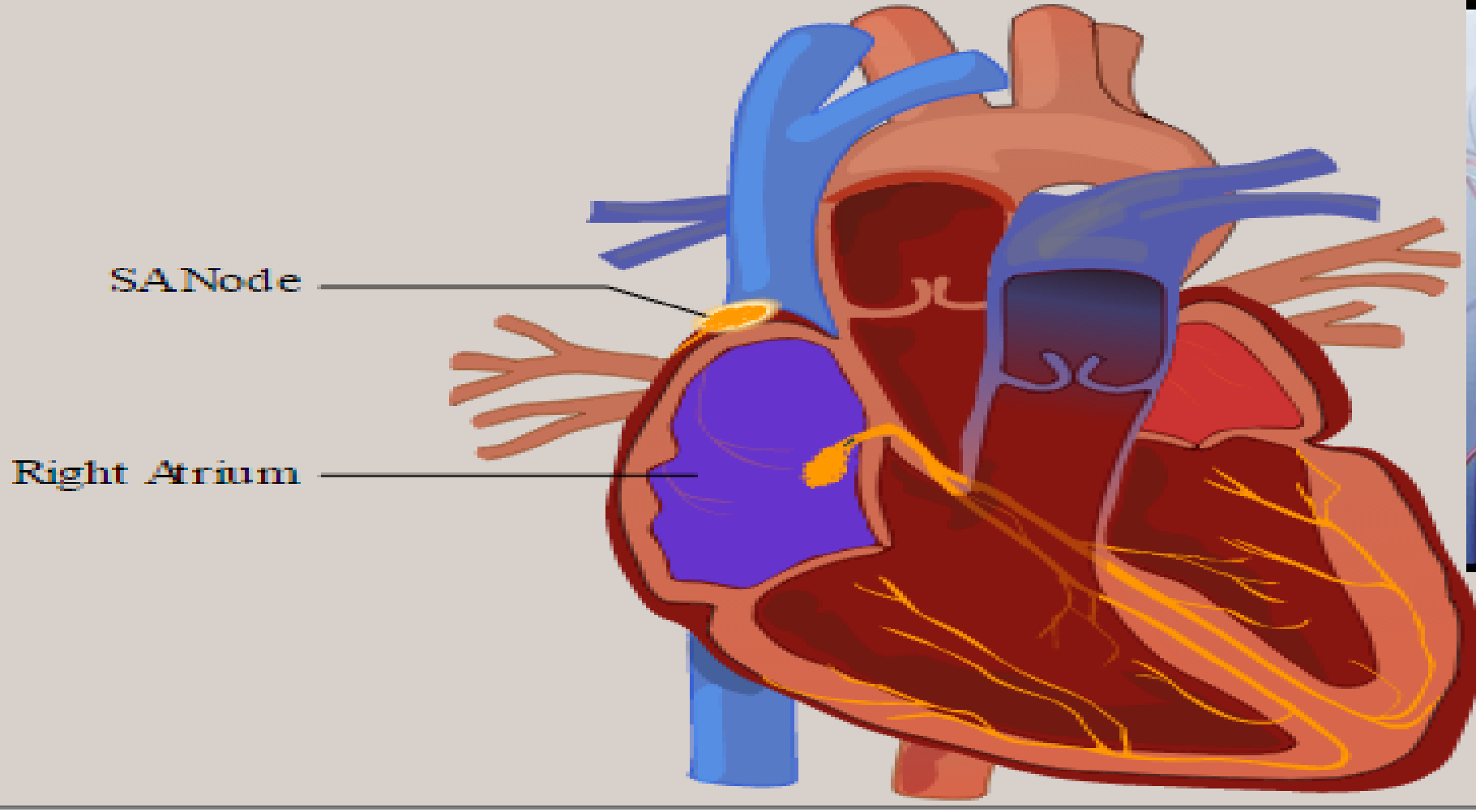


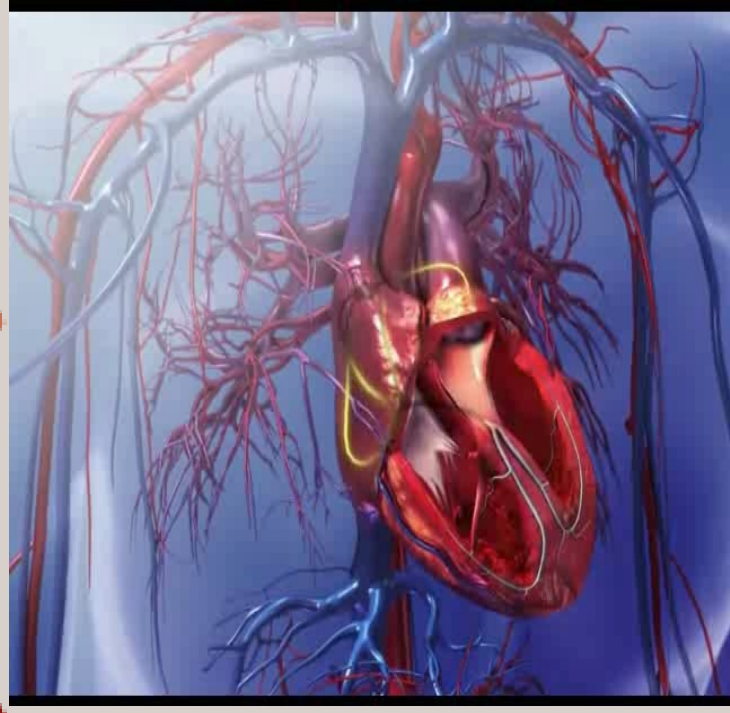
Arrhythmias may cause tachycardia or bradycardia or with extra beats and fibrillations.



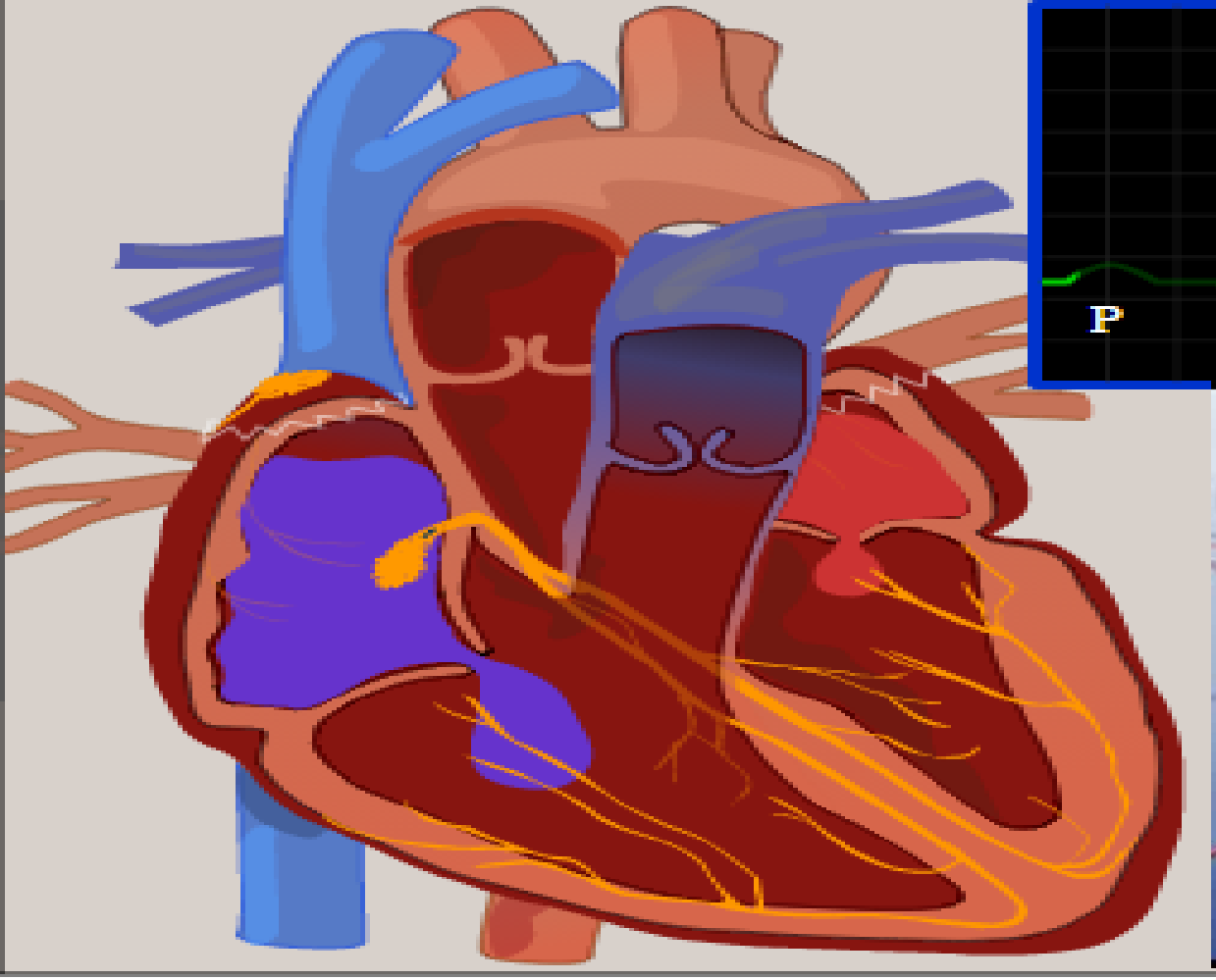


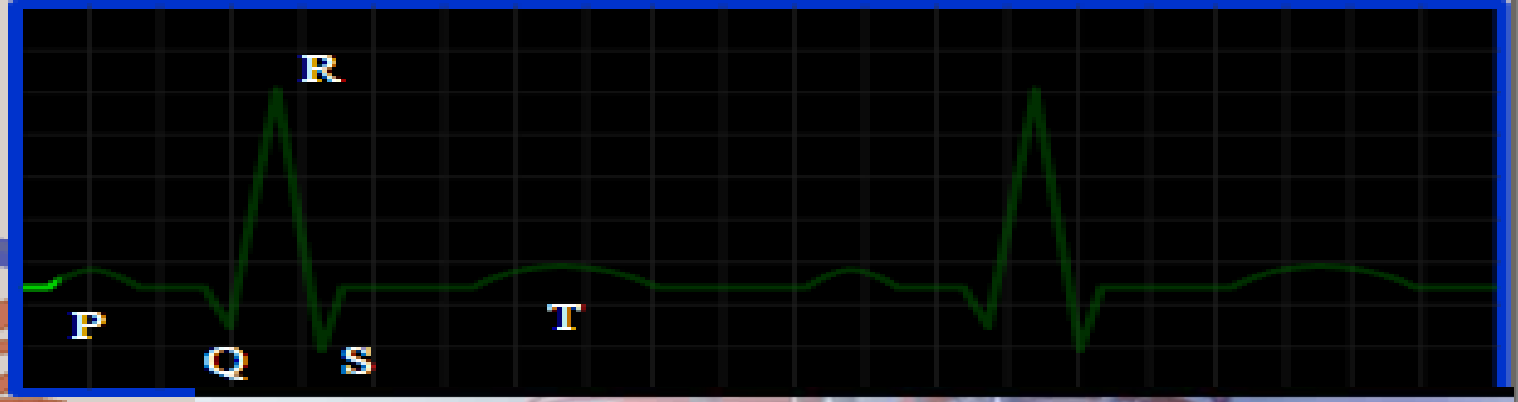

Sinoatrial (SA) node
Atrioventricular (AV) node
Bundle of His
Bundle branches
Purkinje fibres





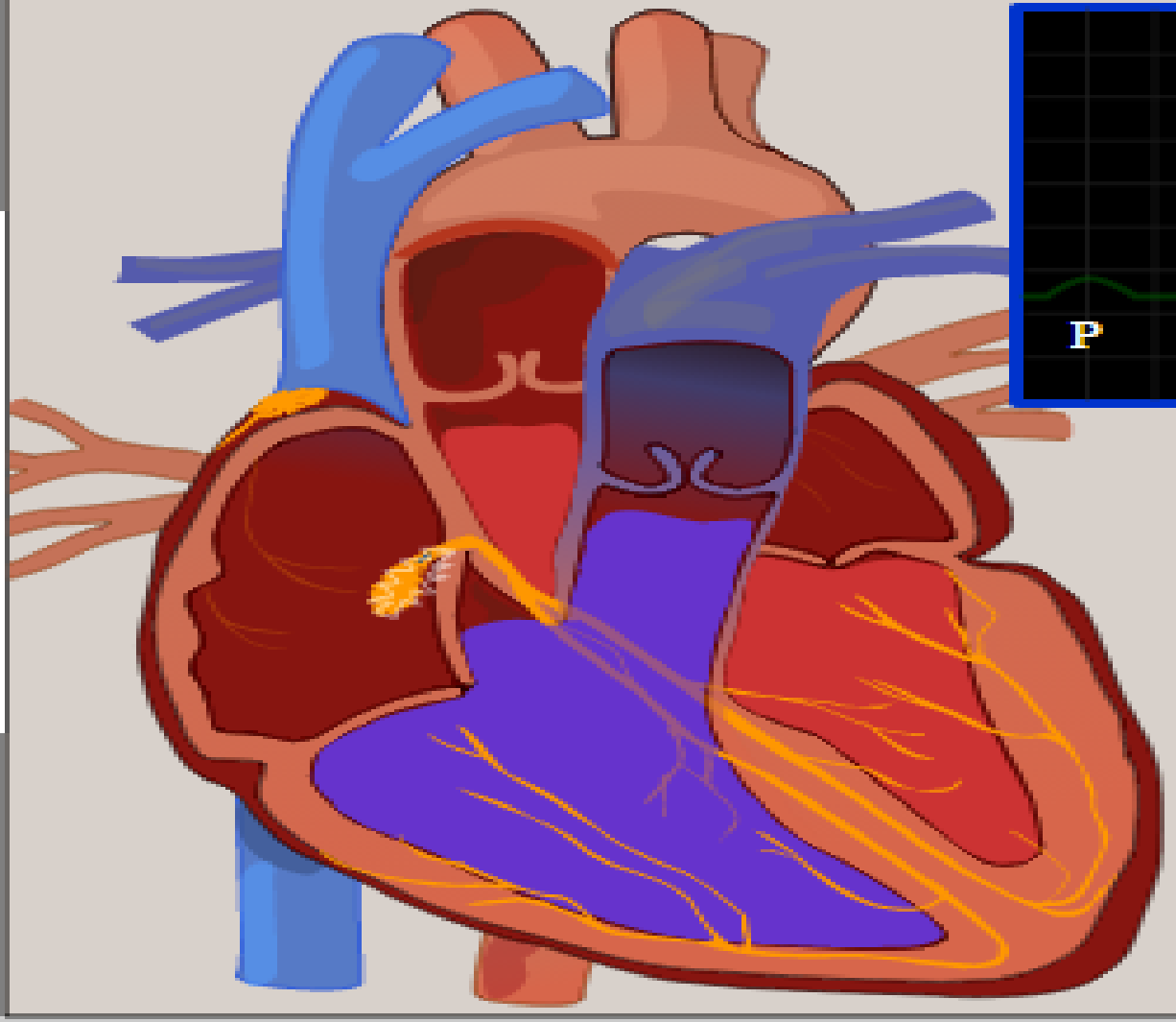
Contractions in the heart begin when electrical impulses are sent from the SA node which is located in the right atrium.

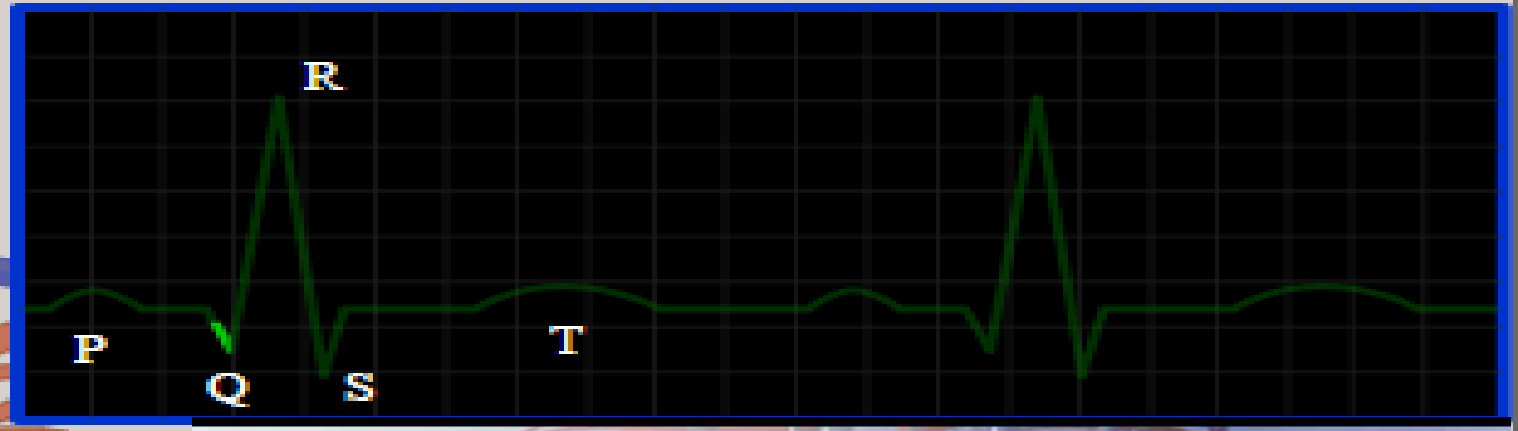




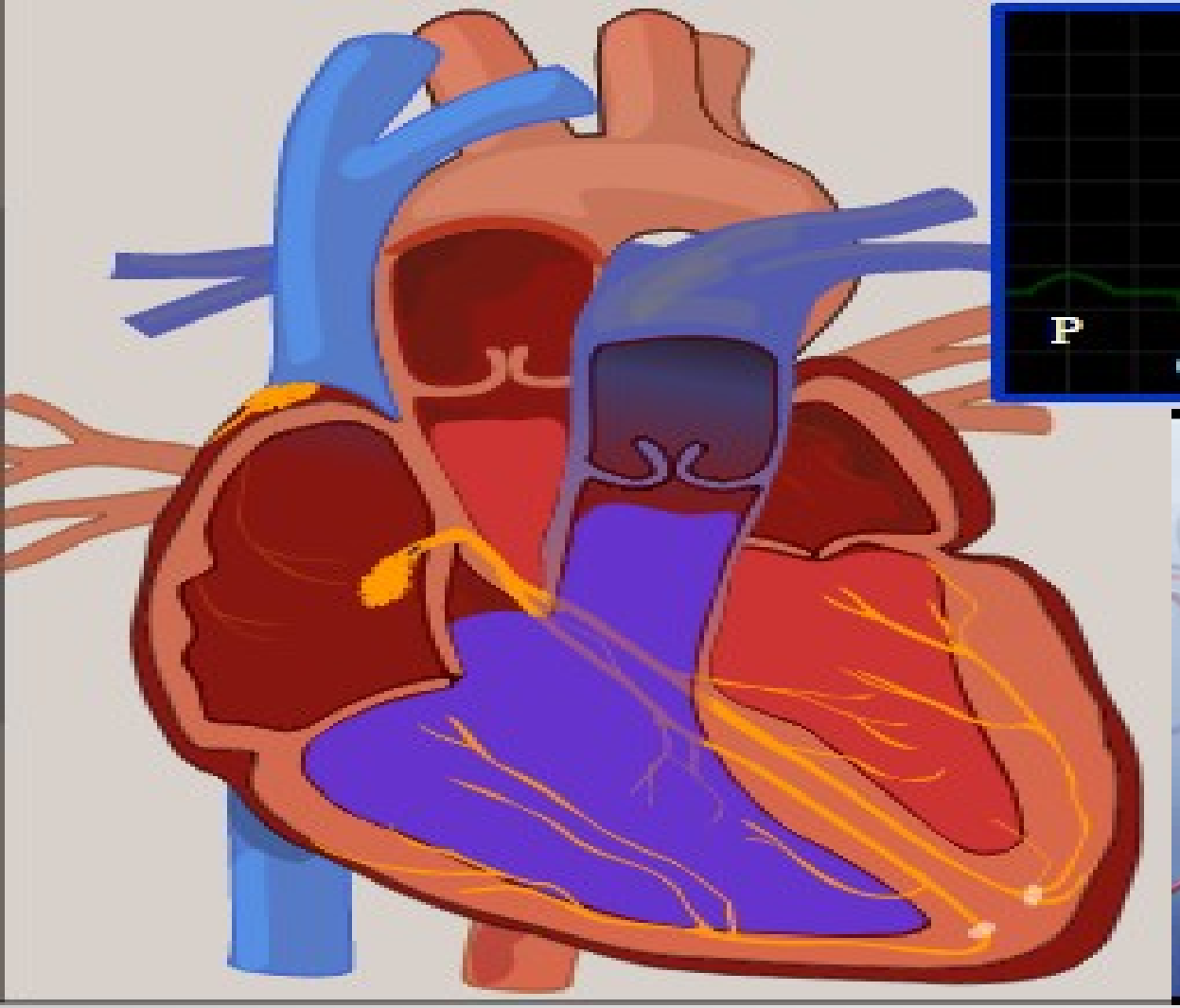
Deoxygenated Blood
Oxygenated Blood

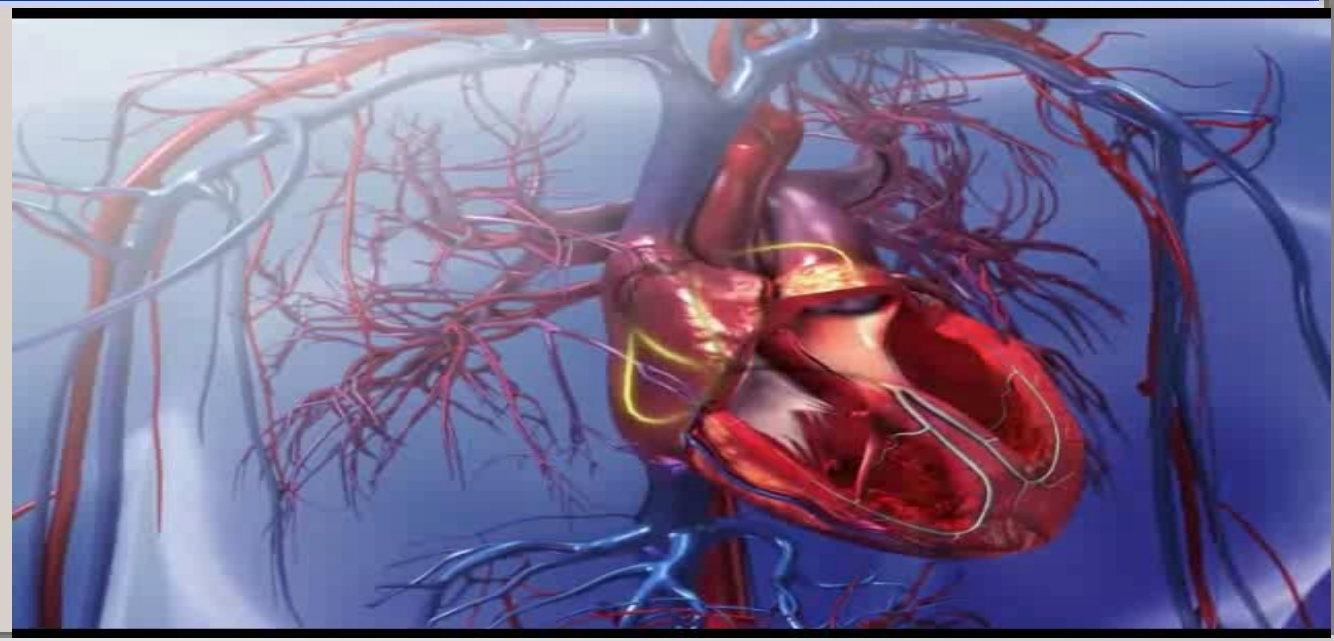
When the right atrium is filled with blood the electrical impulse spreads across the cells in the right and left atria. This causes the atria to contract. Pushing blood through the open valves into the ventricles. The contraction of the atria is represented by the **P wave on the ECG.**



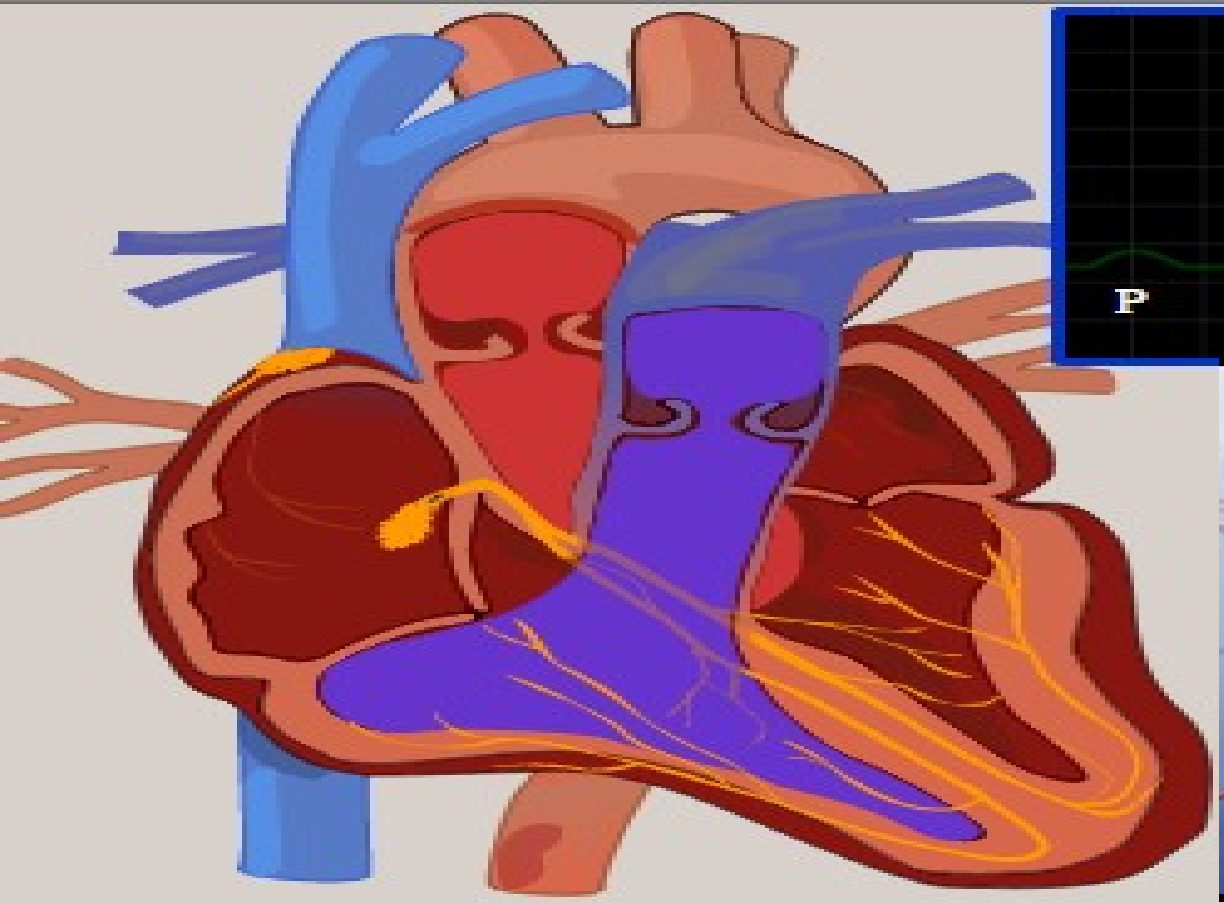


The electric impulse <u>arrives at the AV node</u> which is located between the two atria. ‘The impulse slows down slightly to allow the ventricles to fill with blood. This is marked by the line between the **P and Q wave**.

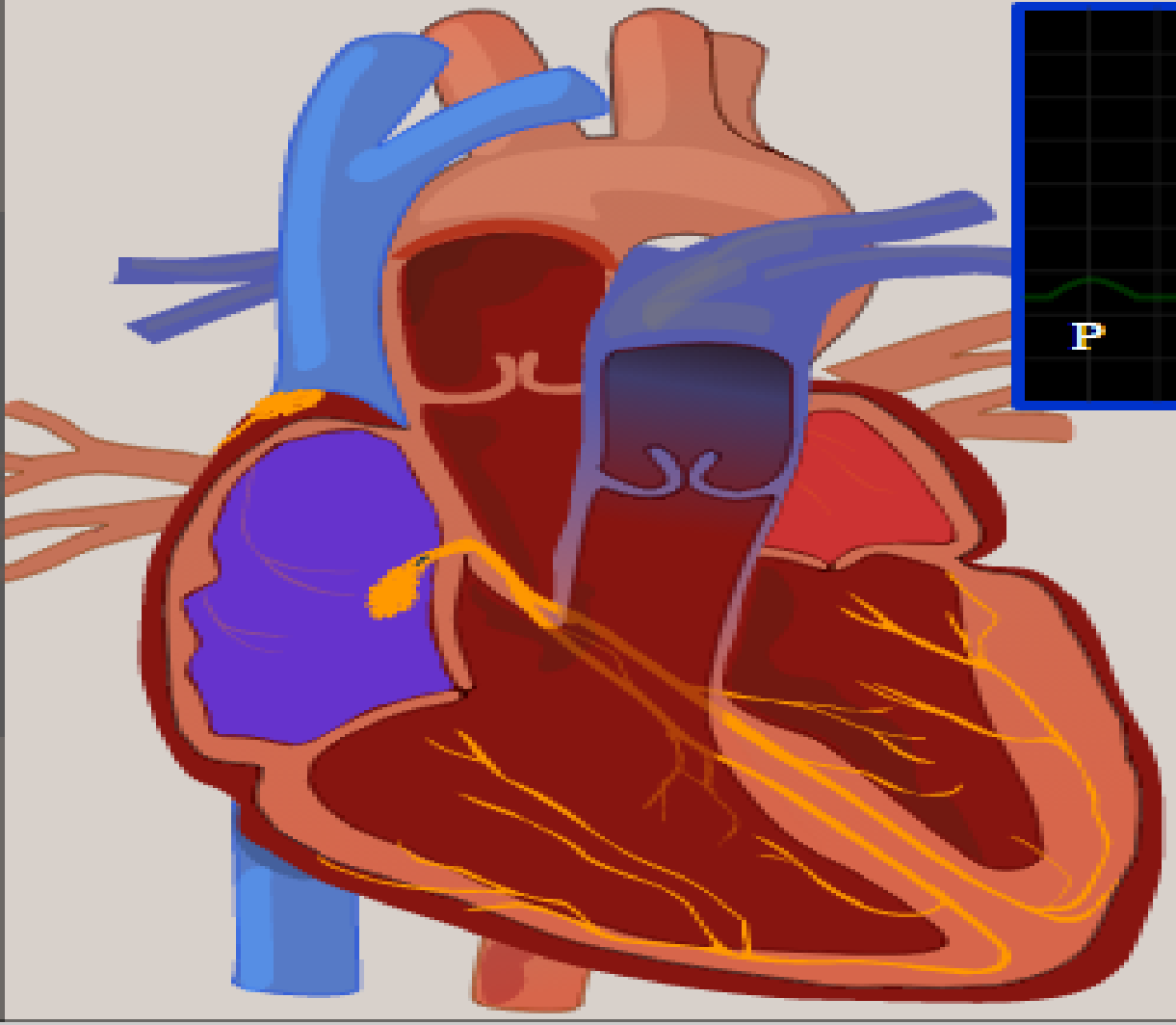


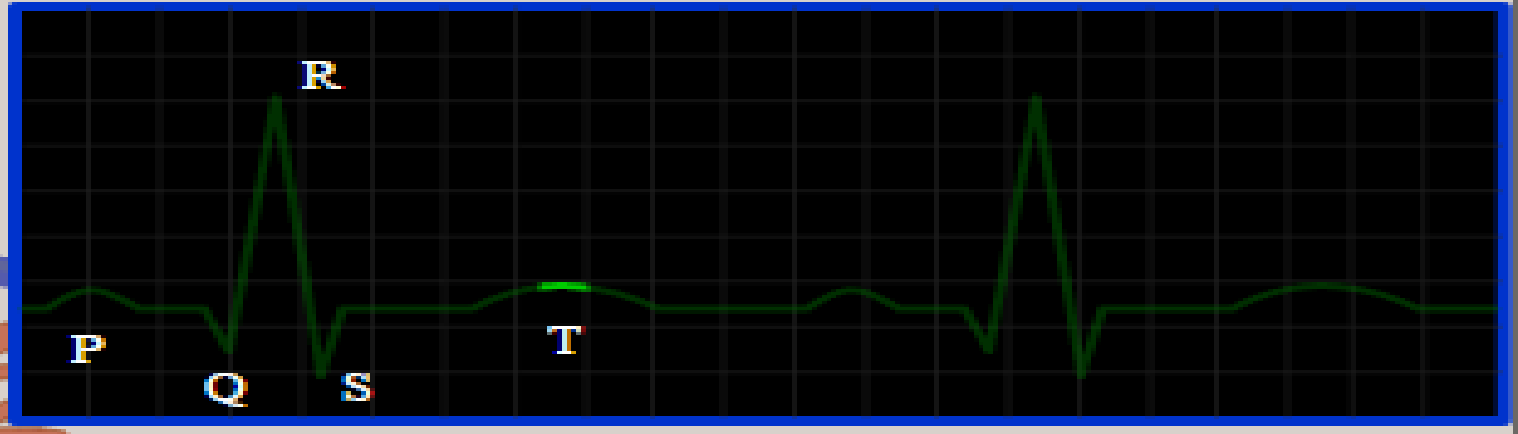


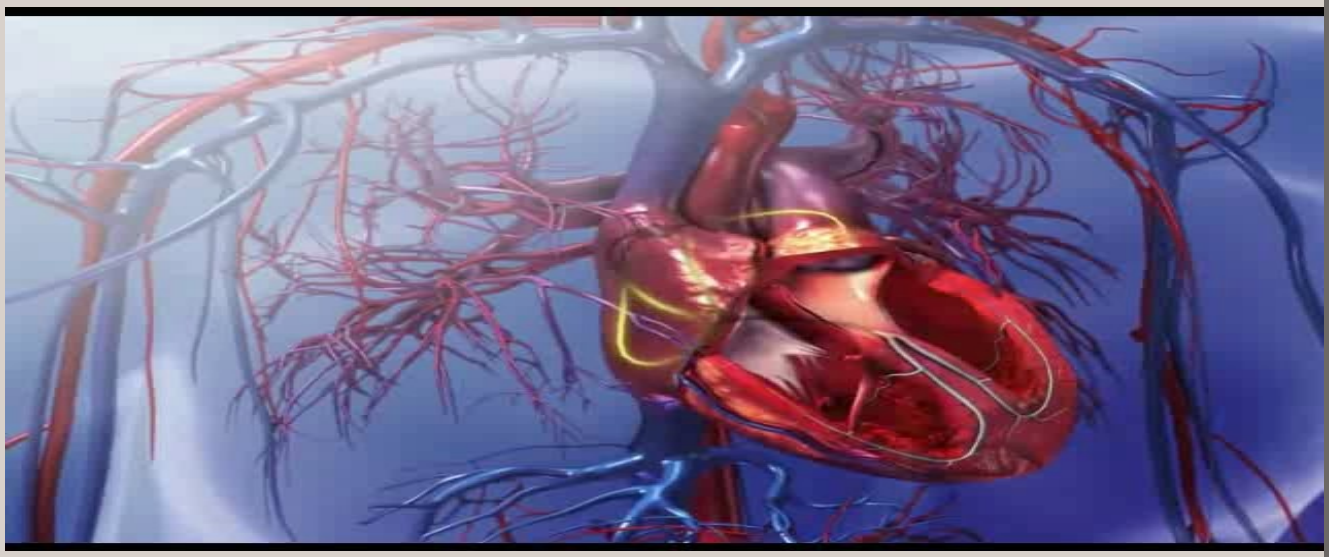
The electrical impulse travels through **the bundle of his** which is located in the ventricles. The bundle of his divides into the left and right bundle branches and the impulse travels down these. On the ECG this is marked by the **Q wave**.



Purkinje fibers causes the ventricles to contract. Both ventricles do not contract at precisely the same time. The left ventricle contracts slightly before the right. On ECG the contraction of the left ventricle is represented by the R wave and the contraction oft he **right ventricle is represented by the S wave**.







Once the impulse has passed the ventricles relax and wait for the next electric impulse. **The T wave in the ECG marks ventricles relaxing**.

HEART VALVES

atria + ventricles
relax + fill

atria contract

isovolumetric
contraction

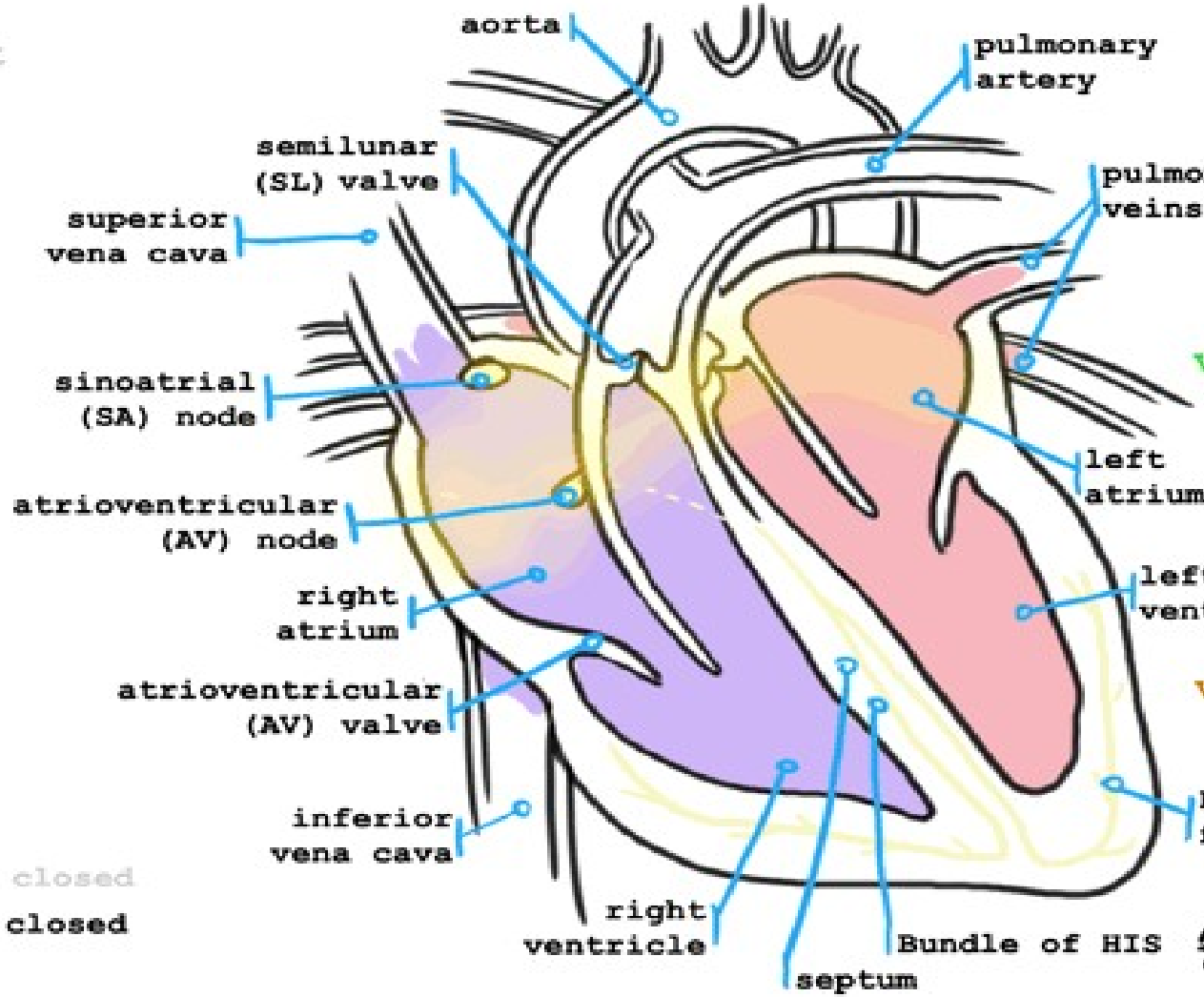
ventricles
contract;
ejection

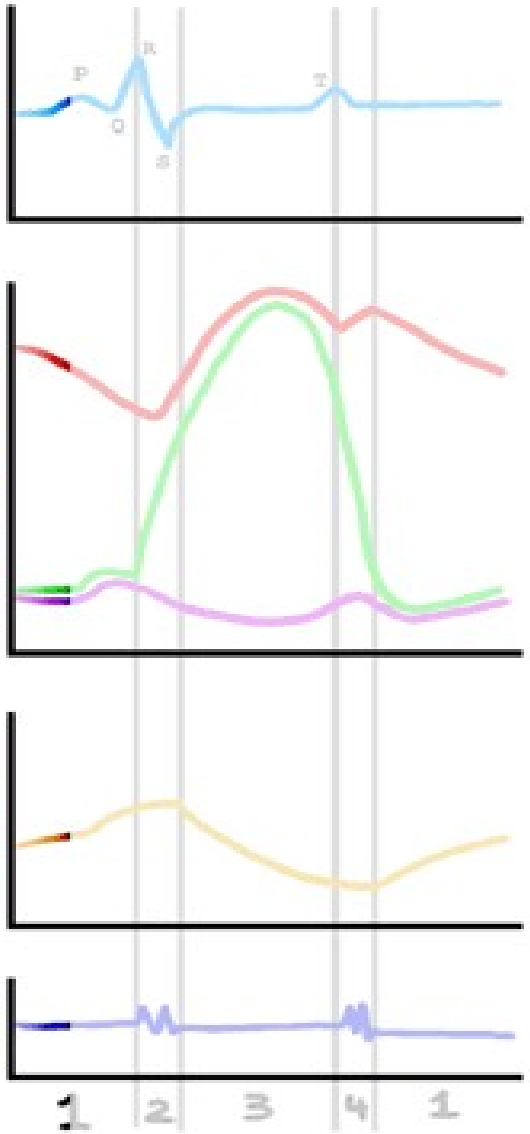
isovolumetric
relaxation

Time: 0.1s

diastole
systole

AV valves open closed
SL valves open closed





ARRHYTHMIAS

Risk factors

- ICP raise
- MI recent
- Stroke
- Hyperthyroidism
- Alcohol use
- Medications
- Transient in head injury, spinal cord injury, brain disorders

Fibrillation

The SA node initiates and paces the heartbeat. During an MI, damaged heart muscle cells, deprived of oxygen, can release small electrical impulses that may disrupt the heart's normal conduction pathway.

Risk Factors

- Hyperthyroidism
- Alcohol and caffeine consumption
- High fevers
- CHF
- Digitalis toxicity
- Pericarditis
- Rheumatic mitral stenosis.

SYMPTOMS OF FIBRILLATION

- Subjective report of palpitations
- Dyspnea
- Chest pain
- Anxiety
- Pallor
- Nervousness
- Cyanosis

Sinus Tachycardia

- Abnormally rapid heart rate, usually taken to be **more than 100 beats per minute**
- Normal physiologic response to fever, hypotension, thyrotoxicosis, anemia, anxiety, exertion, hypovolemia, pulmonary emboli, myocardial ischemia, CHF, and shock.

Palpitation (most common symptom)

- Restlessness
- Chest discomfort or pain
- Agitation
- Anxiety and apprehension

Sinus Bradycardia

Bradycardia may be normal in athletes or young adults

- Reduced pulse rate
- Syncope

HYPERTENSION

- Blood pressure is the force against the walls of the arteries and arterioles.
- When these muscular walls constrict, reducing the diameter of the vessel, blood pressure rises; when they relax, increasing the vessel diameter, blood pressure falls.
- A high blood pressure indicates vessels cannot relax fully.

- Extra effort can cause the heart muscle to become enlarged and eventually weakened.
- The force of blood pumped at high pressure can also produce small tears in the lining of the arteries, weakening the arterial vessels
- Risk factor management

PULSE PRESSURE

- (SBP minus DBP)
- A difference of more than 40mmhg is abnormal
- Higher risk of stroke and heart failure after the sixth decade

Modifiable	Nonmodifiable
Smoking or tobacco	African-American ethnicity
Type 2 diabetes	Age (60 or older)
High cholesterol	Postmenopausal status (including surgically-induced menopause)
Chronic alcohol use/abuse	Family history of cardiovascular disease (women younger than age 65; men younger than age 55)
Obesity	
Sedentary lifestyle	
Stress	
Diet, nutritional status; potassium deficiency	

CLINICAL SIGNS AND SYMPTOMS

- Occipital headache
- Vertigo (dizziness)
- Flushed face
- Spontaneous epistaxis
- Vision changes
- Nocturnal urinary frequency

TRANSIENT ISCHEMIC ATTACK

- Persistent elevated diastolic pressure damages the intimal layer of the small vessels, which causes an accumulation of fibrin, local edema, and, possibly, intravascular clotting
- Changes diminish blood flow to vital organs

SYMPTOMS

- Slurred speech, sudden difficulty with speech, or difficulty understanding others
- Sudden confusion, loss of memory, even loss of consciousness
- Temporary blindness or other dramatic visual changes

ORTHOSTATIC HYPOTENSION

- Change in blood pressure (decrease) and pulse (increase)
- Lightheadedness, dizziness
- Pallor, diaphoresis
- Syncope or fainting
- Mental or visual blurring
- Sense of weakness or "rubbery" legs

PERIPHERAL VASCULAR DISORDERS

- Arterial (occlusive) disease
- Venous disorders
- Lymphedema

ARTERIAL (OCCLUSIVE) DISEASE

- Thrombus, embolism, or trauma to an artery,
- Arteriosclerosis
- Buerger's disease
- Raynaud's disease
- Hypertension, abnormal platelet activation, and metabolic disturbances

SIGN &SYMPTOMS

- Intermittent claudication
- Burning, ischemic pain at rest
- Rest pain aggravated by elevating the extremity;
- Relieved by hanging the foot over the side of the bed or chair
- Color, temperature, skin, nail bed changes
- Decreased skin temperature

SIGN &SYMPTOMS

- Dry, scaly, or shiny skin
- Poor nail and hair growth
- Possible ulcerations and gangrene on weight bearing surfaces (e.G., Toes, heel)
- Vision changes (diabetic atherosclerosis)
- Fatigue on exertion (diabetic atherosclerosis)

RAYNAUD'S PHENOMENON AND DISEASE

- Intermittent episodes during which small arteries or arterioles constrict, causing temporary pallor and cyanosis of the digits and changes in skin temperature.
- In response to cold temperature or strong emotion
- Secondary Raynaud's Phenomenon is associated With connective tissue or collagen vascular disease, such as polymyositis

SIGN & SYMPTOMS

- Pallor in the digits
- Cyanotic, blue digits
- Cold, numbness, pain of digits
- Intense redness of digits

VENOUS DISORDERS

- ❑Acute
  - Thromboembolism
- ❑Chronic conditions
  - Varicose vein formation
  - Chronic venous insufficiency

ACUTE VENOUS DISORDERS

Acute venous disorders are due to formation of thrombi (clots), which obstruct venous flow.

- Blockage may occur in both superficial and deep veins.
- Superficial thrombophlebitis is often iatrogenic, resulting from insertion of intravenous catheters

- Pulmonary emboli , most of which start as thrombi in the large deep veins of the legs.
- Thrombus formation results from an intravascular collection of platelets, erythrocytes, leukocytes, and fibrin in the blood vessels

RISK FACTORS

- Previous personal/family history of
- Thromboembolism
- Congestive heart failure
- Age (over 50 years)
- Oral contraceptive use
- Blood stasis
- Immobilization or inactivity
- Burns

- Obstetric/gynecological conditions
- Obesity
- Spinal cord injured, stroke
- Endothelial injury
- Neoplasm
- Recent surgical procedures
- Trauma or fracture of the legs or pelvis
- Blood disorders

- Clotting abnormalities
- History of infection, diabetes mellitus
- Oral contraceptive use

SIGN & SYMPTOMS

Superficial venous T h r o m b o s i s

- Subcutaneous venous distention
- Palpable cord
- Warmth, redness
- Indurated (hard)

SIGN & SYMPTOMS

Deep venous T h r o m b o s i s

- Unilateral tenderness or leg pain
- Unilateral swelling
- Warmth
- Discoloration
- Pain with placement of blood pressure cuff around calf inflated to 160 mm to 180mmhg

LYMPHEDEMA

- An excessive accumulation of fluid in tissue spaces.
- Lymphedema typically occurs secondary to an obstruction of the lymphatic system from trauma, infection, radiation, or surgery.
- Postsurgical lymphedema is usually performed as a prophylactic measure for metastatic tumor.

SIGN & SYMPTOMS

- Edema of the dorsum of the foot or hand
- Decreased range of motion, flexibility, and function
- Usually unilateral
- Worse after prolonged dependency
- No discomfort or a dull, heavy sensation; sense of fullness

SERUM ELECTROLYTE

- Direct influence on the contraction of the muscles.
- NA, K, MG & CA

POTASSIUM

- Diuretic therapy decrease potassium result in arrhythmia
- Increase due to renal/endocrine problem result in asystole
- Lack of potassium may cause muscle weakness, irregular heartbeat, mood changes, or nausea and vomiting
- **1600 to 2000 mg**

SODIUM

- Water overload
- Decrease NA by diuretic therapy, diarrhea
- Water deficient, lack of ADH result in increase NA
- 1,500 milligrams

CALCIUM

Decrease calcium due to

- Multiple transfusion
- Alkalosis
- Laxative
- Antacid
- Ventricular arrhythmias and cardiac arrest.

Increase calcium

Thiazide diuretic, adrenal insufficiency,

Result in tachycardia

1,300 mg

MAGNESIUM

- Serum magnesium levels are rarely changed in healthy individuals because magnesium is abundant in foods and water.
- Alochol
- Myocardial irritable & arrhythmia
- Premature ventricular beats
- **400 mg-310 mg**

MEDICATION IN CVS

Angina pectoris

- Beta blocker
- Ca+ blocker
- Organic nitrates

Arrhythmia:

- Beta blocker
- Ca+ blocker
- Sodium channel blocker

Congestive heart failure:

Diuretic

Digitalis

ACE inhibitors

Vasodilators

Hypertension

- Beta blocker
- Ca+ blocker

ACE inhibitors

Vasodilators, diuretics

Angina	Myocardial infarct	Mitral valve prolapse	Pericarditis
Begins 3 to 5 minutes after exertion or activity ("lagtime"): 1-5 minutes	30 minutes-hour	Minutes to hours	Hours to days
Moderate intensity	Severe (can be painless)	Rarely severe	Varies; mild to severe
Tightness; chest discomfort	Crushing pain; intolerable (can be painless)	May be asymptomatic; "sticking" sensation, not substernal	Asymptomatic; sharp or cutting; can mimic MI
Can occur at rest or during sleep	Exertion	Often occurs at rest	Worse with breathing, swallowing, belching, neck or trunk movement
Usually occurs with exertion, emotion, cold, or large meal			
Subsides with rest or nitroglycerin; worse when lying down	Unrelieved by rest or nitroglycerin	Unrelieved by rest or nitroglycerin; may be relieved by lying down	Relieved by kneeling on all fours, leaning forward, sitting upright, or breathholding
Pain related to tone of arteries (spasm)	Pain related to heart ischemia	Mechanism of pain unknown	Pain related to inflammatory process


thanks
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