Adult Health III Concepts #1

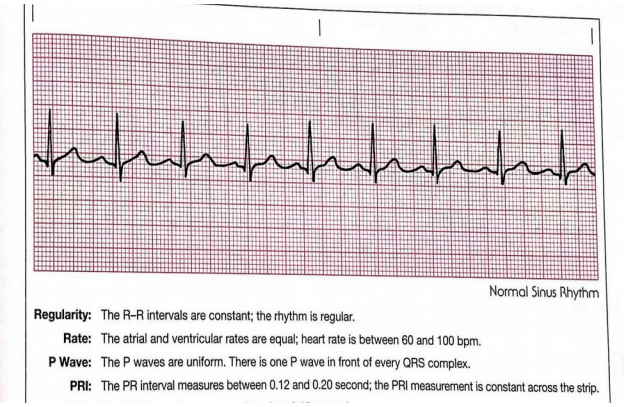
Week 1

- Blood product administration
    - **Nursing interventions:**
        - Check vital signs (especially temp) prior to administration
        - Type and cross will be completed
        - Stay with the patient for AT LEAST the first 15 minutes
        - Take vital signs before you administer, At the 15-minute mark, and then every hour after
        - Use an 18-20 gauge needle so you don’t lyse the blood cells
        - Ask patient if they have had any previous reactions to blood products
        - **TWO NURSE CHECK FOR BLOOD ADMINISTRATION (correct patient and product)**
        - Use a tubing set specifically for blood with filter and prime with NS
        - Administer PRBCs within 4 hours
        - Monitor for adverse reactions
            - Fever, tachycardia, hypotension, back pain
    - **Transfusion Reactions & interventions**
        - Acute hemolytic- incompatibility with issue
        - Febrile- anti-WBC antibodies (use filter)
            - Give Tylenol
        - Allergic- sensitivity reaction to something in the blood product
            - Give Benadryl
        - Bacterial- contaminated blood
            - Obtain blood cultures
        - Circulatory overload- blood given too fast, body can't handle the volume
            - Sit the patient up, administer oxygen, diuretics as prescribed
        - ***STOP THE TRANSFUSION, THEN ADMINISTER NS VIA IV TUBING***
- Chest tubes
    - **Expected findings**
        - 2 chambers: water seal- contains 2cm of water
        - Normal fluctuation of water within the water-seal chamber is called tidaling (Investigate any cessation of tidaling, this may mean the tube is occluded)
        - Constant bubbling in the suction chamber

- **1st chamber drainage collection**
  - Receives fluid from the pleural or mediastinal space
- **2nd chamber water seal**
  - Contains 2cm of water acts as a 1-way valve
  - Incoming air enters the collection chamber & bubbles up through the water
  - Water prevents backflow of air into the client
  - Brisk bubbling often occurs when a pneumothorax is initially evacuated
  - Intermittent bubbling during exhalation, coughing, or sneezing may be observed as long as there is air in the pleural space
  - When air leak resolves and lung become more fully expanded bubbling ceases
  - Normal fluctuation of water w/in the **water-seal chamber** is called **tidaling**; this up and down movement in concert w/ respiration reflects intrapleural pressure changes during inspiration and expiration
    - Investigate any cessation of tidaling, since this may signify an occluded chest tube
- **3rd chamber - suction control (can be wet or dry)**
  - Here we expect to see **constant**, slow & steady bubbling which indicates the suction is functioning properly

- ETT suctioning
  - Nursing interventions
    - Generally, not left in place longer than 14 days d/t risk of infection and airway injury
    - Hyper oxygenate before suctioning and assess the patient, before, during and after the procedure
    - Hyper oxygenate for 30 seconds and then suction for no more than 10 seconds (you can only hyper oxygenate for TWO MINUTES)
    - Insert catheter without applying suction, apply suction while using a rotation motions to remove it
    - Closed suction requires clean gloves
    - Only perform 2 or 3 suction passes
  - Possible complications
    - Airway injury
    - Hypoxia
    - Nosocomial infections
    - Dysrhythmias

- Dysrhythmias
  - **Normal Sinus Rhythm**

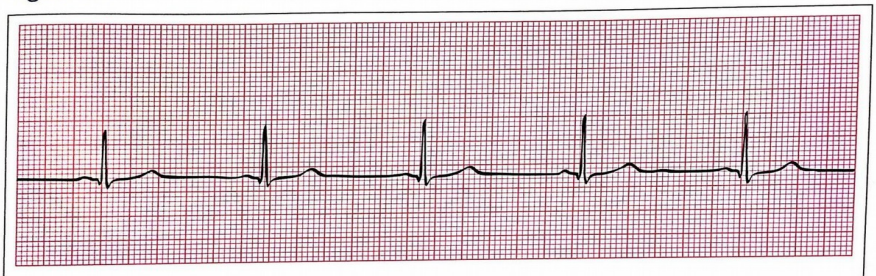


Normal Sinus Rhythm

Regularity: The R–R intervals are constant; the rhythm is regular.
Rate: The atrial and ventricular rates are equal; heart rate is between 60 and 100 bpm.
P Wave: The P waves are uniform. There is one P wave in front of every QRS complex.
PRI: The PR interval measures between 0.12 and 0.20 second; the PRI measurement is constant across the strip.

- **Sinus Bradycardia**

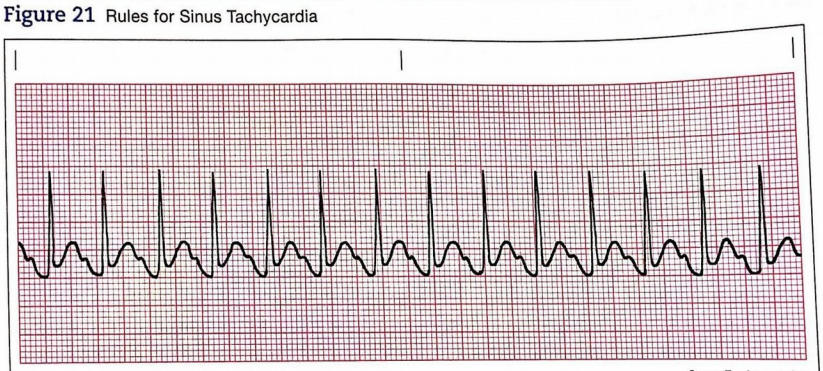
Figure 19 Rules for Sinus Bradycardia



Regularity: The R–R intervals are constant; the rhythm is regular.
Rate: The atrial and ventricular rates are equal; heart rate is less than 60 bpm.
P Wave: There is a uniform P wave in front of every QRS complex.
PRI: The PR interval measures between 0.12 and 0.20 second; the PRI measurement is constant across the strip.
QRS: The QRS complex measures less than 0.12 second.

- **Sinus Tachycardia**

Figure 21 Rules for Sinus Tachycardia

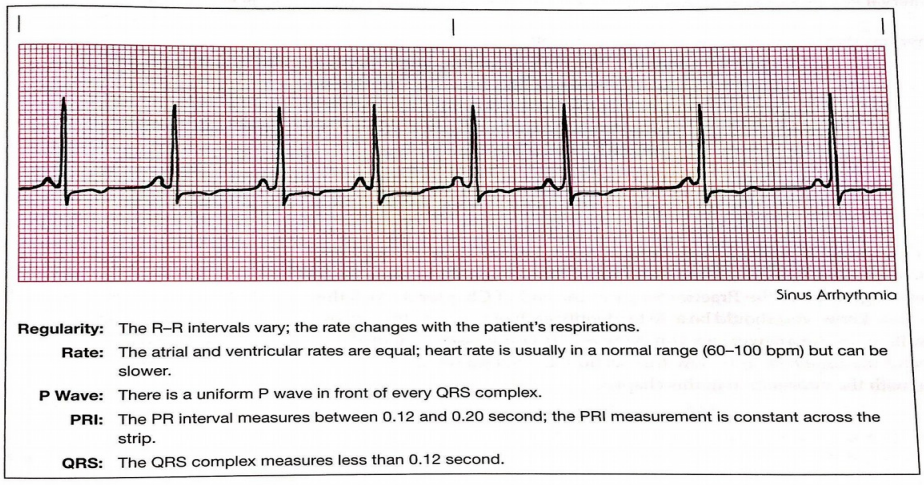


Sinus Tachycardia

Regularity: The R–R intervals are constant; the rhythm is regular.
Rate: The atrial and ventricular rates are equal; heart rate is greater than 100 bpm (usually between 100 and 160 bpm).
P Wave: There is a uniform P wave in front of every QRS complex.
PRI: The PR interval measures between 0.12 and 0.20 second; the PRI measurement is constant across the strip.
QRS: The QRS complex measures less than 0.12 second.

- **Sinus Arrhythmia**

Figure 23 Rules for Sinus Arrhythmia



Sinus Arrhythmia

Regularity: The R–R intervals vary; the rate changes with the patient's respirations.

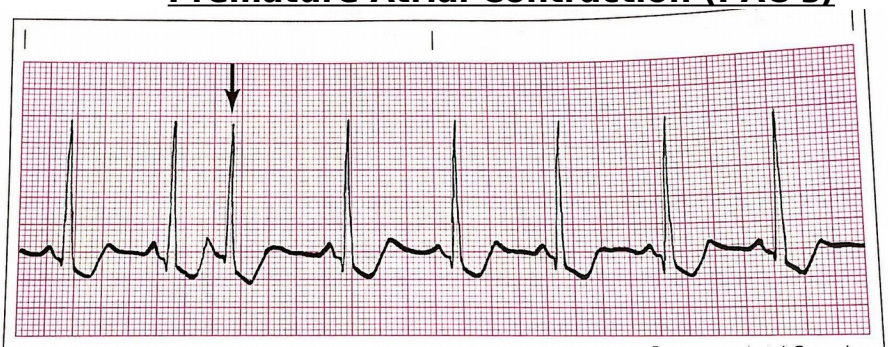
Rate: The atrial and ventricular rates are equal; heart rate is usually in a normal range (60–100 bpm) but can be slower.

P Wave: There is a uniform P wave in front of every QRS complex.

PRI: The PR interval measures between 0.12 and 0.20 second; the PRI measurement is constant across the strip.

QRS: The QRS complex measures less than 0.12 second.

- **Premature Atrial Contraction (PAC's)**



Premature Atrial Complex

Regularity: Since this is a single premature ectopic beat, it will interrupt the regularity of the underlying rhythm.

Rate: The overall heart rate will depend on the rate of the underlying rhythm.

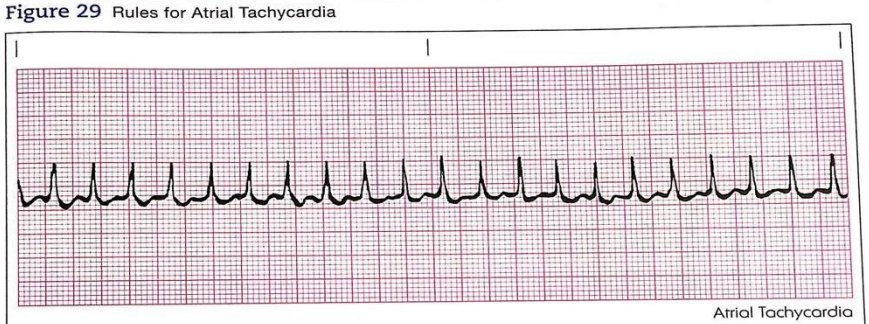
P Wave: The P wave of the premature beat will have a different morphology than the P waves of the rest of the strip. The ectopic beat will have a P wave, but it can be flattened, notched, or otherwise unusual. It may be hidden within the T wave of the preceding complex.

PRI: The PRI should measure between 0.12 and 0.20 second but can be prolonged; the PRI of the ectopic will probably be different from the PRI measurements of the other complexes.

QRS: The QRS complex measurement will be less than 0.12 second.

- **Atrial Tachycardia**

Figure 29 Rules for Atrial Tachycardia



Atrial Tachycardia

Regularity: The R–R intervals are constant; the rhythm is regular.

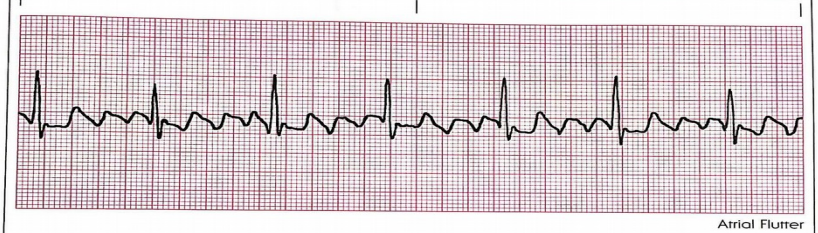
Rate: The atrial and ventricular rates are equal; the heart rate is usually 150–250 bpm.

P Wave: There is one P wave in front of every QRS complex. The configuration of the P wave will be different from that of sinus P waves; they may be flattened or notched. Because of the rapid rate, the P waves can be hidden in the T waves of the preceding beats.

PRI: The PRI is between 0.12 and 0.20 second and constant across the strip. The PRI may be difficult to measure if the P wave is obscured by the T wave.

QRS: The QRS complex measures less than 0.12 second.

Figure 31 Rules for Atrial Flutter



Atrial Flutter

Regularity: The atrial rhythm is regular. The ventricular rhythm will be regular if the AV node conducts impulses through in a consistent pattern. If the pattern varies, the ventricular rate will be irregular.

Rate: Atrial rate is between 250 and 350 bpm. Ventricular rate will depend on the ratio of impulses conducted through to the ventricles.

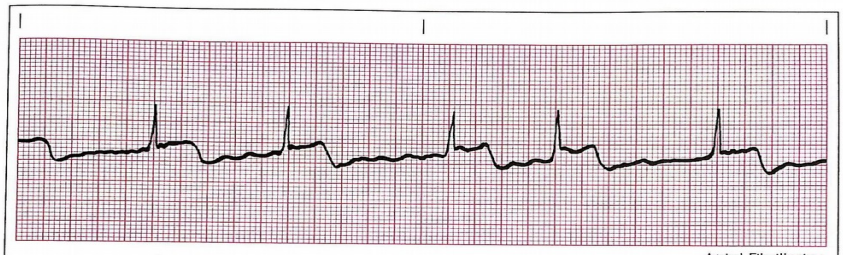
P Wave: When the atria flutter, they produce a series of well-defined P waves. When seen together, these "Flutter" waves have a sawtooth appearance.

PRI: Because of the unusual configuration of the P wave (Flutter wave) and the proximity of the wave to the QRS complex, it is often impossible to determine a PRI in this arrhythmia. Therefore, the PRI is not measured in Atrial Flutter.

QRS: The QRS complex measures less than 0.12 second; measurement can be difficult if one or more Flutter waves is concealed within the QRS complex.

- **<u>Atrial Fibrillation</u>**
  - Carotid and radial pulses won't match, apical and radial pulses won't match

Figure 33 Rules for Atrial Fibrillation



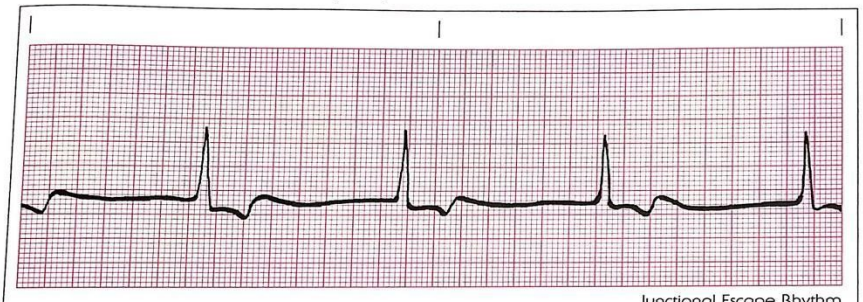
Atrial Fibrillation

Regularity: The atrial rhythm is unmeasurable; all atrial activity is chaotic. The ventricular rhythm is grossly irregular, having no pattern to its irregularity.

Rate: The atrial rate cannot be measured because it is so chaotic; research indicates that it exceeds 350 bpm. The ventricular rate is significantly slower because the AV node blocks most of the impulses. If the ventricular rate is 100 bpm or less, the rhythm is said to be "controlled." If it is over 100 bpm, it is considered to have a "rapid ventricular response" and is called "uncontrolled."

P Wave: In this arrhythmia, the atria are not depolarizing in an effective way; instead, they are fibrillating. Thus, no

Figure 40 Rules for Junctional Escape Rhythm



Junctional Escape Rhythm

Regularity: The R–R intervals are constant. The rhythm is regular.

Rate: Atrial and ventricular rates are equal. The inherent rate of the AV junction is 40–60 bpm.

P Waves: The P wave can come before or after the QRS complex, or it can be lost entirely within the QRS complex. If visible, the P wave will be inverted.

PRI: If the P wave precedes the QRS complex, the PRI will be less than 0.12 second. If the P wave falls within the QRS complex or follows it, there will be no PRI.

QRS: The QRS complex measurement will be less than 0.12 second.

- **Accelerated Junctional Rhythm**

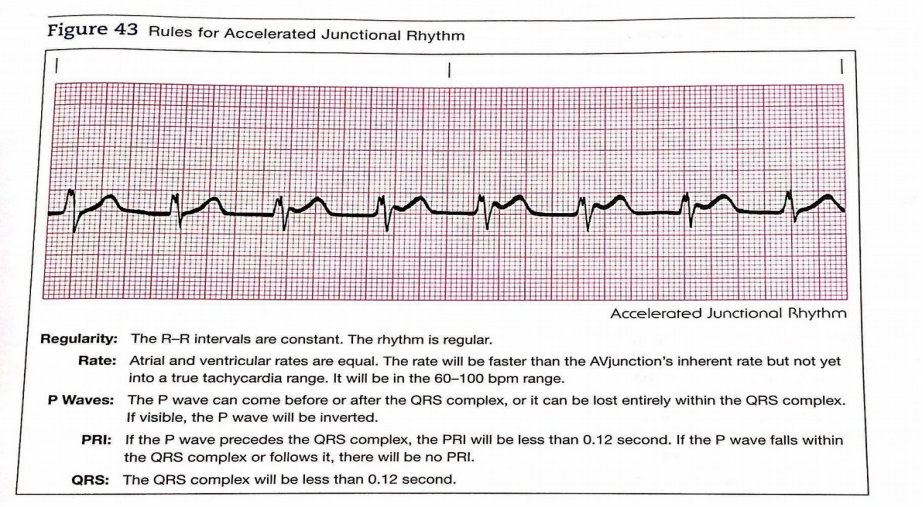


Figure 43 Rules for Accelerated Junctional Rhythm

Accelerated Junctional Rhythm

Regularity: The R–R intervals are constant. The rhythm is regular.

Rate: Atrial and ventricular rates are equal. The rate will be faster than the AVjunction's inherent rate but not yet into a true tachycardia range. It will be in the 60–100 bpm range.

P Waves: The P wave can come before or after the QRS complex, or it can be lost entirely within the QRS complex. If visible, the P wave will be inverted.

PRI: If the P wave precedes the QRS complex, the PRI will be less than 0.12 second. If the P wave falls within the QRS complex or follows it, there will be no PRI.

QRS: The QRS complex will be less than 0.12 second.

- **Junctional Tachycardia**

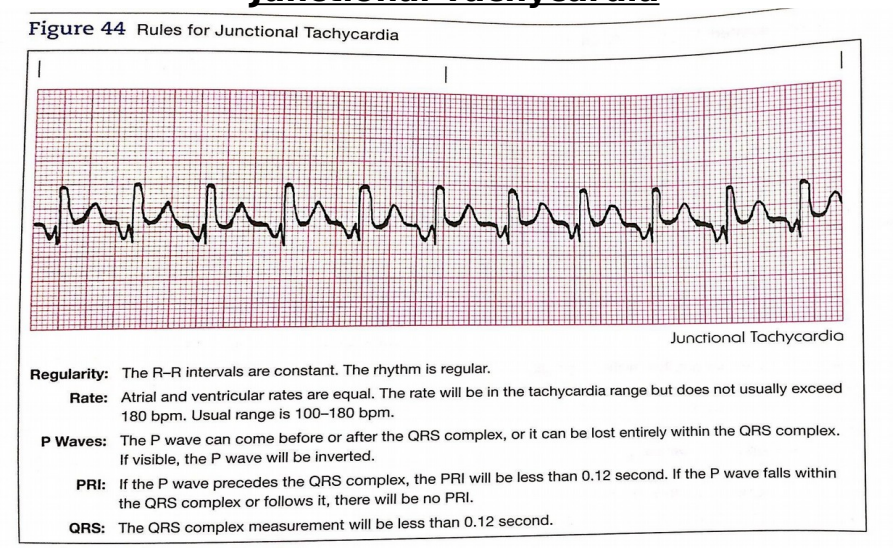


Figure 44 Rules for Junctional Tachycardia

Junctional Tachycardia

Regularity: The R–R intervals are constant. The rhythm is regular.

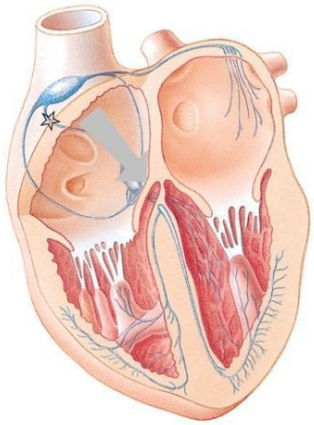
Rate: Atrial and ventricular rates are equal. The rate will be in the tachycardia range but does not usually exceed 180 bpm. Usual range is 100–180 bpm.

P Waves: The P wave can come before or after the QRS complex, or it can be lost entirely within the QRS complex. If visible, the P wave will be inverted.

PRI: If the P wave precedes the QRS complex, the PRI will be less than 0.12 second. If the P wave falls within the QRS complex or follows it, there will be no PRI.

QRS: The QRS complex measurement will be less than 0.12 second.

- **Supraventricular Tachycardia**



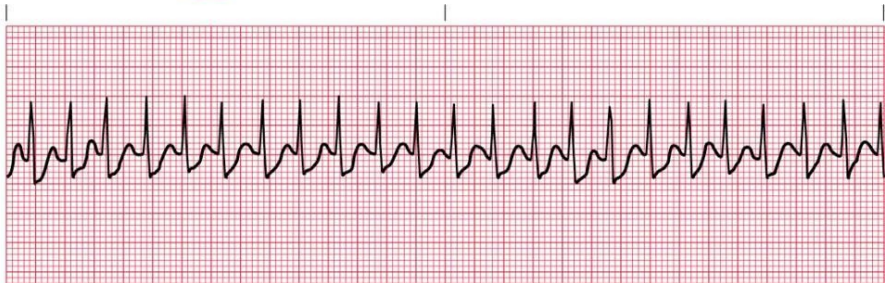
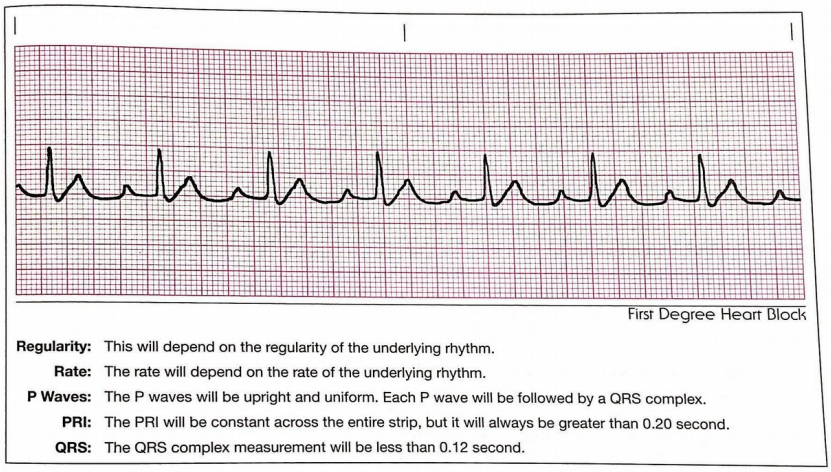


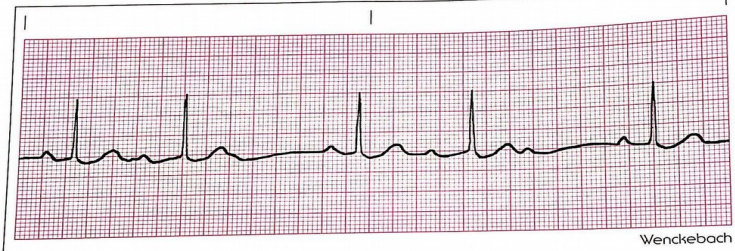
Figure 48 Rules for First-Degree Heart Block



Regularity: This will depend on the regularity of the underlying rhythm.
Rate: The rate will depend on the rate of the underlying rhythm.
P Waves: The P waves will be upright and uniform. Each P wave will be followed by a QRS complex.
PRI: The PRI will be constant across the entire strip, but it will always be greater than 0.20 second.
QRS: The QRS complex measurement will be less than 0.12 second.

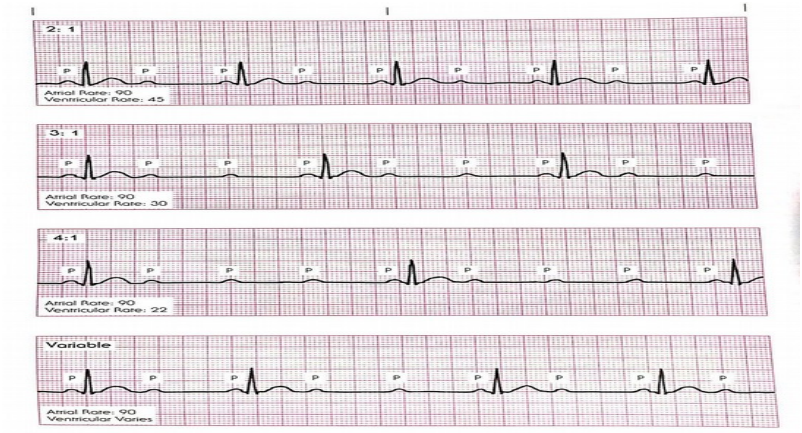
- **<u>Wenckebach (second degree type I)</u>**
  - Longer, longer, longer, drop, now you got a Wenckebach
  - Look @ PR interval
  - AV node selectively blocks SOME impulses

Figure 56 Rules for Wenckebach

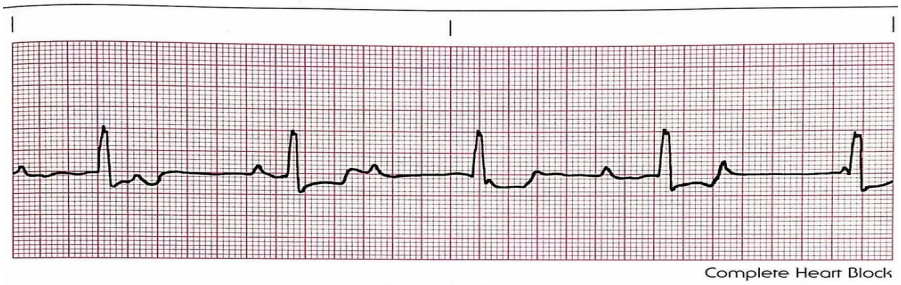


Regularity: The R–R interval is irregular in a pattern of grouped beating.
Rate: Since some beats are not conducted, the ventricular rate is usually slightly slower than normal (< 100 bpm). The atrial rate is normal (60–100 bpm).
P Waves: The P waves are upright and uniform. Some P waves are not followed by QRS complexes.
PRI: The PR intervals get progressively longer, until one P wave is not followed by a QRS complex. After the blocked beat, the cycle starts again.
QRS: The QRS complex measurement will be less than 0.12 second.

- **<u>Second Degree Heart Block Type II</u>**
  - One or more P waves not getting through, the atrial rate is 2-4x faster, the ventricular rate is slow to normal



- **<u>Third Degree Heart Block (Complete Heart Block)</u>**



Complete Heart Block

Regularity:	Both the atrial and the ventricular foci are firing regularly; thus, the P–P intervals and the R–R intervals are regular.
Rate:	The atrial rate will usually be in a normal range. The ventricular rate will be slower. If a junctional focus is controlling the ventricles, the rate will be 40–60 bpm. If the focus is ventricular, the rate will be 20–40 bpm.
P Waves:	The P waves are upright and uniform. There are more P waves than QRS complexes.
PRI:	Since the block at the AV node is complete, none of the atrial impulses is conducted through to the ventricles. There is no PRI. The P waves have no relationship to the QRS complexes. You may occasionally see a P wave -superimposed on the QRS complex.
QRS:	If the ventricles are being controlled by a junctional focus, the QRS complex will measure less than 0.12 second. If the focus is ventricular, the QRS will measure 0.12 second or greater.

- **Ventricular Tachycardia**
  - In VT you will see a succession of PVCs across the strip at a rate of about 150-250 bpm

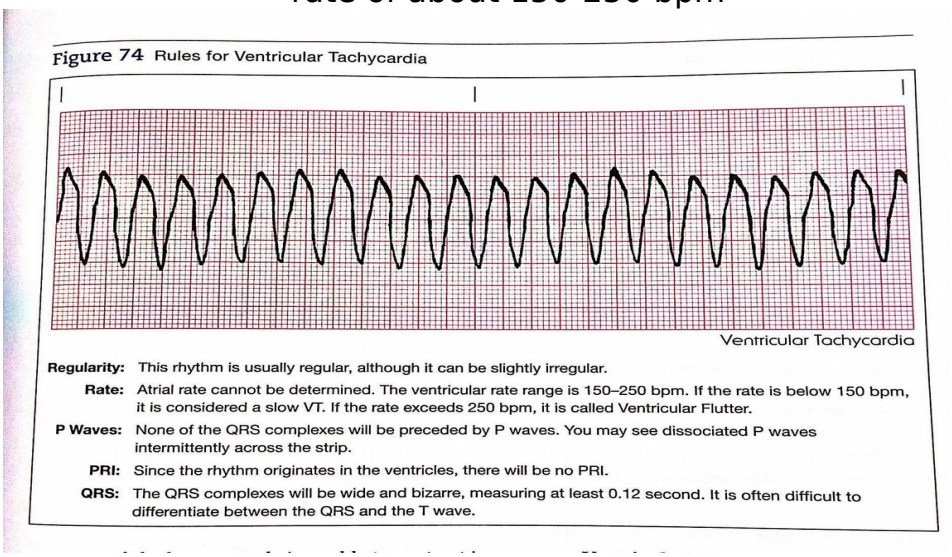


Figure 74 Rules for Ventricular Tachycardia

Ventricular Tachycardia

Regularity: This rhythm is usually regular, although it can be slightly irregular.

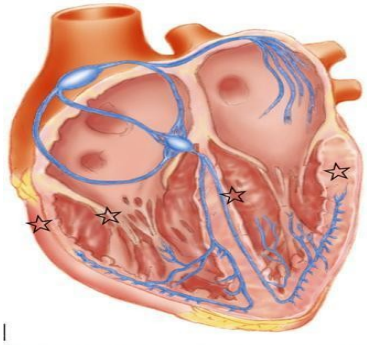
Rate: Atrial rate cannot be determined. The ventricular rate range is 150–250 bpm. If the rate is below 150 bpm, it is considered a slow VT. If the rate exceeds 250 bpm, it is called Ventricular Flutter.

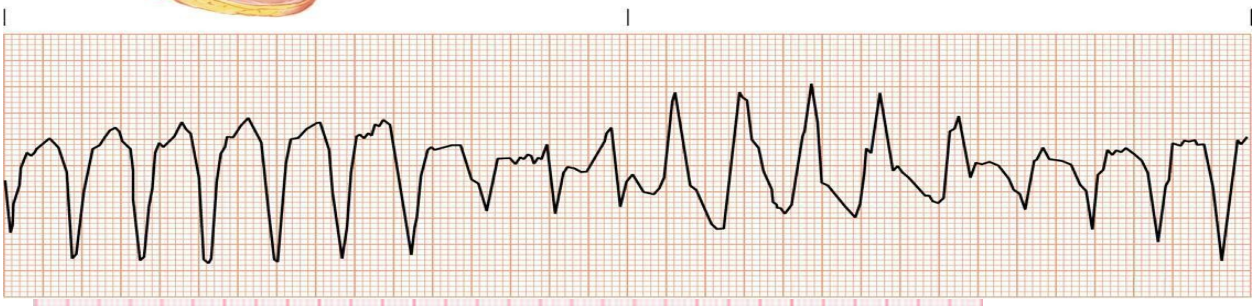
P Waves: None of the QRS complexes will be preceded by P waves. You may see dissociated P waves intermittently across the strip.

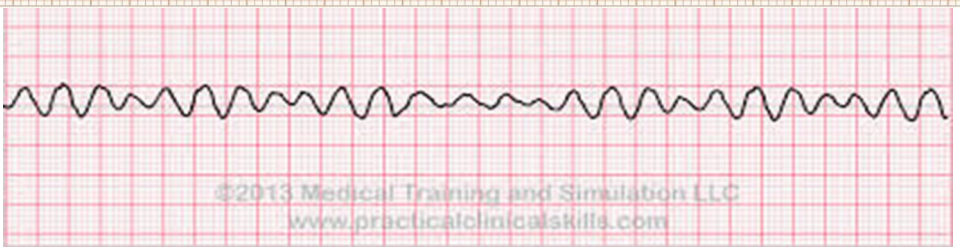
PRI: Since the rhythm originates in the ventricles, there will be no PRI.

QRS: The QRS complexes will be wide and bizarre, measuring at least 0.12 second. It is often difficult to differentiate between the QRS and the T wave.

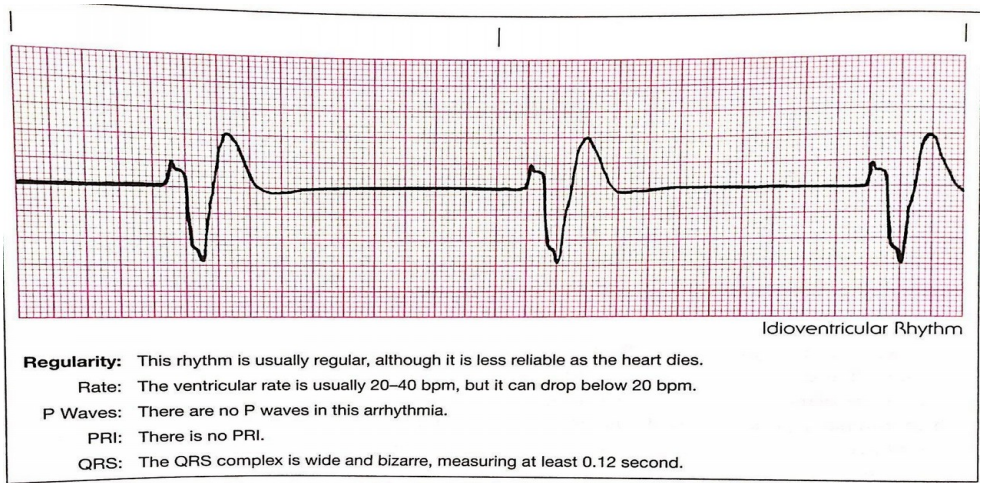
- **Torsade de Pointes**







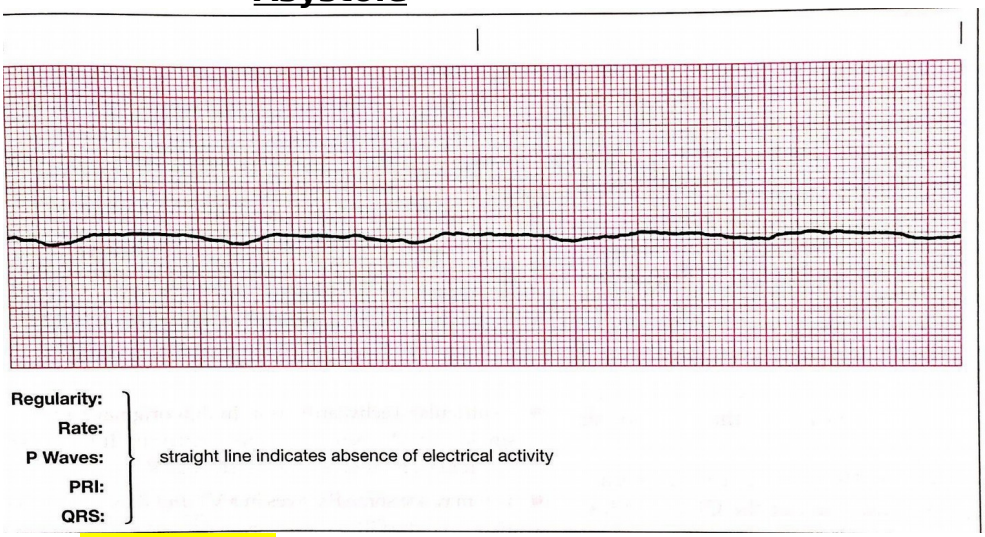
- **Idioventricular rhythm**



Idioventricular Rhythm

Regularity: This rhythm is usually regular, although it is less reliable as the heart dies.
Rate: The ventricular rate is usually 20–40 bpm, but it can drop below 20 bpm.
P Waves: There are no P waves in this arrhythmia.
PRI: There is no PRI.
QRS: The QRS complex is wide and bizarre, measuring at least 0.12 second.

- **Asystole**



Regularity:
Rate:
P Waves: straight line indicates absence of electrical activity
PRI:
QRS:

- EKG strip
  - SA node = pacemaker of the heart
  - Components of the cardiac complex/cycle
    - P wave
    - P-R Interval = 0.12-0.20
    - QRS complex = Less than 0.12
    - T wave
    - U wave
    - ST segment
    - QT interval = 0.33–0.42
  - P wave = atrial electrical activity
  - QRS complex = ventricular electrical activity
  - T wave = resting phase of ventricle

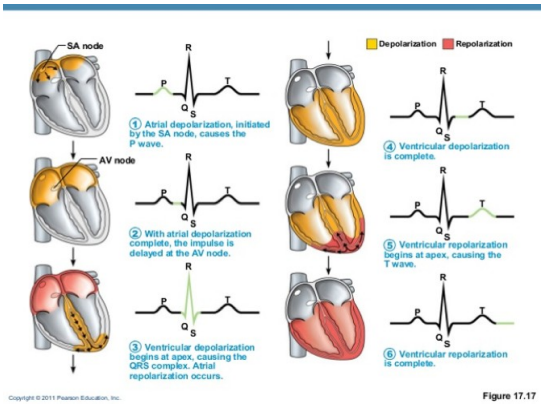


Figure 17.17

Week 3

- Pulmonary Embolism
    - Manifestations: anxiety, feelings of impending doom, pressure in chest, pain upon inspiration and chest wall tenderness, dyspnea and air hunger, cough, hemoptysis
    - Pharmacologic treatment: anticoagulants, direct factor Xa inhibitor, and thrombolytic therapy
    - Nursing Interventions: administer oxygen therapy to relieve hypoxemia and dyspnea, position the patient in high fowlers, initiate and maintain IV access, administer meds as prescribed, assess respiratory status every 30 minutes, assess cardiac status, provide emotional support and comfort to control anxiety, and monitor changes in LOC and mental status
    - Chest Xray, labs (ddimer), CT
- Acute Respiratory Failure
    - Manifestations: dyspnea, orthopnea, cyanosis, pallor, hypoxemia, tachycardia, confusion, irritability or agitation, restlessness, hypercarbia, and accessory muscle use
- Acute Respiratory Distress Syndrome (ARDS)
    - Interventions:
        - Maintain a patent airway and monitor respiratory status
        - Oxygenate before suctioning secretions to prevent further hypoxemia.
        - Suction the client as needed.
        - Monitor for pneumothorax (a high PEEP can cause the lungs to collapse).
        - Obtain ABGs as prescribed.
        - Continuous telemetry
        - monitoring for changes that indicate increased hypoxemia, especially when repositioning and applying suction.
        - Continually monitor VS, including SaO2.
        - Assess pain level
        - Prevent infection.
        - Promote nutrition.
        - Provide emotional support to the client and family.
    - Pharmacologic treatment
        - Oxygen therapy (Intubation and mechanical ventilation)
        - Analgesics
        - Blood thinners
        - Antibiotics

- Oxygen Therapy
    - Nursing interventions

        - Assess respiratory rate and rhythm
        - Assess oxygenation status with pulse oximetry and ABGs
        - Apply the oxygen delivery device as prescribed.
        - Promote good oral hygiene
        - Promote turning, coughing, deep breathing, use an incentive spirometer, and suctioning
        - Titrate oxygen to maintain prescribed oxygen status
        - Position in fowlers

- Pneumothorax
    - Manifestations
        - Anxiety
        - Pleuritic pain
        - Signs of respiratory distress
            - Tachypnea
            - Tachycardia
            - Hypoxia
            - Cyanosis
            - Dyspnea
            - Use of accessory muscles
        - Hyperresonance on percussion due to trapped air
        - Asymmetrical chest wall movement

- Pneumonia

    - Diagnostics
        - Chest x-ray: show consolidation of lung tissue
        - Pulse oximetry
        - Sputum culture
        - CBC
        - ABGs
        - Blood culture
        - Serum electrolytes

- Ventilator alarms
    - Interventions:
        - Volume (low pressure): indicate a low exhale volume d/t a disconnection, cuff leak, and/or rube displacement
        - Pressure (high pressure): indicate excess secretions, client biting the tubing, client coughing, pulmonary edema, bronchospasm, or pneumothorax
        - Apnea: indicate that the ventilator does not detect spontaneous respiration in a preset time period

- ETT
    - Interventions upon extubating

        - Deflate the cuff on the ET tube and remove during peak inspiration (taking a breath)
        - After monitor signs of respiratory distress/airway obstruction, such as ineffective cough, dyspnea, and stridor
        - Assess SpO2 and VS q5min for first hour
        - Encourage coughing, deep breathing, and use of IS → prevent pneumonia
        - Reposition the client to promote mobility of secretions → High Fowlers

- Positive pressure mechanical ventilation
    - Nursing interventions
        - Assess respiratory status q1-2hours
            - Concerned with deviation → Assess with XR
        - Monitor and document hourly:
            - Rate, FiO2, and tidal volume
            - Mode of ventilation
            - Use of adjuncts (PEEP, CPAP) - an add on
            - Plateau or peak inspiratory pressure (PIP)
            - Alarm settings
        - Never turn off vent alarms:
            - **Low pressure/volume** - disconnection, cuff leak, tube displacement
            - **High pressure/pressure** - excess secretions, biting the tubing, kinks in the tubing, client coughing, pulmonary edema, bronchospasm, pneumothorax
            - **Apnea** - does not detect spontaneous respiration
        - Assess position and placement of tube q24h - two staff members
            - Assess skin breakdown around mouth
        - Assess GI function q8h
        - Suction oral and tracheal secretions to maintain patency
        - Support ventilator tubing (up and elevated against gravity) to prevent mucosal erosion and displacement
        - Continuously monitor pt. during weaning for intolerance
            - RR >30 or <8
            - BP or HR change more than 20%
            - SaO2 <90%
            - Dysrhythmias/elevated ST segment
            - Significant decrease in tidal volume
            - Labored breathing
            - Increased use of accessory muscles
            - Diaphoresis, anxiety, and decreased LOC

- Postural drainage

- Makes use of gravity to drain secretions from the lungs
- Position the patient in a way that promotes the drainage of secretions from smaller pulmonary branches into larger ones, where they can be removed by coughing
- Vibration, percussion, or both often precede postural drainage
- Have tissues and emesis basin close at hand for the patient to use when coughing and expectorating secretions
- •Administer medications as prescribed.
- •**Analgesics**: morphine and fentanyl or Dilaudid
- •**Sedatives**: propofol, diazepam, lorazepam, midazolam
- –Clients receiving mechanical ventilation can require sedation or paralytic agents to prevent competition between extrinsic and intrinsic breathing and the result effects of hyperventilation
- •**Neuromuscular blocking agents**: pancuronium, atracurium, vecuronium are infrequently used in the clinical setting d/t long half-life.
- –Neuromuscular blocking agents paralyze muscles, but do not sedate or relieve pain. The use of a sedative or analgesic agent in conjunction with a neuromuscular blocking agent is typically prescribed.
- •**Ulcer-preventing agents**: famotidine (Pepcid) or lansoprazole (Prevacid)
- •**Antibiotics**: for established infections

Week 3

- Aortic Aneurysm
  - Signs of dissection
    - Sudden onset of tearing or ripping or stabbing abdominal and back pain
    - Hypovolemic shock
      - Diaphoresis, N/V, feeling faint, apprehension
      - Decreased or absent peripheral pulses
      - Neurological deficits
      - Hypotension and tachycardia (initial)
      - Oliguria
  - Thoracic Aortic aneurysm- SEVERE BACK PAIN!!!!
- MI
  - Manifestations
    - Nausea, indigestion, and vomiting
    - Decreased urinary output may indicate cardiogenic shock.
    - Cool, clammy, diaphoretic, and pale appearance due to sympathetic stimulation may indicate cardiogenic shock.
    - Anxiety, restlessness, and lightheadedness may indicate increased sympathetic stimulation or a decrease in

contractility and cerebral oxygenation. The same symptoms may also herald cardiogenic shock.
        - Fear with feeling of impending doom, or denial that anything is wrong.
    - EKG changes
        - NSTEMI- does NOT cause ST elevation in EKG
        - STEMI- ST elevation in EKG leads facing the area of infarction
    - Interventions
        - Oxygen and medication therapy
        - Frequent VS assessment
        - Physical rest in bed with HOB elevated
        - Relief of pain helps decrease workload of heart
        - Monitor I&O and tissue perfusion
        - Frequent position changes to prevent respiratory complications
        - Report changes in patient’s condition
    - Diagnostics
        - Chest pain
        - Occurs suddenly and continues despite rest and medication
        - Other S&S: SOB, indigestion, nausea, anxiety, cool, pale skin, increased HR & RR
        - ECG changes
        - Lab studies: cardiac enzymes (troponin I and T)
    - Pharmacologic treatment
        - Obtain 12-lead electrocardiogram to be read within 10 minutes.
        - Obtain laboratory blood specimens of cardiac biomarkers, including troponin T & I, myoglobin, CKMB
        - Supplemental oxygen
        - Nitroglycerin
        - Morphine
        - Aspirin 162–325 mg
        - Beta-blocker
        - Angiotensin-converting enzyme inhibitor within 24 hours
        - Anticoagulation with heparin and platelet inhibitors
        - Evaluate for indications for reperfusion therapy:
            - Percutaneous coronary intervention
            - Thrombolytic (fibrinolytic) therapy
        - Continue therapy as indicated:
            - IV heparin, low-molecular-weight heparin, bivalirudin, or fondaparinux • Clopidogrel (Plavix)

        - Glycoprotein IIb/IIIa inhibitor
        - Bed rest for a minimum of 12–24 hours
    - Patient education
        - Risk factors: male, HTN, tobacco, excessive alcohol, drug use, metabolic disorders (DM, hypothyroidism), sedentary lifestyle, hyperlipidemia, etc.
        - MI S/S (listed above) and to call 911
        - How to administer nitroglycerin at home (q5mins 1 sublingual tablet - up to 3 times)
            - Sit down before first tablet admin
            - Before second tablet call 911

- Cardiac Catheterization
    - Access sites
        - Femoral artery
        - Brachial
    - Nursing interventions
        - Ensure consent is signed
        - Maintain NPO for at least 8 hours
        - Assess for iodine/shellfish allergy
        - Assess renal function prior to the introduction of contrast dye
        - Administer pre-medications as prescribed
        - Assess VS every 15 min x4, every 30 min x2, every 1 hr x4, and then every 4 hours
        - Assess groin site for bleeding and hematoma formation
        - Maintain bed rest in supine position with extremity straight for up to 6 hours
        - Continuous cardiac monitoring
        - Administer anti-platelet, anti-anxiety, pain medication as prescribed
    - Possible complications
        - Cardiac tamponade
            - Hypotension, chest pain, SOB
        - Hematoma formation
            - Hold pressure, monitor peripheral circulation
        - Restenosis of treated vessel
        - Retroperitoneal bleeding
            - D/T femoral artery puncture
- ECG
    - How to complete, patient instructions during the test
        - Attach wires (white/green, brown, black/red)
        - Inform patient not to move or speak during the test
        - Test will not hurt - removing stickers after will be the worst part

- Aortic Stenosis
  - Manifestations: fainting, fatigue, inability to exercise, lightheadedness, murmur or enlarged heart, chest pressure, and shortness of breath

- Coronary Artery Disease (CAD)
  - Risk factors
    - Non-modifiable risk factors
      - Increasing age
      - Gender (more common in men than in women until 75)
      - Ethnicity (more common in AA than white males)
      - Genetic predisposition and family history of heart disease
    - Modifiable risk factors
      - Serum lipids- total cholesterol >200, triglycerides >150, LDL >160, HDL <40 in men and <50 in women
      - Elevated CRP
      - BP >140/90
      - Diabetes
      - Tobacco use
      - Physical inactivity
      - Obesity: waist circumference >102 cm in men and >88 cm in women
      - Fasting glucose >100
      - Psychosocial risk factors (depression, hostility, anger, stress)

- Heart disease
  - Risk factors:
    - Modifiable: blood pressure, cholesterol, tobacco use, physical inactivity, diabetes, obesity, elevated CRP, stress
    - Non-modifiable: gender, ethnicity, genetic predisposition, and family history of heart disease

- Myocarditis
  - Manifestations
    - flu -like symptoms are present
    - Tachycardia
    - Murmur
    - Friction rub auscultated in the lungs.
    - Cardiomegaly

- Chest pain
- Dysrhythmias

- Nitroglycerin
  - Methods of administration
    - Sublingual- administer every 15 mins, max 3 nitro's and have IV access, check vitals every 5 mins
    - Patch- replace every 24 hours, apply on a hairless area and always wear gloves when handling
    - IV- titrate based on the patient's symptoms

Week 4

- Aortic Aneurysm: ***Life threatening condition***
  Dissection can occur when blood accumulates within the artery wall (hematoma) following a tear in the lining of the artery (usually d/t hypertension)
  - Signs of dissection
    - Sudden onset of tearing/ripping/stabbing in abdomen, + back pain
    - Hypovolemic shock
    - Diaphoresis, N/V, feeling faint, apprehension
    - Decreased or absent peripheral pulses
    - Neurologic deficits
    - Hypotension and tachycardia (initial)
    - Oliguria

  - MI
    - Occurs because of abrupt stoppage of blood flow through a coronary artery from a thrombus caused by platelet aggregation causes irreversible myocardial cell death in the heart muscle beyond the blockage

    - Manifestations
      - STEMI
      - Caused by an occlusive thrombus
      - Creates ST-elevation in the ECG leads facing the area of infarction
      - Emergency situation artery must be opened within 90 minutes of presentation
      - Either PCI (Cath) or thrombolytics
      - Non-STEMI
      - Caused by non-occlusive thrombus
      - Does not cause ST segment elevation on the 12-lead ECG

    - Do not usually go to the catheterization lab emergently but usually undergo the procedure within 12 to 72 hrs if there are no contraindications
    - Thrombolytic therapy is not used
- EKG changes
    - STEMI
    - ST segment elevation in the leads facing the area of infarction
    - T wave inversion: ischemia
    - ST segment elevation: cellular injury
    - Q wave: necrosis
- Interventions
    - MONA
    - ABCs of acute coronary syndrome
    - A = anti-thrombotic, anti-platelet, anti-anginal, ACEi (if LV dysfunction)
    - B = beta-blocker
    - C = cholesterol (statin)
    - Upon discharge
    - Aspirin administered upon arrival to the hospital
    - Aspirin prescribed at discharge from the hospital
    - ACE inhibitor or ARB prescribed for patients with concomitant left ventricular systolic dysfunction
    - Adult smoking cessation advice/counseling as needed
    - Beta-blocker prescribed at discharge from the hospital
    - Thrombolytic (fibrinolytic) therapy received within 30 minutes of hospital arrival
    - NOT used if PCI is available b/c will show the extent of the occlusion
    - PCI received within 90 minutes of hospital arrival
    - Statin prescribed at discharge
    - (statin, ASA, beta, maybe ACE/ ARB - prescribed at discharge)
- Diagnostics
    - EKG – assess for changes on serial EKG’s
    - MI:
    - T wave inversion: ischemia, angina
    - ST segment elevation: injury
    - Q wave: necrosis
    - Angina
    - ST depression: angina
    - T wave inversion: angina
    - Cardiac enzymes – released w/ cardiac tissue injury

    - Troponin I/ T: a positive value indicates damage to the cardiac tissue and should be reported
    - Creatinine Kinase –CK-MB
    - Myoglobin: elevated in any skeletal tissue damage
    - Cardiac catheterization to determine the presence and degree of coronary artery occlusion
    - Via femoral or brachial vessels
- Pharmacologic treatment
    - Vasodilators – nitro
    - Prevents coronary artery spasm, reduces preload/ afterload decreasing myocardial oxygen demand
    - Analgesics – morphine
    - tX pain, relax pt to decrease O2 demand
    - Beta Blockers
    - Decrease the imbalance of myocardial O2 demand and supply by reducing cardiac afterload and slowing the heart rate (making beating more efficient)
    - In acute MI Beta’s decrease infarct size and improve short term and long-term survival rates
    - May cause BC/ hypotension – hold if apical pulse is <60
    - Avoid in asthmatics – or give cardio selective (beta1 receptor agonist)
    - Caution in pt w/ heart failure
    - Thrombolytics
    - Alteplase breaks up already formed blood clots
    - **time frame**** 30 min of arrival to ED
    - Assess contraindications
    - Bleeding, hX of stroke, recent trauma, PUD
    - mX clotting times and for active bleeding
    - Antiplatelet agent
    - ASA/ cloptogril
    - Prevent new platelet aggregation
    - ASA prevents vasoconstriction and should be given w/ nitro during onset of chest pain
    - Tinnitus is a SE, mX in pt w/ Gi ulcers
    - Anticoagulants
    - Heparin and enoxaparin are used to prevent clots from becoming larger and the formation of new clots
    - Glycoprotein 2B, 3A inhibitors
    - Eptifibatide prevents binding of fibrinogen to platelets, reducing aggregations
    - Combined with ASA therapy
- Patient education
    - Diet/ exercise modifications
    - Nitro usage

- Risk factors

- Cardiac Catheterization
  - Access sites
    - Femoral
    - Brachial
  - Nursing interventions
    - PRE
    - Pt to be NPO for 8 hrs prior
    - Consent/ ensure understanding
    - Assess for iodine/ shellfish allergy
    - Assess renal fxning for clearance of contrast dye
    - Admin pre medications
    - methylprednisolone (solumedrol)
    - diphenhydramine
  - Possible complications
    - Cardiac tamponade/ pericardial tamponade
    - Fluid filling the pericardium resulting in inability to effectively pump/ fill
    - Manifestations: muffled heart sounds low BP, distended neck veins
    - Hematoma formation –
    - (pseudoaneurysm: blood flow in and out of the hematoma – will hear a bruit)
    - Hold pressure, monitor peripheral circulation
    - Re-stenosis of treated vessel
    - Retroperitoneal bleeding
    - D/T femoral artery puncture
    - Client Education:
    - Instruct the client on the following:
    - Leave the dressing in place for 1st 24 hrs following discharge
    - Avoid strenuous activity for the prescribed period of time until follow up with cardiology
    - Immediately report bleeding from the insertion site, chest pain, SOB, and changes in the color or temperature of the extremity
    - Restrict lifting to <10 lbs for the prescribed period of time
- ECG
  - How to complete, patient instructions during the test
    - Placement of 12 lead w/in 10 min of entry to ED
    - Pt to remain still, no talking but can breathe
    - Serial EKGs to detect acute alterations in cardiac fxining
- Aortic Stenosis

- Manifestations
  - Hypotension
  - Murmur
  - Weak peripheral pulses

- Coronary Artery Disease (CAD)

Coronary Artery Disease (CAD) - Type of blood vessel disorder that is in the general category of atherosclerosis. Progressive disease that develops over many years

- Risk factors
  - Increasing age
  - Gender (more common in men than in women until 75 yr of age d/t cardioprotective properties of estrogen)
  - Ethnicity (more common in AA than white males)
  - Genetic predisposition and family history of heart disease
  - Serum lipids:
  - TC >200
  - Triglycerides >150
  - LDL >160
  - HDL <40 in men and <50 in women
  - Elevated CRP
  - BP > 140/90 – damage to vessels and inefficient pumping
  - Diabetes – damage to vessels
  - Tobacco use
  - Physical inactivity
  - Obesity: Waist circumference >102 cm in men and >88 cm in women
  - Contributing:
  - Fasting blood glucose >100
  - Psychosocial risk factors (e.g. depression, hostility, anger, stress)
  - CAD: 3 main interventions
  - Diet
  - Exercise
  - And stop tobacco

- Heart Disease
  - Risk factors
    - Obesity
    - Smoking
    - excessive EtOH use
    - diabetes

- Myocarditis
  - Inflammation of the myocardium

        - Can be d/t viral, fungal, or bacterial infection, or a systemic inflammatory disease (Crohn's disease)
    - Manifestations:
        - Findings include tachycardia, murmur, friction rub auscultated in the lungs, cardiomegaly, chest pain, and dysrhythmias
        - Flu-like symptoms are present
- Nitroglycerin
    - Methods of administration
        - Sublingual
        - 1 every 5 min
        - If unrelieved up to 3
        - Patch
        - replace Q 24 hrs (every morning)
        - Hairless place –chest
        - Wear gloves
        - Nitro drip
        - Can titrate based on s/s

Unstable angina: Chest pain that is new in onset, occurs at rest, or occurs with increasing frequency, duration, or with less effort than the patient's chronic stable angina pattern
Usually lasts >10 min