Exam 1 Concept Review

1. Endotracheal Tube care

- Suctioning-before suctioning-hyperoxygenation Don't forget that if you don't they can desa t, throw some funky heart rhythms d/t temporary hypoxemia
- Suction the tube to clear secretions from the airway.
- Preventions: reposition ET tube, elevate HOB, PPI's
- Fluid retention: prevention-monitor I/O, weight, breath sounds, and ET suctions.
- Oxygen toxicity: prevention-monitor for fatigue, restlessness, severe dyspnea, tachycardia, tachypnea, crackles, and cyanosis
- Hemodynamic compromise: prevention-monitor for tachycardia, hypotension, urine output <30mL/hr, cool/clammy extremities, decreased peripheral pulses and decreased LOC.
- Aspiration: prevention: keep HOB elevated, check residuals every 4 hours if the client is receiving feedings.
- GI ulcerations: prevention- monitor GI drainage and stools for blood, administer ulcer prevention medications.
- Oral care: provide frequent oral care (2 hours) and reposition tubing frequently to prevent skin breakdown.
- Altered position of endotracheal tube: check positioning q 1-2h and as needed assess lung sounds
- Aspiration pneumonia check the cuff for leaks, asses suctioning contents for gastric secretions, verify NG tube placement
- Infection: proper hand hygiene and suctioning technique; assess color, amount, and consistency of secretions
- Blocked endotracheal tube (high pressure alarm on vent) suction secretions or insert an oral airway. Could also be a kinked ETT

2. Incorrect position of ET tube

The cuff on the tracheal end of an ET tube is inflated to ensure proper placement and the formation of a seal between the cuff and the tracheal wall. (This prevents air from leaking around the ET tube).

3. Chest tube Care

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

4. Pneumothorax is a collapsed lung. This presents by increased SOB, sharp stabbing pain during inspiration. Increased HR is normal.

5. Chest tubes (expected findings in the chambers). If the water seal chamber is continuously bubbling you have an air leak. Intermittent bubbling during exhalation is normal. This should be addressed immediately.

6. Blood Administration (important VS)- Make sure to take vitals before blood administration. This is important to have a baseline. Temperature is also important. Increase in temperature is a sign of reaction.

7. Blood Administration (administration times)

Packed Red Blood Cells (PRBCs) within 4 hours

Fresh Frozen Plasma (FFP) over 30 minutes

Platelets within 30-60 minutes (as fast as patient can tolerate)

8. Blood Administration (monitoring times)

-Initial 15-30 minutes of the transfusion. Most reactions will occur within this time.

9. Blood Administration (reactions)

-Acute hemolytic: immediate (chills, fever, low-back pain, tachycardia, hypotension, flushing, chest tightening/pain, tachypnea, nauseous, anxiety, hemoglobinuria, and an impending sense of doom)

-Febrile: occurs within 2 hours (chills, increase of 1º F or greater temperature from baseline, flushing, hypotension, and tachycardia)

-Allergic: within 24 hours (symptoms usually mild including itching, urticaria, and flushing)

-Bacterial: During or up to several hours (wheezing, dyspnea, chest tightness, cyanosis, hypotension, and shock)

10. Blood Administration (fluids to infuse with)

0.9% Normal Saline (Sodium Chloride). Y-tubing with a filter is used to transfuse blood.

11. Blood Administration (consent, verification, nursing care)

-Verification done by 2 RNs by looking at the hospital identification number (will be on blood product and on the patient's hospital identification band).

-Consent must be obtained prior to transfusion. Explain the reason for the transfusion.

-Nursing care: Pre, Intra, and Post-procedure the nurse will monitor vitals.

Pre: explain the procedure to the client. Stay with the client. Assess for a history of blood transfusion reactions. Assess laboratory values.

Intra: Stay with the client for the first 15-30 minutes (most reactions occur within this time). Monitor vitals and rate of infusion.

Post: obtain vital signs. Complete paperwork (file in the appropriate places). Document the client's responses.

12. Pulmonary embolism nursing care and medications

Nursing Care:

- Administer O2 therapy to relieve hypoxemia and dyspnea. Position the client to maximize ventilation (high-Fowler's)
- Initiate and maintain IV access
- Administer medications as prescribed
- Assess respiratory status at least every 30 min
    - Auscultate lung sounds
    - Measure rate, rhythm, and ease of respirations
    - Inspect skin color and capillary refill
    - Examine for position of trachea
- Assess cardiac status
    - Compare BP in both arms
    - Palpate pulse quality
    - Check for dysrhythmias on cardiac monitor
    - Examine neck for distended neck veins
    - Inspect the thorax for petechiae
- Provide emotional support and comfort to control client anxiety
- Monitor changes in LOC and mental status

Medications:

- Anticoagulants
    - Heparin, enoxaparin, warfarin, and fondaparinux are used to prevent clots from getting larger or additional clots from forming
    - Nursing Considerations:
        - Assess for contraindications (active bleeding, PUD, hx of stroke, recent trauma)
        - Monitor bleeding times: PT and INR for warfarin, PTT for heparin, and CBC
        - Monitor for side effects of anticoagulants (e.g. thrombocytopenia, anemia, hemorrhage)
- Direct factor Xa inhibitor
    - Rivaroxaban (Xarelto) binds directly with the active center of factor Xa, which inhibits the production of thrombin
    - Nursing Considerations
        - Assess for bleeding from any site. (Clients have experienced epidural hematoma, as well as intracranial, retinal, adrenal, or GI bleeds)
        - Risk for spinal or epidural hematoma; should DC medication for 18 hr prior to removing an epidural catheter, and wait another 6 hr to restart
- Thrombolytic therapy
    - Alteplase, reteplase, and tenecteplase are used to dissolve blood clots and restore pulmonary blood flow
    - Similar side effects and contraindications as anticoagulants
    - Nursing Considerations:
        - Assess for contraindications (know bleeding disorders, uncontrolled HTN, active bleeding, PUD, hx of stroke, recent trauma or surgery, pregnancy
        - Monitor for evidence of bleeding, thrombocytopenia, and anemia
        - Monitor BP, HR, RR, and O2Sat per facility protocol before, during, and after administration of medication
- Embolectomy
    - Surgical removal of embolus
    - Nursing actions: prepare client for the procedure (NPO status, informed consent), monitor postop (VS, SaO2, incision drainage, pain management)

- Vena cava filter
    - Insertion of a filter in the vena cava to prevent further emboli from reaching the pulmonary vasculature
    - Nursing actions: prepare the client for the procedure (NPO status, informed consent), monitor postop (VS, SaO2, incision drainage, pain management

13. Acute respiratory failure manifestations

- Hypoxemia specific
    - Dyspnea
    - Tachypnea
    - Prolonged expiration
    - Nasal flaring
    - Intercostal muscle retraction
    - Use of accessory muscles in respiration
    - Decreased SpO2
    - Paradoxic chest or abdominal wall movement with respiratory cycle
    - Cyanosis (late)
- Hypoxemia nonspecific
    - Agitation
    - Disorientation
    - Restlessness
    - Combative behavior
    - Delirium
    - Confusion
    - Decreased LOC
    - Coma (late)
    - Tachycardia
    - HTN
    - Skin cool, clammy, and diaphoretic
    - Dysrhythmias (late)
    - Hypotension (late)
    - Fatigue
    - Inability to speak in complete sentences w/o pausing to breathe
- Hypercapnia specific
    - Dyspnea
    - Use of tripod position
    - Pursed lip breathing
    - Decreased RR or rapid rate w/ shallow respirations
    - Decreased TV
    - Decreased minute ventilation
- Hypercapnia nonspecific
    - Morning HA
    - Disorientation, confusion
    - Agitation
    - Progressive somnolence
    - Elevated ICP
    - Coma (late)
    - Dysrhythmias

- HTN
- Tachycardia
- Bounding pulse
- Muscle weakness
- Decreased DTRs
- Tremors, seizures (late)

14. Priority care for complications (ABCs)

Potential complications include:

-Pain (related to nerve injury or noxious stimulation)

*manage acute pain with a multimodal approach (combines 2 or more medications, or methods for pain reduction)

-infection

*maintain strict asepsis for dressing changes, wound care intravenous therapy, and catheter handling

-hematoma

*remove the catheter; apply light pressure with a dry, sterile dressing; apply ice and elevate the extremity.

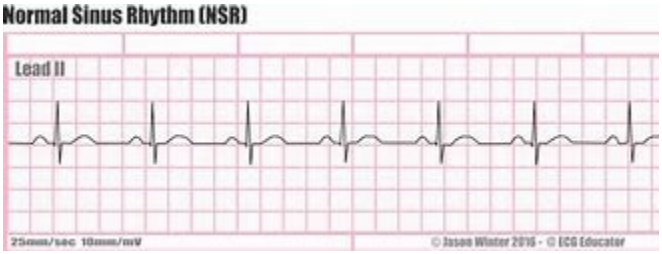
-hemorrhage

*control the bleeding, maintain adequate blood circulation for tissue oxygenation, and prevent shock

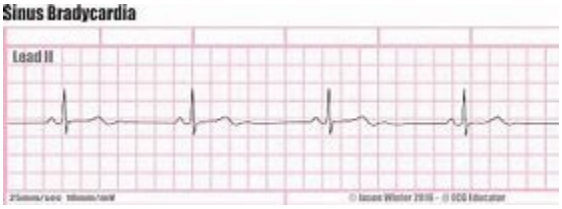
15. Identify dysrhythmias

"Sinus"= p wave present. Consistent R-R intervals. PR interval 0.12-0.2 sec. (Each small box is 0.04 sec. One larger box is 0.2 sec. So the PR interval should be between 3-5 small boxes.)

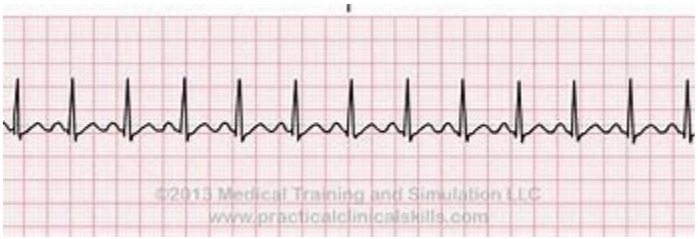
Sinus rhythm: P wave is present in front of every QRS complex. R-R intervals are equally spaced. Normal PR interval. **HR is between 60-100bpm.** For most strips, they are 6 sec strips. Count the number of R waves and multiple by 10 to get the beats per minute.



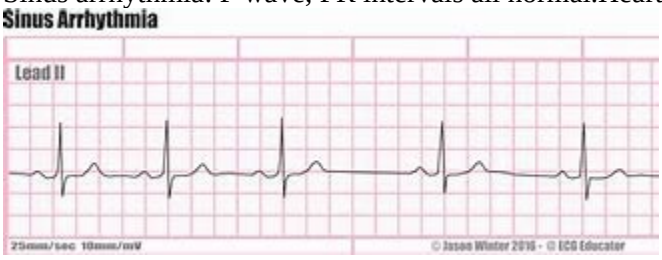
Sinus bradycardia: P wave is present in front of QRS complex. R-R intervals are equally spaced. Normal PR interval. **HR is less than 60 bpm**.



Sinus tachycardia: P wave, R-R, and PR intervals all normal. **HR greater than 100**.

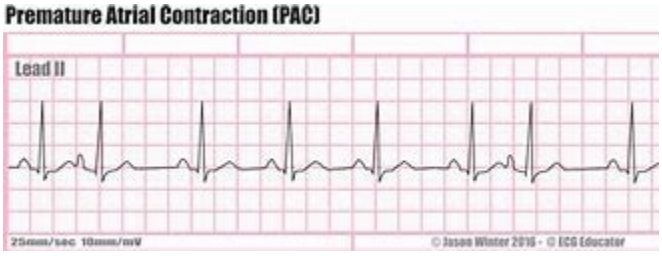


Sinus arrhythmia: P wave, PR intervals all normal.Heart rate typically 60-100. **R-R intervals vary**



<u>"Atrial"</u> rhythms= originating in the atria. These rhythms affect the P wave

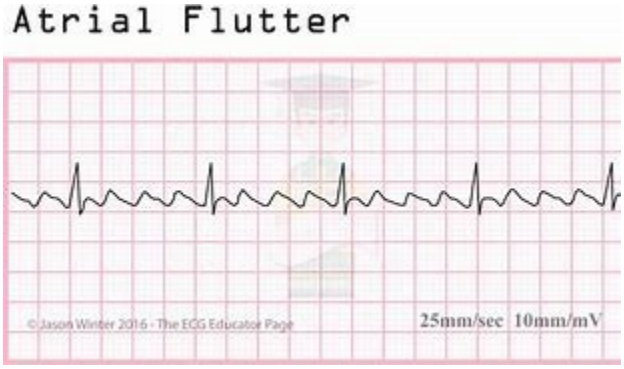
PAC's- premature atrial contractions= happening before it should be. The one off set PQRS has a P wave that looks different. R-R interval varies with this complex but all other R-R intervals are equal



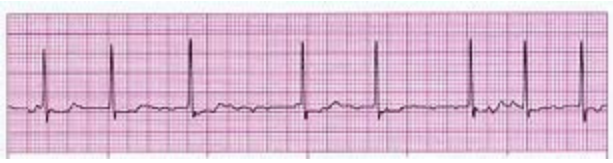
Atrial Tachycardia- Consistent R-R interval. **HR 150-250.**P wave is flattened or hidden inside the T wave because of the rapid rhythm.

Atrial Flutter- Atrial rate is rapid (greater than 100). Meaning there are multiple p waves between each QRS complex. P waves are well defined and have a “sawtooth” appearance. PR interval is hard to measure. R-R interval consistent.

“Regularly irregular”



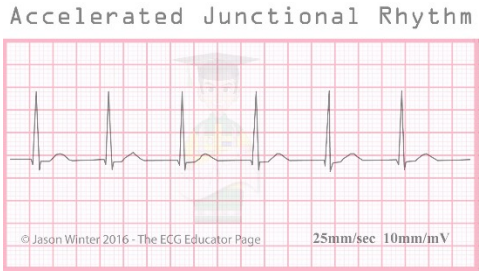
Atrial fibrillation- “Irregularly Irregular”. Atrial and ventricular activity is irregular and chaotic. Unable to predict PR interval, p waves, or R-R intervals.



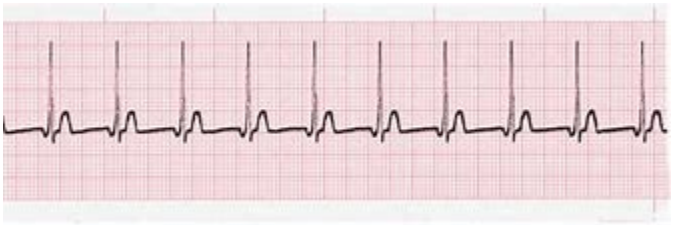
“Junctional” rhythms- P wave hidden in preceding T wave, can be inverted, or come after QRS complex. R-R interval consistent.

Junctional rhythm: rate 40-60bpm

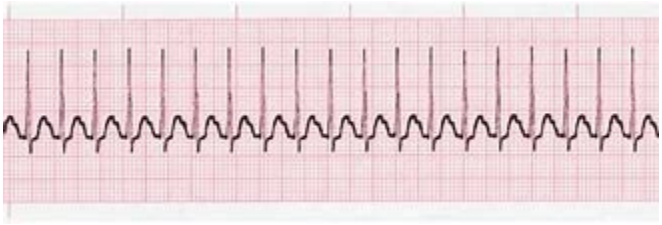
Accelerated Junctional rhythm: rate 60-100bpm



Junctional tachycardia: rate 100-180bpm

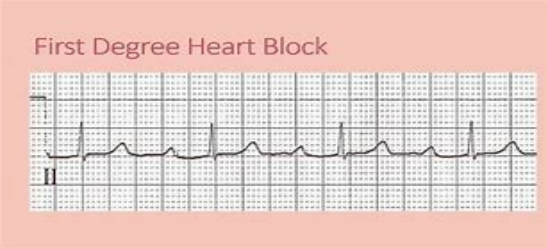


Supraventricular Tachycardia: Rate >150bpm. Too fast to see the p wave. R-R interval is regular. Hard to accurately identify the rhythm so it is given the descriptive identification of SVT.



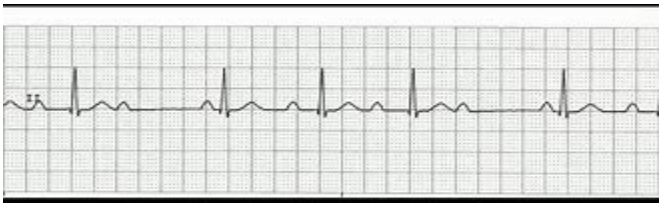
Heart Blocks- conduction trouble at the AV node.

First degree: PR interval greater than 0.20sec and constant. P wave present. R-R interval consistent. This heart block if fairly common.

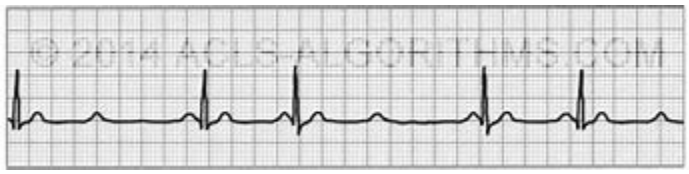


Second degree:

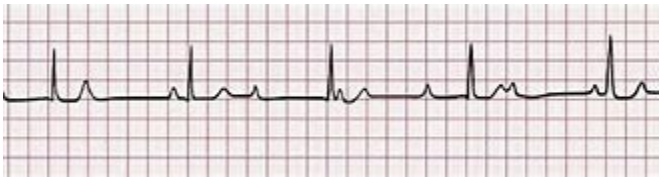
Type 1: (Wenckeback) “Going, Going, Gone”. PR interval progressively gets longer until one P wave is NOT followed by QRS complex.



Type 2: PR intervals are all the same size. Random p waves drop the QRS.

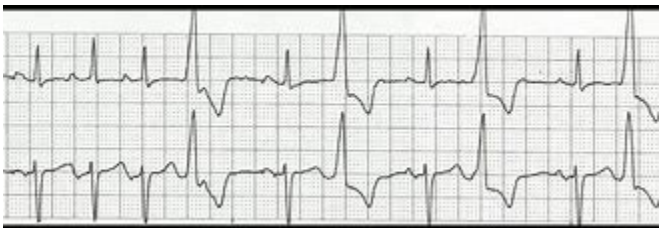


Third degree (complete): More P waves than QRS.No PR interval. P waves have no relationship to QRS complexes.

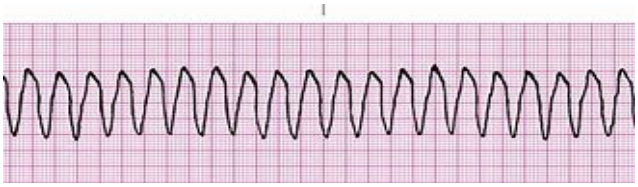


<u>Ventricular</u> Rhythms- more serious.

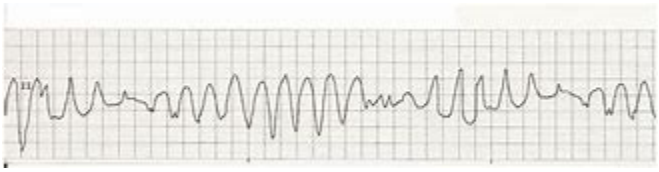
PVCs: Very common. Wide QRS out of the normal sequence. Identify if they are Unifocal or multifocal and how often they are occurring. If falling on a T wave it is called “R on T phenomenon”. 2 PVCs in a row = couplet. Bigeminy= every other beat. trigeminy= every 3rd beat.



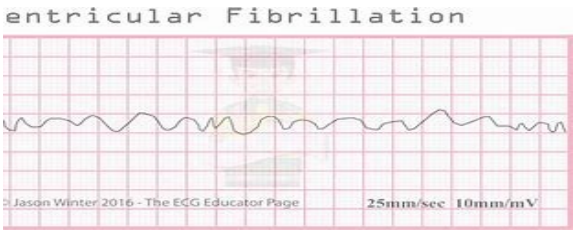
Ventricular Tachycardia: Run of PVCs. Rate of 150-250 bpm. Uniform, wide, measurable complexes.



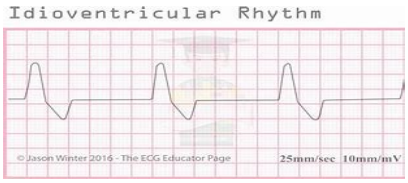
Torsade de Pointes: Polymorphic V tach



Ventricular fibrillation: Easy to recognize. No measurable waves or complexes.



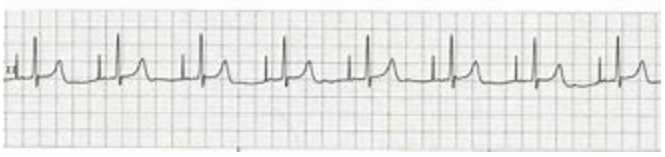
Idioventricular rhythm (Last chance): rate less than 40 bpm. No p wave. Wide and bizarre QRS



Asystole: flat line

Pulseless Electrical Activity: activity seen on EKG no pulse is produced

Pacemaker: detectable by “capture spike”. Can be before p wave, before QRS, or both.



16. Defibrillation & Cardioversion

-Cardioversion: the delivery of a direct countershock to the heart synchronized the QRS complex.

>Indications: elective treatment for atrial dysrhythmias, supraventricular tachycardia, and ventricular tachycardia with a pulse.

-Defibrillation: the delivery of an unsynchronized direct countershock of the heart. Stops all electrical activity of the heart, allowing the SA node to take over and re-establish a perfusing rhythm

>Indications: ventricular fibrillation or pulseless ventricular tachycardia.

17. Reducing CAD

-Reducing modifiable risk factors (cholesterol abnormalities, tobacco use, hypertension, and diabetes)

-A diet low in saturated fat and high in soluble fiber

-Regular, moderate physical activity

-Using medications to help control cholesterol, hypertension, diabetes.

18. Ventilator care/checklist

- Maintain a patent airway
- Assess respiratory status ever 1-2 hours
- Monitor and document ventilator settings hourly
- Monitor ventilator alarms, which sign if the client is not receiving the correct ventilation
- Maintain adequate volume in the cuff of the ET tube
- Reposition the oral ET tube every 24 hours or according to protocol.

19. Myocardial infarction labs

-Myoglobin: earliest marker of injury to cardiac or skeletal muscle (levels no longer evident after 24 hours)

-Creatine kinase-MB (CKMB): Peaks around 24 hours after onset of chest pain (levels no longer evident after 3 days).

-Troponin I or T: any positive value indicates damage to cardiac tissue

>Troponin I: levels no longer evident after 7 to 10 days.

>Troponin T: levels no longer evident after 10 to 14 days.

20. Myocardial infarction manifestations

-Pallor, and cool, clammy skin.

-Tachycardia and heart palpitations

-Tachypnea and shortness of breath.

-Diaphoresis

-Vomiting

-Decreased level of consciousness

21. Alteplase Nursing Tasks

-Dosage based on weight.

-Monitor closely for bleeding

-Vitals taken q15 minutes (progressively lengthens as patient is stable)

-Minimize puncture sites for iv insertion, blood draws, avoids intramuscular injections, and prevents any possible tissue trauma (apply pressure twice as long as usual if puncture is performed)

22. Sedative and paralytic medications- ATI Ch 19 Med Surg - not this exam

Sedative Medications: propofol, diazepam, lorazepam, midazolam, and haloperidol

- Clients receiving mechanical ventilation can require sedative or paralytic agents to prevent competition between extrinsic and intrinsic breathing and the resulting effects of hyperventilation.

Neuromuscular blocking agents- pancuronium, atracurium, and vecuronium are infrequently used in the clinical setting due to their 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.

23. Atelectasis manifestations- increase dyspnea, cough sputum production, if large amounts of lung tissue then respiratory distress may be observed, tachycardia, tachypnea, pleural pain, central cyanosis, and patients may have difficulty breathing while lying supine

24. Flail chest manifestations- unequal chest expansion, paradoxical chest wall movement, tachycardia, hypotension, dyspnea, cyanosis, anxiety, chest pain

25. Chest tube indications- pneumothorax, blood from trauma, other fluids in cavity

26. Intubation respiratory monitoring

- Assess respiratory status every 1-2 hours.
    - Equal bilaterally, presence of reduced or absent breath sounds, respiratory effort, or spontaneous breaths.
    - Clear secretions with suctioning
    - Document vent settings every hour
    - Rate, FiO2, tidal volume
    - Mode
    - Use of adjuncts (CPAP, PEEP)

- Peak inspiratory pressure
- Alarm settings (low pressure, high pressure, apnea)

27. Valvular heart disease nursing care

- Monitor weight daily
- Assess heart rhythm - can be brady or irregular, assess for murmurs
- Administer oxygen and medications as prescribed
- Hemodynamic monitoring
- Fluid and sodium restrictions
- Assist with activity to preserve energy

28. Pacemaker education

-Avoid large electromagnetic fields (produced by magnetic resonance imaging, radio & television towers, transmission power lines)

-Objects that contain magnets should not have prolonged exposure (no longer than a few seconds)

-Welding and the use of chain saws should be avoided.

-May trigger security metal detectors in stores & airports

-Hand held screening devices used in airports may interfere with pacemaker (ask security personal to perform hand search)

-Patient should also wear or carry medical identification to alert medical personnel to the presence of a pacemaker.

29. Modifiable and nonmodifiable risk factors for CAD

Non-modifiable

- Increasing age
- Gender (more common in men than women until 75 years of age)
- Ethnicity (more common in white men than in African American)
- Genetic predisposition and family history of heart disease

Modifiable

- Major: Serum lipids (TC > 200, Triglycerides > 150, LDL > 160, HD LD < 40 in men and < 50 in women)
- BP > 140/90
- Diabetes
- Tobacco use
- Physical inactivity
- Obesity: waist circumference > 102cm in men and > 88 cm in women
- Contributing: fasting blood glucose > 100, psychosocial risk factors (depression, hostility, anger, stress), elevated homocysteine levels

30. Pericarditis treatment → inflammation of the pericardium

- Commonly follows a respiratory infection
- Can be due to myocardial infarction
- Findings include: chest pressure/pain aggravated by breathing (mainly inspiration), coughing, and swallowing; pericardial friction rub auscultated at left lower sternal border; SOB; relief of pain when sitting and leaning forward

31. Hypertensive crisis treatment

- Severely elevated BP
- Two types that require treatment: hypertensive emergency and hypertensive urgency
- Causes: poorly controlled HTN, undiagnosed HTN, abrupt discontinuation of medications, exacerbation of chronic HTN, renovascular HTN, pre-eclampsia, eclampsia, pheochromocytoma, drugs (cocaine amphetamines), monoamine oxidase inhibitors taken with tyramine-containing foods (WTF does that even mean?), rebound HTN (abrupt withdrawal of medications), head injury, acute aortic dissection
- Findings: an extremely high BP (usually SBP > 240 and DBP > 120), HA, drowsiness/confusion, blurred vision, changes in neurological status, tachycardia and tachypnea, dyspnea, cyanosis, seizures
- Hypertensive emergency → acute, life-threatening BP elevation that must be lowered quickly to halt or prevent damage to the target organs
    - Requires intensive care
    - Goals are to reduce the mean BP by 20-20% within the first hour of treatment, further reduction to BP goal of 160/100 over a period of up to 6 hours, and further gradual reduction over a period of days
    - Associated conditions include: HTN of pregnancy, acute MI, dissecting aortic aneurysm, intracranial hemorrhage
    - Treatment: IV vasodilators frequently used for initial treatment (nitroprusside, nicardipine, clevidipine, enalaprilat, Nitroglycerin)
    - Labetalol also frequently used with nicardipine for quick blood pressure reduction
    - Evaluate client's fluid volume status: prepare for administration of NS to support BP if indicated
- Hypertensive urgency → very elevated blood pressure; no evidence of impending or progressive target organ damage
    - Severe HA, nosebleed, anxiety
    - Treatment: oral doses of fast-acting agents (beta-adrenergic blockers like labetolol, ACE inhibitors like captopril, or alpha2 agonists like clonidine)
    - Goal is to normalize BP within 24-48 hours of treatment

32. AAA manifestations

- Constant gnawing feeling in abdomen
- Flank or back pain
- Pulsating abdominal mass (do not palpate, can cause rupture)
- Bruit over the area of the aneurysm
- Elevated blood pressure (unless in cardiac tamponade or rupture of aneurysm).

33. Bronchoscopy (diagnostic/nursing care)

-Permits visualization of the larynx, trachea, and bronchi through either a flexible fiber-optic or rigid bronchoscope.

>Indications: visualization of abnormalities such as tumors, inflammation, and strictures.

Biopsy of suspicious tissue (lung cancer).

Aspiration of deep sputum or lung abscesses for culture and sensitivity or cytology (pneumonia)

>Nursing Care: assess for allergies to anesthetic agents or routine use of anticoagulants. Ensure consent is signed. Maintain client NPO status prior to the procedure. Continue to monitor vital signs, including respiration. Assess the level of consciousness, presence of gag reflex. Provide oral hygiene.

34. Cardiac catheterization nursing care

- The patient remains on bed rest for 2-6 hours.
- Observe catheter site for bleeding or hematoma formation.
- Assess peripheral pulses on affected extremity (evaluate temperature, color & capillary refill)
- Observe carefully for dysrhythmias
- Instruct patient to report chest pain and bleeding or sudden discomfort from catheter site
- Monitor for contrast-induced nephropathy by observing for elevations in serum creatinine
- Ensure patient safety by assisting patient when getting up the first time.