

Exam 1 Concept Review

1. Endotracheal Tube care

- Maintain a patent airway
 - Assess position and placement of ET tube
 - Document placement in cm at teeth or lips
 - Use 2 staff members for repositioning and to resecure tube
 - Apply soft wrist restraints prevent self extubation.
 - Suction oral and tracheal for tube patency
 - Assess resp status every 1-2 hrs.
 - Breath sounds equal, presence of reduced or absent breath sounds, respiratory efforts.
- Monitor Ventilator Alarms: NEVER TURN OFF
 - High pressure (pressure)- client biting tubing, kink, excess secretions, coughing, pulmonary edema
 - Low pressure (volume) -cuff leak, exhaled volume disconnection, or tube displacement
- Maintain adequate cuff of the ET tube
 - Assess cuff pressure at least every 8 hours and below 20mmHg
 - Assess air leaks around the cuff
 - Medication
 - Analgesic: fentanyl and morphine
 - Sedative: propofol, diazepam, midazolam

2. Incorrect position of ET tube

CORRECT- Done by nurse anesthetist, anesthesiologist, or pulmonologist.

- CXR verifies placement

- ET tubes can be cuffed or uncuffed. 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.

- Seal ensures that an adequate amount of tidal volume is delivered by the mechanical ventilator when attached to the external end of the ET tube.

- Client unable to talk when cuff is inflated.

3. Chest tube Care

Pre-procedure

- Verify consent form signed
- Inform the client breathing will improve when chest tube is placed
- Assess for allergy to local anesthetics
- Fill water seal chamber
- Prep insertion site

Post procedure

- Assess vital signs, breath sounds, SaO₂, resp efforts- Q4hrs
- Encourage pt. to cough/ deep breathing every 2 hrs.
- Keep drainage system below chest level when ambulating
- Monitor chest tube placement
- Check seal every 2 hrs. add fluid if needed should move with resp efforts
- Report excess drainage >70ml/hr.
- Document amount & color the first 24hr than every 8hrs after
- X Ray for placement
- CLAMP: only when air leak, during drainage system change, and disconnection

4. Pneumothorax

Can be spontaneous air in lungs causes lungs to collapse and mediastinal shift

Most common in tall, lean, white, adolescent males

Treated with chest tube

May need intubated/ventilated after placement depending on severity

S/S

Dyspnea, anxiety, tachycardia, pleural pain, asymmetrical chest wall expansion, decreased/absent breath sounds on affected side

Physical assessment

- Respiratory distress
- Tracheal deviation to the unaffected side
- Hyperresonance

History of lung disease increases risk

Management

- *Monitoring drainage*
- *Frequent respiratory assessments*
- *Assess for tracheal shift*
- *Keep clamps at bedside in event of dislodging*

Treatment

Chest tube to suction, water seal as heals

5. **Chest tubes (expected findings in the chambers)**

- Expected findings tidaling in the water seal chamber continuous bubbling in suction chamber

Complication

- Air leak notify provider place clamp to find its leak location
- Disconnection- immediately notify provider
 - Instruct client to exhale as much as possible and cough to remove air from pleural space
- Chest tube remove dress with dry, sterile gauze.

6. **Blood Administration (important VS)**

- Obtain vital signs before infusion, every 15 minutes during, and once the infusion is complete.
- Monitor BP for hypotension
- Monitor heart rate for tachycardia
- Monitor respiration rate for tachypnea
- Monitor temperature for increases and fever

7. **Blood Administration (administration times)**

- RBCs: administer in 2-4 hours
- Platelets: Administer as fast as the patient can tolerate, typically 15-30 minutes
- Plasma: administer rapidly in 30-60 minutes
- WBCs: administer in 1 hour

8. **Blood Administration (monitoring times)**

- Monitor the client for the first 15 minutes of blood administration

9. Blood Administration (reactions)

- **Acute hemolytic**
 - Blood is incompatible with the client's blood
 - S/S: fever, chills, low-back pain, flushing, chest tightness or pain, nausea, anxiety, tachycardia, tachypnea, hypotension, impending sense of doom
- **Febrile**
 - Client develops antibodies against the WBCs
 - S/S: chills, flushing, hypotension, tachycardia, increase in temperature of 1 or more degree above pretransfusion temperature
- **Allergic reaction**
 - Develops a sensitivity reaction to a component of the blood
 - S/S: itching, urticaria (rash), and flushing, anaphylaxis with bronchospasm, hypotension, and shock
- **Bacterial**
 - Blood product was contaminated
 - S/S: wheezing, dyspnea, chest tightness, cyanosis, hypotension, shock
- **Circulatory overload**
 - Transfusion rate is too rapid for the client
 - S/S: crackles, dyspnea, cough, JVD, tachycardia, anxiety

Nursing actions for reactions:

- Stop the infusion!
- Remove blood tubing
- Initiate an infusion of 0.9% sodium chloride with NEW tubing
- Monitor vital signs and patient condition

Additional interventions:

- Hemolytic: send blood to lab for testing
- Febrile: administer antipyretics
- Allergic: administer diphenhydramine for mild reaction. For anaphylaxis, administer epinephrine, corticosteroids, oxygen, or vasopressors if needed.
- Bacterial: Obtain a blood culture and then administer antibiotics
- Fluid Overload: slow the infusion rate, position the client in an upright position with the legs lower than the heart, administer oxygen or diuretics if indicated.

10. Blood Administration (fluids to infuse with)

- All blood transfusions should be infused with 0.9% normal saline.
- Must use a Y-tubing with a filter

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

- Explain procedure to the client
- Verify the prescription for blood product
- Obtain informed consent
 - The provider must explain the procedure to the client, not the nurse.
- Obtain type and crossmatch
- Assess for history of blood-transfusion reactions
- Initiate IV access, must be an 18 or 20 gauge
- Obtain and inspect blood products for bubbles, cloudiness, discoloration.
- Have two RNs verify correct blood product and client by comparing identification number on the client's wrist band and on the blood product
 - One of the nurses who verify the blood product must be the one to administer the blood
- Obtain vital signs and a temperature on the client before beginning the transfusion
- You must start the blood transfusion within 30 minutes of receiving the product!

12. Pulmonary embolism nursing care and medications pg.150

NURSING CARE:

- Administer oxygen therapy to relieve hypoxemia and dyspnea. Position the client to maximize ventilation (High-Fowler's = 90 degrees).
- Initiate and maintain IV access.
- Administer medications as prescribed.
- Assess respiratory status at least every 30 min.
- Assess cardiac status
- Provide emotional support and comfort client anxiety.
- Monitor changes in LOC and mental status.

MEDICATIONS

- Anti-coagulants: Heparin, Enoxaparin, Warfarin.
- Direct factor Xa inhibitor: Rivaroxaban, Apixaban, and Fondaparinux.
- Direct thrombin inhibitor: Dabigatran
- Thrombolytic therapy: Alteplase, Reteplase, and Tenecteplase

13. Acute respiratory failure manifestations

- Dyspnea

- Orthopnea
- Cyanosis
- Pallor
- Hypoxemia
- Tachycardia
- Confusion
- Irritability or agitation
- Restlessness
- Hypercarbia (high levels of carbon dioxide in the blood)

14. Priority care for complications (ABCs)

- Position the client to maximize ventilation (High-Fowler's)
- Administer oxygen as prescribed
- Encourage effective coughing, or suction to remove secretions
- Administer breathing treatments and medications

15. Identify dysrhythmias:

Dysrhythmias are classified by the following:

- Site of origin: sinoatrial (SA) node, atria, atrioventricular (AV) node, or ventricle
- Effect on the rate and rhythm of the heart: bradycardia, tachycardia, heart block, premature beat, flutter, fibrillation, or asystole

Sinus:

- Sinus bradycardia and tachycardia

Atrial:

- Atrial fibrillation
- Premature atrial complexes (PACs)

Junctional:

- Atrioventricular (AV) blocks

Ventricular:

- Ventricular asystole
- Premature ventricular complexes (PVCs)
- Supraventricular tachycardia
- Ventricular tachycardia

- Ventricular fibrillation

Table 28.8, p. 181:

28.3 Dysrhythmias

ATRIAL FIBRILLATION



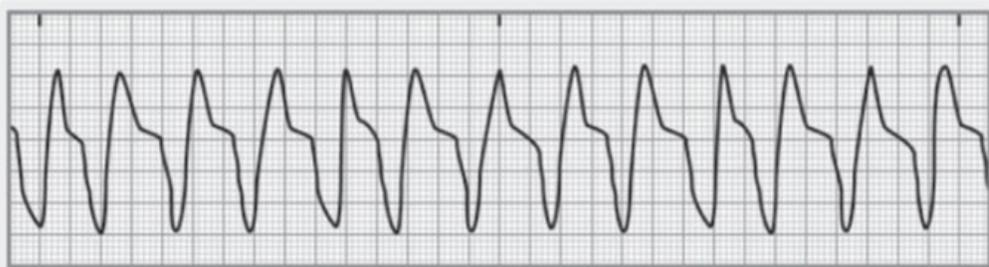
PREMATURE ATRIAL COMPLEXES



PREMATURE VENTRICULAR COMPLEXES



VENTRICULAR TACHYCARDIA



16. Defibrillation & Cardioversion: p.181

- **Cardioversion** is the delivery of a direct countershock to the heart *synchronized* to the QRS complex
 - Indications:
 - Elective tx of atrial dysrhythmias
 - SVT,
 - V-tach with a pulse
- **Defibrillation** is the delivery of an *unsynchronized*, direct countershock to the heart
 - → Stops all electrical activity of the heart, allowing the SA node to take over and reestablish a perfusing rhythm
 - Indications:
 - V-fib
 - Pulseless v-tach

17. Reducing CAD p. 192 :

- Stop smoking, nicotine raises BP
- Control HTN - take prescribed meds
- Follow heart healthy diet to lower BP
- Surgery:
 - Coronary artery bypass grafts - CABG - invasive surgical procedure that aims to restore vascularization of the myocardium, improves quality of life

18. Ventilator care/checklist, (skills day ppp)

- Endotracheal or tracheostomy tube suction via either open or closed (in-line) method of suctioning
- Insert the catheter without applying suction; applying suction on insertion could injure the airway
- After you insert the catheter, apply suction while using a rotating motion to remove it
- Closed suctioning wear clean (not sterile) gloves and use a multi-use catheter enclosed in a plastic sheath
- Advantage of closed suction system is that you do not have to disconnect the patient from the mechanical ventilator
- **Suctioning procedures for a patient on mechanical ventilation** (slide 47):
 - General measures for open- and closed- suction techniques
 - Gather all equipment
 - Wash hands and don PPE

- Explain procedure and patient's role in assisting with secretion removal by coughing
- Monitor patient's cardiopulmonary status (eg. VS, ECG, LOC) before, during, and after the procedure
- Turn on suction and set vacuum to 100-120mmHg

19. Myocardial infarction labs

- *Myoglobin*: Earliest marker of injury to cardiac or skeletal muscle. Levels no longer evident after 24 hours.
- *Creatine kinase-MB*: Peaks around 24 hours after onset of chest pain. Levels no longer evident after 3 days.
- *Troponin I or T*: Any positive values indicates damage to cardiac tissue and should be reported.
- *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

- Anxiety, feeling of impending doom
- Chest pain: substernal or precordial, can radiate down the shoulder or arm, or present as jaw pain, can be described as a crushing or aching pressure
- Nausea
- Dizziness
- Females can experience atypical angina: pain between the shoulders, ache in the jaw, or sensation of choking with exertion.

Physical Assessment Findings:

- Pallor and cool and clammy skin
- Tachycardia and heart palpitations
- Tachypnea and shortness of breath
- Diaphoresis
- Vomiting
- Decreased level of consciousness

21. Alteplase nursing tasks (X)

For best results, give within 6 hours of infarction.

- Assess for contradictions (active bleeding, PUD, history of stroke, recent trauma).
- Monitor for effects of bleeding (mental status changes, hematuria).
- Monitor bleeding times: PT, aPTT, INR, fibrinogen levels, and CBC.

- Monitor for the same adverse effects as anticoagulants (thrombocytopenia, anemia, hemorrhage).

Client Education:

- There is a risk for bruising and bleeding while on this medication.

22. Sedative and paralytic medications (X)

Sedatives:

- Pentobarbital
- Secobarbital

Uses:

- Sedative effects for preanesthesia sedation or amnesia.
- Induction of general anesthesia.

Adverse effects:

- Respiratory depression

Disclaimer: Avoid giving within 14 days of starting or stopping an MAOI.

Neuromuscular Blocking Agents

- Succinylcholine
- Vecuronium

Uses:

- Skeletal muscle relaxation for surgery.
- Airway placement.
- In conjunction with IV anesthetic agents (propofol, opioids, benzodiazepines).

Adverse effects:

- Total flaccid paralysis
- Requires mechanical ventilation because it blocks contraction of all muscles, including the diaphragm and respiratory system.

23. Atelectasis manifestations

- Shortness of breath

- Diminished or absent breath sounds over affected area
- Chest x-ray shows an area of density
- Signs/ symptoms of hypoxia
 - Tachypnea, Tachycardia, Restlessness, Elevated Blood Pressure, Pale Skin and Mucus Membranes, Signs of Respiratory Distress

24. Flail chest manifestations

- Unequal chest expansion
- Inward movement of chest during inspiration, outward movement during expiration
- Tachycardia
- Hypotension
- Dyspnea
- Cyanosis
- Anxiety
- Chest Pain

25. Chest tube indications

- Pneumothorax (involves lung collapse)
- Hemothorax (involves lung collapse)
- Post-op Chest Drainage following thoracotomy or open-heart surgery
- Pleural Effusion
- Pulmonary Empyema (Accumulation of pus in the pleural space- can be used to lung infection or lung abscess)

26. Intubation respiratory monitoring

- Auscultate for lung sounds bilaterally
- Observe for symmetric movement
- Monitor for hypoxemia, dysrhythmias, and aspiration

27. Valvular heart disease nursing care

- Monitor current weight and note recent changes
- Assess heart rhythm (can be irregular or bradycardic, assess for murmur)
- Administer oxygen and medications as prescribed
- Assess hemodynamic monitoring; maintain fluid and sodium restrictions
- Assist the client to conserve energy

28. Pacemaker education

- Carry a device identification card at all times.

- Wear a sling when out of bed. Do not raise arm above shoulder for 1 to 2 weeks.
- Take pulse daily at the same time for those with pacemakers or combination devices. Notify the provider if heart rate is less than the pacemaker rate.
- Report dizziness, fatigue, fainting, weakness, chest pain, palpitations, difficulty breathing, or weight gain.
- Follow activity restrictions as prescribed, including no contact sports, or heavy lifting for 2 months.
- Avoid direct blows or injury to the generator site.
- Never place items that generate a magnetic field directly over the pacemaker generator.
- The use of household items is not prohibited.

29. Modifiable and nonmodifiable risk factors for CAD (X)

❖ Modifiable

- Serum lipids: Total cholesterol > 200
- Triglycerides > 150
- LDL > 160
- HDL < 40 in men and <50 in women
- BP >140/90
- Diabetes
- Tobacco use
- Physical Inactivity
- Obesity
- Fasting blood glucose >100
- Psychosocial risk factor
- Elevated homocysteine levels

❖ Nonmodifiable

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

30. Pericarditis treatment (X)

- Colchicine plus NSAIDS
- Glucocorticoids if contraindication to NSAIDS or for specific diseases

31. Hypertensive crisis treatment

- Vasodilators (nitroprusside, nicardipine, clevidipine, enalaprilat, nitro)
- Labetolol with nicardipine for quick reduction of blood pressure

- Evaluate for fluid volume status
 - Prepare 0.9% in case of hypotension for blood pressure support
- See medication therapy chart in powerpoint for specifics --slide 9--
 - (sorry, she doesn't have it online for me to copy/paste)

32. AAA manifestations x

- Constant gnawing feeling in abdomen
- Low back pain (d/t pressure on lumbar nerves)
- Pulsating abdominal mass
 - DO NOT palpate, can cause rupture
- Bruit over area of aneurysm
- Elevated BP (except in cardiac tamponade, rupture of aneurysm)

33. Bronchoscopy (diagnostic/nursing care) x

- Diagnostics
 - Visualize abnormalities (tumors, inflammation, strictures, lesions)
 - Remove foreign bodies/secretions from tracheobronchial tree
 - Treat postoperative atelectasis
 - Biopsy of tissue (additional risks for bleeding, perforation)
 - Aspiration of deep sputum or lung abscesses for culture/sensitivity, cytology (for pneumonia)
- Preprocedure
 - Assess for allergies to anesthetics, routine use of anticoagulants
 - Informed consent
 - Remove dentures if present
 - NPO 4-8 hours prior to procedure
 - Aspiration risk d/t cough reflex blocking by anesthesia
 - Administer pre-procedure meds (anxiolytic, atropine, viscous lidocaine, local anesthetic throat spray)
- Intra-procedure (in sites where applicable)
 - Position patient sitting or supine
 - Assist in collecting/labeling specimens, ensure prompt delivery to lab
 - Monitor vitals, respiratory pattern, oxygenation
 - Sedation to older adult clients with respiratory insufficiency can cause respiratory arrest
- Postprocedure
 - Monitor: vitals, respiratory effort, LOC (older adults may develop confusion d/t meds during procedure)

- Assess: level of consciousness (LOC), gag reflex, swallowing ability prior to oral intake
 - When continuing oral intake start with ice chips
- Monitor: development of significant fever, productive cough, significant hemoptysis (large amount is indicative of hemorrhage)
- Oral care
- cough/deep breathe every 2 hours

34. Cardiac Catheterization nursing care

Indications

- Elective procedure to treat coronary artery disease with occlusion of one to two coronary arteries
- Open coronary arteries to restore cardiac perfusion during an acute MI
 - NSTEMI: perform within 4-6 hours of symptom onset
 - STEMI: perform within 60-90 minutes of symptom onset
- Alternative to a CABG
- Stent placement to prevent reocclusion

Interventions (nursing actions)

Preprocedure

- Educate pt about procedure and answer questions
- Witness informed consent
- Assess for allergies (especially contrast, lidocaine, and other local anesthetics), history of asthma
- If possible may need to fast for 3-8 hours prior
 - Hold or decrease meds per providers orders
- Establish two peripheral IV sites
- Ensure labs have been drawn
 - CBC, CMP, coagulation studies, cardiac biomarkers, UA
- Chest x-ray, EKG
- Assess and mark pulses on extremities that may be used

Postprocedure

- Assess for nausea, pain
 - Medicate as needed
- Assess insertion sight for bleeding, hematoma
- Assess vitals per orders

- Instruct client to inform staff of chest discomfort or angina
- Provide discharge instructions
 - Activity restrictions
 - Signs of complications (MI, stroke, insertion-site bleeding/infection)
 - Follow up with primary care provider