

## Exam 1 Concept Review

### 1. Endotracheal Tube care

- Provide oral care/suctioning Q2H and PRN- helps to prevent VAP
- Reposition the oral ET tube every 24 hours or according to protocol. Assess for skin break down
- Assess cuff pressure every 8 hours
- Assess respiratory status every 1-2 hours
- Provide adequate nutrition if needed
- Assess GI functioning every 8hrs
- Monitor bowel habits
- Administer enteral or parenteral feedings as ordered

### 2. Incorrect position of ET tube

- Placed the ET tube in the right main bronchus d/t anatomy. Simply pull back ET tube and reassess.
- S/S:
  - Right sided breath sounds heard but left sided breath sounds are basent
  - Left-sided chest wall expansion is absent
  - Possible low SpO2

### 3. Chest tube Care

- Pre-procedure:
  - verify consent
  - reinforce pt teaching, breathing will improve with chest tube in place
- Nurse assisting in insertion:
  - Provide adequate pain control
  - Conscious sedation
  - Supplemental O2
  - Supine position
  - Chest radiography to confirm placement and assess lung expansion
  - Monitor initial drainage
  - Re-expansion pulmonary edema
- Intra-procedure:
  - Ensure that the tubing from the bed to the drainage system is straight to promote drainage via gravity
- Post-procedure:
  - Encourage coughing and deep breathing every 2 hours
  - Drainage system below the pts chest level
  - Routinely monitor tubing for kinks, occlusions, or loose connections
  - Bubbling only in suction chamber

### 4. Pneumothorax

- Presence of air or gas in the pleural space that causes lung to collapse
- Risk factors:

- Blunt chest trauma
- Penetrating chest wound
- Closed/occluded chest tube
- Decreased lung elasticity and thickening alveoli
- COPD
- Expected findings:
  - Anxiety
  - Pleuritic pain
  - Respiratory distress → tachypnea, tachycardia, hypoxia, cyanosis, dyspnea, and accessory muscle use
  - Tracheal deviation to the unaffected side (tension pneumothorax)
  - Reduced or absent breath sounds on the affected side
  - Asymmetrical chest wall movement
  - Hyperresonance on percussion
  - Dull percussion (hemothorax)
  - Subcutaneous emphysema
- Lab/diagnostic procedures:
  - ABGs → hypoxemia (PaO<sub>2</sub> <80)
  - CXR → confirm diagnosis
  - Thoracentesis → surgical perforation of the chest wall and pleural space with a large bore needle
- Nursing care:
  - Administer O<sub>2</sub> therapy
  - Auscultate heart and lung sounds and monitor VS every 4 hours
  - Document ventilator settings hourly if the client is receiving MV
  - Check ABGs, SaO<sub>2</sub>, CBC, CXR results
  - High fowlers
  - Monitor chest tube drainage
  - Administers meds
  - Instruct the pt to deep breathe

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

- 1<sup>st</sup> chamber → drainage collection (fluid from the pleural or mediastinal space)
- 2<sup>nd</sup> → water seal
  - 2cm of sterile fluid acts as a 1-way valve
  - **Water prevents backflow of air into the pt**
  - 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**
  - Bubbling stops= air leak
  - Normal fluctuation of water within the water-seal chamber is called **tidaling**, this up and down movement is concert with respiration reflects intrapleural pressure changes during inspiration and expiration.

- 3<sup>rd</sup> chamber → suction control (can be wet or dry)

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

- Sign of fluid volume overload:
- Changes in pulse, bp, and respiratory rate
- Shortness of breath, fever, chills or rash

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

- PRBC's: 2-4 hours
  - CHF= use full 4 hrs
- 30 mins to give blood after receiving from blood bank
- Platelets: quickly= 30-60mins
  - Treat thrombocytopenia
- FFP (fresh frozen plasma): less than 4 hours

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

- Stay with the pt for the first 15 to 30 mins of the infusion
  - Clock doesn't start until blood reaches the patient

#### 9. **Blood Administration (reactions)**

- **For any type of reaction:**
  - Stop the infusion
  - Assess the pt and their vitals
  - Maintain IV patency with NS
  - Notify the provider
  - Administer meds as ordered
  - Monitor output
  - blood and urine
  - Return blood bag and tubing to blood bank
- Bacterial contamination
  - Blood cultures
  - Tachycardia
  - Hypotension
  - Fever
  - Chills
  - V/D
  - shock
- Febrile reaction
  - Fever (if pt gets frequent blood transfusions)
  - Anemia, cancer (develops antibodies)
- Allergic reaction
  - Mild:
    - Urticaria= hives=allergic
    - Pruritus=itchy=allergic
  - Severe:
    - Anxiety, SOB

- Hemolytic Reaction-preventable
  - Most dangerous-potentially life threatening
  - Low back pain, fever, chills, nausea, chest tightness, dyspnea, and anxiety-incompatibility
- Circulatory overload
  - Urine may be red
  - Chest pain
  - ↑ HR
  - Decreased BP
  - Fever
  - Chills

TACO: common in pts with CHF, Renal dysfunction, advanced age and acute MI

S/s: cough, dyspnea, DJV, pulmonary congestion, HTN, tachy, bounding pulses, restlessness

Elevate HOB, monitor resp. distress, provide O2, administer diuretics

#### **10. Blood Administration (fluids to infuse with)**

- Normal saline (0.9% sodium chloride)
- Y-tubing
- Filter-to prevent reaction
- 18-20 gauge IV

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

- Consent must be signed by pt-
- Nurse must confirm with 2 RN at the pts bedside:
  - Pts name (pt should confirm)
  - Pts DOB
  - Pts MRN
  - Pts blood bank ID
  - Blood product (RBCs, FFP, platelets)
  - Expiration date
  - Check the blood product for cloudiness, gas bubbles, or other abnormalities
- Nursing care:
  - When complete check temp, pulse, respiration, O2, bp for signs of transfusion reaction
  - Document the amount of blood product that was infused
  - Blood product, normal saline bag and blood tubing in biohazard bag
  - New y-tubing and bag of normal saline should be used for each unit of blood product being given

#### **12. Pulmonary embolism nursing care and medications**

- Administer O2 therapy to relieve hypoxemia and dyspnea.
  - High fowlers

- IV assess
- Administer meds as ordered
- Assess resp status every 30 mins
- 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 cardia monitor
  - Examine neck for distended neck veins
  - Inspect the thorax for petechiae
- Provide emotional support and comfort
- 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
  - Direct factor Xa inhibitor- Rivaroxaban (Xarelto) binds directly with active center of factor Xa, which inhibits the production of thrombin
  - Thrombolytic therapy- Alteplase, reteplase and Tenecteplase are used to dissolve blood clots and restore pulmonary blood flow

### **13. Acute respiratory failure manifestations**

- PaO<sub>2</sub> less than 60mm Hg (hypoxemia) and PaCO<sub>2</sub> >50 mm Hg (hypercapnia with an arterial pH <7.35)
- Failure of the lungs to provide adequate oxygenation or ventilation for the blood
- Chronic respiratory failure pts can still get acute respiratory failure
- COPD
- In acute respiratory failure, the ventilation or perfusion mechanisms in the lung are impaired (PNU, COPD, PE, ARDs)

### **14. Priority care for complications (ABCs)**

- Airway
- Breathing
- circulation

### **15. Identify dysrhythmias (see slides and practice sheets)**

- What is the rhythm?
  - Reg or irregular
- What is the rate?
  - normal, fast or slow
- Are there P waves?
  - P wave before every QRS
- What is the PR interval

- Normal or varied range
- What is the QRS complex?
  - Equal, similar, WNL
- PR: 0.12-0.20 (3-5 small boxes)
- QRS: <0.12 (less than 3 boxes)
- QT: 0.32-0.42
- Small box= 0.04
- Big box: 0.20
- QRS narrow- atrium
- QRS wide- ventricular

## 16. **Defibrillation & Cardioversion**

- Used to treat tachydysrhythmias by delivering an electrical current that depolarizes a critical mass of myocardial cells
- When the cell repolarizes, the SA node is usually able to recapture its role as the heart's pacemaker
- Defibrillation
  - Ventricular fibrillation
  - Ventricular tachycardia without a pulse
  - Used in emergency situations as treatment of choice for ventricular fibrillation and pulseless VT
  - Not used in conscious people or who have a pulse
  - Sooner a defibrillator is utilized in VF or pulseless VT, the better the survival rate
  - Delivery of the current is immediate and unsynchronized
- Electrical Cardioversion
  - Atrial dysrhythmias
  - Supraventricular tachycardia
  - Ventricular tachycardia with a pulse
  - Involves the delivery of a "timed" electrical current to terminate a tachydysrhythmia
  - Synchronized with the ECG on a cardiac monitor
  - Electrical impulse discharges during ventricular depolarization (QRS complex)
  - The synchronization prevents the discharge from occurring during the vulnerable period of repolarization (T wave), which could result in VF or VT
- Preprocedural Nursing Actions
  - Explain the procedure to the client, and obtain consent
  - Administer oxygen
  - Document preprocedure rhythm
  - Have emergency equipment available
  - Digoxin is held for 48 hr prior to elective cardioversion

- Intraoperative Nursing Actions
  - Administer sedation as prescribed
  - Ensure proper placement of leads and machine settings (synchronized), including joules to be delivered
  - Monitor client in a lead that provides an upright QRS complex
  - All staff must stand clear of the client, equipment connected to the client, and the bed when a shock is delivered
  - CPR/defibrillate/give antidysrhythmics if necessary
- Post procedure Nursing Actions
  - Monitor VS, assess airway patency, and obtain an ECG
  - Provide client/family with reassurance and emotional support
  - Document the following
    - Preprocedure rhythm
    - Number of defibrillation or cardioversion attempts, energy settings, time, and response
    - Client's condition and state of consciousness following procedure
    - Skin condition under the electrodes
- Complications
  - Embolism
    - Can dislodge blood clots causing a PE, CVA, or MI
  - Decreased cardiac output and heart failure
    - Can damage heart tissue and impair heart function

### **17. Reducing CAD**

- Change all modifiable risks
- Cigarette smoking
- High blood cholesterol
- Hypertension
- Physical inactivity
- Obesity and overweight
- Stress
- Excessive alcohol intake (3oz or less per day)

### **18. Ventilator care/checklist**

- Maintain a patent airway
  - Use 2 staff members for repositioning and to re-secure the tube, REPOSITION Q2H and PRN
  - Perform PRM
  - Apply protective barriers (soft wrist restraints) according to hospital protocol to prevent self-extubation
  - Only if necessary!
  - Suction oral and tracheal secretions to maintain tube patency
  - Support ventilator tubing to prevent mucosal erosion and displacement

- Have a resuscitation bag with a face mask available at the bedside at all times in case of ventilator malfunction or accidental extubation.
- Assess respiratory status every 1-2 hr:
  - breath sounds equal bilaterally, presence of reduced or absent breath sounds, respiratory effort, or spontaneous breaths
- Monitor VS, ABGs, CXRs, LOC
- Monitor and document ventilator settings hourly
  - Rate, FiO<sub>2</sub>, and tidal volume
  - Mode of ventilation
  - Use of adjuncts (PEEP, CPAP)
  - Plateau or peak inspiratory pressure (PIP)
  - Alarm settings

## 19. **Myocardial infarction labs**

- Cardiac Biomarkers
  - Troponin
    - Three isomers of troponin: C, I, & T
    - Increase of troponin in the serum can be detected w/in a few hours during an acute MI
    - Remains elevated up to 2 weeks- used to detect recent myocardial damage
    - Note these can be elevated w/ sepsis, heart failure, and respiratory failure
- Creatine kinase (CK)
  - Three CK isoenzymes: CK-MM (Skeletal muscle), CK-MB (heart muscle) and CK-BB (brain tissue)
  - CK-MB increases when there is damage to cardiac cells
  - Indicator of acute MI
  - Increase within a few hours and peaks w/in 24 hrs of an infarct
- Myoglobin
  - Found in cardiac and skeletal muscle
  - Increases 1-3 hours and peaks within 12 hours after onset of symptoms
  - Not very specific in indicating acute cardiac event, however, if they are negative and acute MI can be ruled out.

## 20. **Myocardial infarction manifestations**

- Cardiovascular
  - Chest pain or discomfort not relieved by rest or nitroglycerin; palpitations. Heart sounds may include S<sub>3</sub>, S<sub>4</sub>, and new onset of a murmur.
  - Increased jugular venous distention may be seen if the myocardial infarction (MI) has caused heart failure.
  - Blood pressure may be elevated because of sympathetic stimulation or decreased because of decreased contractility, impending cardiogenic shock, or medications.
  - Irregular pulse may indicate atrial fibrillation.
  - In addition to ST-segment and T-wave changes, the electrocardiogram may show tachycardia, bradycardia, or other dysrhythmias.

- Respiratory
  - Shortness of breath, dyspnea, tachypnea, and crackles if MI has caused pulmonary congestion. Pulmonary edema may be present.
- Gastrointestinal
  - Nausea, indigestion, and vomiting
- Genitourinary
  - Decreased urinary output may indicate cardiogenic shock.
- Skin
  - Cool, clammy, diaphoretic, and pale appearance due to sympathetic stimulation may indicate cardiogenic shock.
- Neurologic
  - 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.
- Psychological
  - Fear with feeling of impending doom, or denial that anything is wrong.

#### 21. **Alteplase nursing tasks**

- Should be given in the first 30 mins of pts arrival
- Loading dose is given for rapid therapeutic effect
- Have more than one IV site
- Monitor for reperfusion, dysrhythmias, and hypotension
- Draw blood for labs when starting the IV line

#### 22. **Sedative and paralytic medications**

- Analgesics: morphine and fentanyl
  - Pain and respiratory efforts
- Sedatives: propofol, diazepam, lorazepam, midazolam
  - Sedate (calm state)
- Neuromuscular blocking agents: pancuronium, atracurium, vecuronium are infrequently used in the clinical setting d/t long half-life.
  - Paralyze muscles

#### 23. **Atelectasis manifestations**

- ↑ dyspnea
- Diminished breath sounds in lower lobes
- Cough and sputum production
- If large amount of lung tissue → marked respiratory distress may be observed
- Tachycardia
- Tachypnea
- Pleural pain
- Central cyanosis (a bluish skin hue that is a late sign of hypoxemia)
- Difficulty breathing in the supine position and are anxious
- Goal treatment: improve ventilation and remove secretions

#### 24. **Flail chest manifestations**

- At least 2 neighboring ribs, usually on one side of the chest, sustain multiple fractures causing instability of the chest wall and paradoxical chest wall movement
- Unequal chest expansion (pts chest moves inward during inspiration and bulges out during expiration= paradoxical chest wall movement)
- Tachycardia
- Hypotension
- Dyspnea
- Cyanosis
- Anxiety
- Chest pain

## 25. **Chest tube indications**

- Pneumothorax
- Pleural collection
- Pleurodesis
- Thoracotomy
- Post op

## 26. **Intubation respiratory monitoring**

- Nursing Actions:
- Have ambubag hooked up to oxygen and ready to go
  - Flow meter 15 liters
- Set up suction and Yankauer
- Administer sedation and neuromuscular blocking agents
- Ensure the intubation attempts does not last longer than 30 seconds and then re-oxygenate before another attempt to intubate.
- Monitor VS and check tube placement.
- Auscultate for breath sounds bilaterally after intubation. Observe for symmetric chest movement.
- Stabilize the endotracheal tube with a tube holding device or secure with tape.
- 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**

- Always carry a device id card
- Take pulse daily at the same time
- 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

- Inform airport security(should not affect the pacemaker), dentists and doctors

### 29. **Modifiable and nonmodifiable risk factors for CAD**

Non-modifiable Risk Factors	Modifiable Risk Factors
<ul style="list-style-type: none"> <li>• Age</li> <li>• Heredity</li> <li>• Race</li> <li>• Gender</li> <li>• Women at risk at menopause</li> <li>• Men</li> <li>• African, Mexican American, Asian</li> </ul>	<ul style="list-style-type: none"> <li>• Cigarette smoking</li> <li>• High blood cholesterol</li> <li>• Hypertension</li> <li>• Physical inactivity</li> <li>• Obesity and overweight</li> <li>• Stress</li> <li>• Excessive alcohol intake (3oz or less per day)</li> </ul>

### 30. **Pericarditis treatment**

- **Not indomethacin bc it decreases coronary blood flow**
- Medical Management:
  - NSAIDs
    - Prescribed for pain relief during acute phase
    - Helps reabsorb fluid in patients w/ rheumatic pericarditis
  - Colchicine
    - Severe pericarditis and does not respond w/ NSAIDs
    - Can also be utilized in the acute stage in place of NSAIDs
  - Corticosteroids
    - Severe Pericarditis or if not responding to NSAIDs
    - If contraindication to NSAIDS or for specific diseases (e.g. pregnancy)

### 31. **Hypertensive crisis treatment**

- In the adult client, HTN occurs when:
- systolic BP is greater than or equal to 140 mm Hg OR diastolic BP is greater than or equal to 90 mm Hg FOR TWO OR MORE ASSESSMENTS OF BP

Drug	Mechanism	Onset/Half-life	Starting Dose	Conversion to Oral	Precautions
Nitroprusside (Nipride)	Arterial vasodilator	Immediate 3 min	0.3mcg/kg/min Titrate to effect	No oral equivalent	Thiocyanate toxicity with prolonged use (N/V/twitch) Renal failure
Nitroglycerin	Venous	Immediate	10/mcg/min	Long-acting	HA

	dilator	5-10 min		nitrates (weak)	Tachyphylaxis
Nicardipine (Cardene)	Calcium channel blocker	5 min 6-8 hr	5 mg/hr	CCB (overlap)	Long half-life Heart failure
Labetalol	Alpha-1, beta-blocker	5-10 min 5 hr	20mg bolus, up to 2mg/hr	Yes	Heart block Bradycardia Heart failure
Hydralazine	Direct vasodilator	10 min 4 hr	10mg IV every 4-6 hr	Yes	Reflex tachycardia
Captopril	ACE inhibitor	30-60 min 6 hrs	3.125mg po every 6 hrs	Yes	Renal failure Bilateral renal artery stenosis

### 32. **AAA manifestations**

- Constant gnawing feeling in abdomen
- Flank or back pain – pressure on the nerves cause this 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)
- Indications of rupturing abdominal aortic aneurysm include constant, intense back pain: falling bp; and decreasing hematocrit

### 33. **Bronchoscopy (diagnostic/nursing care)**

- Permits visualization of larynx, trachea, and bronchi through either a flexible fiberoptic or rigid bronchoscope
- Can be performed as outpatient, in a surgical suite under general anesthesia, or at bedside under local anesthesia
- Can be performed on clients who are receiving mechanical ventilation by inserting the scope through the ET tube
- Pre-Procedure
  - Informed consent
  - Remove dentures, if applicable
  - NPO for 4-8 hours; Assess gag reflex
- Intra-Procedure
  - Monitor VS, respiratory pattern, and oxygenation
- Post-Procedure
  - Continue to monitor respirations, BP, pulse ox, HR, and LOC (why LOC)?
  - Assess gag reflex

- Client not discharged until adequate cough reflex and respiratory effort are present
- Expected findings
  - Sore throat, cough, small amounts of blood-tinged sputum, hoarse voice

#### 34. **Cardiac Catheterization nursing care**

- Take VS every 15 min until stable, then every hour. Monitor for an increase in BP.
- Assess the onset, quality, duration, and severity of pain.
- Assess temperature, circulation, and ROM of extremities.
- Continuously monitor cardiac rhythm.
- Monitor hemodynamic findings.
- Monitor ABGs, SaO<sub>2</sub>, electrolytes, and CBC findings.
- Monitor hourly urinary output (>30mL/hr indicate adequate renal perfusion).
- Administer oxygen as prescribed.
- Obtain and maintain IV access.
- Administer medications as prescribed