

Pharmacology Respiratory Drugs - Presentation Transcript

Drugs Affecting the Respiratory System

- Antihistamines- are used to block the release or action of histamine- a chemical mediator of inflammation that increases secretions and constricts the air passageway
- Antitussives- agents utilized to block the cough reflex
- Drugs for COPD- which includes the Bronchodilators, inhaled steroids, Leukotriene receptor blockers and other anti-asthma drugs
- Decongestants- are utilized to decrease the blood flow to the upper respiratory tract and decrease the excessive production of secretions
- Expectorants- are used to decrease the viscosity of sputum to effectively increase productive cough to clear the airways

1. The ANTIHISTAMINES

- Also called H1 blockers or H1 antagonists, these are agents designed to relieve respiratory symptoms and to treat allergic conditions.
- The anti-histamines are group according to the “generation”.
 - The FIRST GENERATION agents have greater anticholinergic effects and can cause more sedation and drowsiness! These agents cause drowsiness
 - The SECOND GENERATION agents have fewer anticholinergic effects that is why they cause less sedation.
- The FIRST GENERATION ANTIHISTAMINES
 1. Azatadine 11. Dimenhydrinate
 2. Azelastine 12. Diphenhydramine
 3. Brompheniramine 13. Hydroxyzine
 4. Buclizine 14. Meclizine
 5. Cetirizine 15. Methdilazine
 6. Chlorpheniramine 16. Promethazine
 7. Clemastine 17. Tripelenamine
 8. Cyclizine 18. Carbinoxamine
 9. Cyproheptadine 19. Trimeprazine
 10. Dexchlorpheniramine 20 Triprolidine
- The SECOND GENERATION ANTIHISTAMINES
 - Fexofenadine
 - Loratidine
 - Azelastine
 - Cetirizine
- The Mechanism of Action
 - These agents SELECTIVELY block the effects of histamine at the HISTAMINE-1 receptor sites in the target tissue by competing with histamine for receptor, decreasing the cellular responses
 - They also have anticholinergic and antipruritic properties.

- Clinical Indications for Use in respiratory system
 - rhinitis
 - allergic sinusitis
 - uncomplicated urticaria and angioedema.
- Contraindications and Precautions for the use of the antihistamines
 - Pregnancy and lactation are contraindications, and they agents are used cautiously in patient with impaired liver and kidney functions.
 - Fatal arrhythmias have been reported if some of these agents are given to patients with a condition called prolonged QT intervals.
 - Pharmacodynamics: Drug effects on the body
 - CNS- drowsiness and sedation, most pronounced if first generation agents are used
 - Fatigue, dizziness and disturbed coordination.
 - Anticholinergic effects= drying of the respiratory mucus membrane, GI upset and nausea, arrhythmias, dysuria, urinary retention
 - Skin dryness
- Implementation
 - The nurse should administer the drug on an EMPTY stomach, or 1 hour before or 2 hours after meals to increase the absorption.
 - Give with food if GI upset occurs
 - Offer sugarless lozenges or hard candy to counteract dryness of the mouth. Give frequent oral care
 - Provide safety measures if drowsiness may occur. Side rails up, assist in ambulation, and advise not to drive or operate dangerous machineries or delicate tasks.
- Nursing implementation
 - Increase humidity in the room by utilizing nebulizers and provide adequate hydration
 - Allow the patient to void first before administering the drug.
 - Caution the patient against use of OTC drugs, alcoholic beverages and sedatives because they may cause extreme sedation.
- Evaluation
 - Monitor patient's response to the drug, the adverse effects and the effectiveness of comfort measures employed
 - Decreased allergic symptoms
 - Decreased occurrence of rhinitis
- 2. Anti tussives
 - These are agents suppress the cough reflex on the MEDULLA oblongata to suppress cough of many respiratory conditions.
 - The anti-tussives are the following:
 - Benzonatate= narcotic anti-tussive
 - Butamirate citrate= non-narcotic
 - Codeine= narcotic
 - Dextromethorphan= non-narcotic

- Hydrocodone= narcotic
- Pharmacodynamics: Therapeutic use of the antitussives
 - The traditional antitussives act directly on the MEDULLARY cough of the brain to depress the cough reflex, but it does NOT suppress respiration.
 - Dextromethorphan DOES not depress respiration.
- Clinical Use of the antitussive:
 - utilized for the treatment of cough
 - Contraindications and Indications for use of antitussives
 - These agents are NOT given to patients who have undergone thoracic and abdominal surgeries because they need to cough to maintain airway patency. Precautions are instituted when giving to patients with asthma, emphysema or COPD because an accumulation of secretions may occur.
- Pharmacodynamics: Drug Effects
 - Respiratory- dryness of mucosal membranes, increased viscosity of secretions
 - CNS- drowsiness, dizziness and sedation
 - GIT- nausea, constipation and dry mouth, GIT upset
 - Nursing Process and the antitussives
- Implementation
 - Emphasize that the drug should be taken only on a specified time frame as ordered
 - Provide other measures to relieve cough like provide humidified oxygen, cool temperatures, fluids and use of lozenges
 - Provide health teaching as to drug name, dosage and measures to handle side-effects
 - Caution that alcohol, narcotics, sedatives-hypnotics can cause CNS depression when used with antitussives.
- 3. Mucolytics
 - These are agents that breakdown mucous in order to help respiratory patients in coughing up thick, tenacious secretions.
 - The following are the mucolytics:
 - Acetylcysteine
 - Dornase alfa
- Pharmacodynamics: Mechanism of Action
 - These agents work in the following ways: acetylcysteine affects the mucoproteins in the respiratory secretions by splitting apart disulfide bonds that are responsible for holding the mucus materials together.
 - Cautions should be used in cases of acute bronchospasms, peptic ulcer and esophageal varices.
 - The increased secretions can aggravate the problem
 - Indications for use
 - COPD
 - Cystic fibrosis
 - Pneumonia
 - Tuberculosis

- Atelectasis
- Pharmacodynamics: drug effects
 - GIT= GI upset, stomatitis, irritation of the respiratory tract
 - others: Bronchospasm and rash
- Implementation
 - Instruct the patient to avoid combining with other drugs in the nebulizer to avoid formation of precipitates
 - The drug can be administered via nebulizers with the drug diluted with sterile water.
 - Remind the patient that the drug may irritate the respiratory mucosa
 - Provide through patient teaching including drug name and prescribed dosage
 - Have suction machine available

4. Drugs for COPD

- The agents used for COPD may be one of the following:
 - Bronchodilators such as adrenergics and the xanthines used to assist in opening the narrowed airways
 - Steroids are used to decrease inflammation
 - Leukotriene modifiers reduce inflammation in the lung tissue
 - Cromolyn sodium and nedocromil act as anti-inflammatory agents by suppressing the release of HISTAMINE from the mast cells
 - Expectorants are used to assist in loosening secretions from the airways
 - Antibiotics are prescribed to prevent serious complications from bacterial infections.

5. The BRONCHODILATORS

- These are Bronchodilators medication used to facilitate respiration by dilating the airways.
- They are helpful in symptomatic relief or prevention of bronchial asthma and bronchospasm associated with COPD.
- The bronchodilators are:
 - Xanthines
 - Sympathomimetics (beta-agonists)
 - Anticholinergics
 - Inhaled steroids

6. The XANTHINES

- Xanthines, including caffeine and theophylline, come from a variety of naturally occurring sources. These drugs were once main choice for treatment of asthma and bronchospasm.
- The Xanthines include:
 - Aminophylline
 - Caffeine
 - Dyphylline
 - Oxytriphylline
 - Pentoxifylline

- Theophylline

- Pharmacodynamics: Drug action

- The xanthines have a direct effect on the smooth – muscles of the respiratory tract, both those on the bronchi and the blood vessels.
- The xanthines stimulate the CNS such that respiration is stimulated, coronary arteries dilate and pulmonary arteries dilate, with additional effect of diuresis.

- Clinical Use of the xanthines

- Xanthines are indicated for the symptomatic relief or prevention of bronchial asthma and reversal of bronchospasm associated with COPD.
- Unlabeled uses include stimulation of respiration in Cheyne – Stokes respiration and
- the treatment of apnea and bradycardia in premature infants.

- Pharmacodynamics: drug effects

- Adverse effects associated with xanthines are related to theophylline levels in the blood.
- Therapeutic theophylline levels are from 10 – 20 ug/ml.
- This should be monitored frequently to avoid severe side effects.
- CIMETIDINE can cause increased level
- GI upset, anorexia, vomiting, gastric pain, nausea, irritability, and tachycardia to seizures, brain damage , and even death.
- Theophylline toxicity occurs when concentration is above 20 ug/mL.
- Rapid IV administration of aminophylline can cause dizziness, flushing, severe HYPOTENSION, bradycardia and palpitations .

- Implementation

- Monitor vital signs and note for the BP and HR because there may be Hypotension and tachycardia .
- Administer oral drug with food or milk to relieve GI irritation, if GI upset is a problem .
- Monitor patient response to the drug= relief of respiratory difficulty and improved airflow, to determine the effectiveness of the drug dosage and to adjust dosage as needed.
- Provide comfort measures, including rest periods, quiet environment, dietary control of caffeine, and headache therapy as needed, to help the patient cope with the effects of drug therapy.
- Provide adequate hydration
- Don't crush enteric coated and sustained release tablets
- Encourage to stop smoking
- Provide periodic follow-up including blood tests to monitor serum theophylline levels.

- Evaluation

- Monitor patient response to the drug (improved air flow, ease of respirations).
- Monitor for adverse effects (CNS effects, cardiac arrhythmias, GI upset, local irritation)

7. The SYMPATHOMIMETICS

- These are drugs that mimic the effects of the sympathetic nervous system.
- One of the actions of the sympathetic nervous system is dilation of the bronchi and increased rate and depth of respiration.
- This is the desired effect when selecting a sympathomimetic as a bronchodilator.
- Sympathomimetics that are used as bronchodilators include the following:
 - Albuterol
 - Bitolterol
 - Isoproterenol
 - Metaproterenol
 - Salbutamol
 - Terbutaline
 - Ephedrine
- Epinephrine= the drug of choice for the treatment of acute bronchospasm, including that which is caused by anaphylaxis
- Pharmacodynamics: drug action
 - Most of the sympathomimetics used as bronchodilators are beta2-selective adrenergic agonists.
 - That means that at therapeutic levels, their actions are specific to the beta2 receptors found in the bronchi.
 - They act to increase the concentration of cellular cAMP leading to dilation of the bronchioles.
- Clinical Use
 - Asthma and other Allergic conditions
 - bronchospasm in reversible obstructive airway disease, such as acute and chronic asthma and chronic bronchitis.
 - They have also been effective in preventing exercise-induced bronchospasm.
 - Used also in Preterm labor
- CONTRAINDICATIONS/CAUTIONS
 - These drugs are contraindicated or should be used with caution, depending on the severity of the underlying condition, in conditions that would be aggravated by the sympathetic stimulation.
 - Such conditions include cardiac disease, vascular disease, arrhythmias, diabetes, hyperthyroidism, pregnancy, and lactation.
- Pharmacodynamics: drug EFFECTS
 - Adverse effects of these drugs, which can be attributed to sympathomimetic stimulation include
 - CNS stimulation= tremors , headache, nervousness
 - GI- GI upset
 - Cardio= cardiac arrhythmias, hypertension, tachycardia and palpitations, vasoconstriction
 - Respi= bronchospasm, sweating, pallor, and flushing.
 - Hyperglycemia, Urinary retention

□ Implementation

- Assure the patient that the drug of choice will vary with each individual. These sympathomimetics are slightly different chemicals and are prepared in a variety of delivery systems.
- Advise patients to use the minimal amount needed for the shortest period of time necessary, to prevent adverse effects and accumulation of drug levels.

□ Implementation

- Instruct the patient on how to use the inhalers. Teach patients who use one of these drugs for exercise-induced asthma to use it 30 to 60 minutes before exercising to ensure peak therapeutic effects when they are needed.
- Provide safety measures as needed if CNS effects become a problem, to prevent patient injury.
- Provide small, frequent meals and nutritional consultation if GI effects interfere with eating to ensure, proper nutrition.
- Carefully teach the patient about the proper use of the prescribed delivery system.
- Review that procedure periodically as improper use may result in ineffective therapy.

□ Evaluation

- Monitor patient response to the drug (improved breathing).
- Monitor for adverse effects (CNS effects, increased pulse and blood pressure, GI upset)

8. INHALED STEROIDS

- Inhaled steroids have been found to be a very effective treatment for bronchospasm.
- Agents include
 - Beclomethasone = given via MDI inhaler
 - Flunisolide
 - Triamcinolone
 - Dexamethasone= is given IV and orally, not inhaled
 - Prednisone and prednisolone

□ THERAPEUTIC ACTIONS AND INDICATIONS

- Inhaled steroids are used to decrease the inflammatory response in the airway.
- In an airway swollen and narrowed by inflammation and swelling, this action will increase airflow and facilitate respiration.
- Inhaling the steroid tends to decrease the numerous systemic effects that are associated with steroid use.
- When administered into the lungs by inhalation, steroids decrease the effectiveness of the inflammatory cells.
- This has two effects:
 - decreased swelling associated with inflammation
 - and promotion of beta adrenergic receptor activity= which may promote smooth muscle relaxation and inhibit broncho-constriction.

□ CONTRAINDICATIONS/CAUTIONS

- Inhaled corticosteroids are not for emergency use and not for use during an acute asthma attack or status of asthmaticus .
- They should not be used during pregnancy or lactation.

□ ADVERSE EFFECTS

- Adverse effects are limited because of the route of administration
- Respiratory= Sore throat, hoarseness, coughing, dry mouth, and pharyngeal and laryngeal fungal infections are the most common side effects encountered .
- If a patient does not administer the drug appropriately or develops lesions that allow absorption of the drug, the systemic side effects associated with steroids may occur.

□ Implementation

- Do not administer the drug to treat an acute asthma attack or status asthmaticus, as these drugs are not intended for treatment of acute attack.
- Taper systemic steroids carefully during the transfer to inhaled steroids; deaths have occurred from renal insufficiency with sudden withdrawal.
- Have the patient use decongestant drops before using the inhaled steroid to facilitate penetration of the drug if nasal congestion is a problem.
- Have the patient rinse the mouth after using the inhaler, as this will help to decrease systemic absorption and decrease GI upset and nausea
- Monitor the patient for any sign of respiratory infection; continued use of steroids during an acute infection can lead to serious complications related to the depression of the inflammatory and immune responses.

□ Evaluation

- Monitor patient response to the drug (improved breathing).
- Monitor for adverse effects (nasal irritation, fever, GI upset)

9. Cromolyn

- Administered by INHALATION is a drug that is frequently used in the treatment of asthma .
- It does not have bronchodilating or anticholinergic effects and does not fit into any other pharmacological class.

□ THERAPEUTIC ACTIONS AND INDICATIONS

- Cromolyn is a mast cell stabilizer.
- It works at the cellular level to inhibit the release of histamine (released from mast cells in response to inflammation or irritation) and inhibits the release of SRSA.
- It is inhaled from a capsule and may not reach its peak effect for 1 week.
- It is recommended for the treatment of chronic bronchial asthma, exercise-induced asthma, and allergic rhinitis.

□ CONTRAINDICATION / CAUTIONS

- Cromolyn cannot be used during an acute attack, and patients need to be instructed in this precaution.
- Allergy to seafoods

- It is not recommended for pregnant or nursing women or children under the age of 6 years.
- ADVERSE EFFECTS
 - Few adverse effects have been reported with the use of cromolyn
 - swollen eyes, headache, dry mucosa, and nausea.
 - Careful patient management (avoiding a dry or smoky environment, analgesics, use of proper inhalation technique, using a humidifier, and pushing fluids as appropriate) can help to make drug - related discomfort tolerable:
- Assessment
 - Patient HISTORY= the nurse elicits the following: allergy to cromolyn; impaired renal or hepatic function, which could interfere with the metabolism or excretion of the drug leading to a need for dosage adjustment; and pregnancy or lactation, which require cautious administration.
 - PHYSICAL ASSESSMENT= physical assessment should be done to establish baseline data for assessing the effectiveness of the drug and the occurrence of any adverse effects associated with drug therapy
 - Laboratory Tests= liver and renal function tests (to assess for potential problems with drug metabolism or excretion).
- Nursing Diagnoses
 - Pain related to local effects, headache, and GI effects.
 - High risk for injury related to CNS effects.
 - Knowledge deficit regarding drug therapy.
- Implementation
 - Review administration procedures with the patient periodically; proper use of the delivery device is important in maintaining the effectiveness of this drug.
 - Caution the patient not to discontinue use abruptly; cromolyn should be tapered slowly if discontinuation is necessary to prevent rebound adverse effects.
 - Caution the patient to continue taking this drug, even in symptom-free periods, to ensure therapeutic levels of the drug.
 - Administer oral drug one-half hour before meals and at bedtime, which will promote continual drug levels and relief of asthma.
 - Advise the patient not to wear soft contact lenses; if cromolyn eye drops are used, lenses can be stained.
 - Provide thorough patient teaching, including the drug name and prescribed dosage, measures to help avoid adverse effects, warning signs that may indicate problems, and the need for periodic monitoring and evaluation to enhance patient knowledge about drug therapy and to promote compliance.
- Evaluation
 - Monitor patient response to the drug (improved breathing).
 - Monitor for adverse effects (drowsiness, headache, GI upset, local irritation).
 - Evaluate the effectiveness of the teaching plan (patient can name drug, dosage, adverse effects to watch for, specific measures to avoid adverse effects).

Common Respiratory Diseases - Presentation Transcript

1. Chronic Obstructive Pulmonary Disease

- Includes diseases that cause airflow obstruction
- Chronic Bronchitis
- Emphysema
- Risk Factors include environmental exposures and host factors
- Primary symptoms are cough, sputum production and dyspnea

2. EMPHYSEMA

Definition

- is a chronic obstructive pulmonary disease .
- It is often caused by exposure to toxic chemicals , including long-term exposure to tobacco smoke .

Smoking and pollution can lead to emphysema and lung cancer .

- Infectious
- Allergens
- Smoking
- Hereditary
- Air pollution
- agents

Predisposing Factors

- Dyspnea with insidious onset progressing to
- Chronic cough, sputum production
- severe dyspnea with slight exertion On inspection, hyper- inflated “barrel chest”
- wheezing, fatigue, and tachypnea due to air trapping, muscle wasting, and pursed- lip breathing (pink- puffers) On auscultation, diminished breath sounds with crackles, wheezes, rhonchi, and
- Hyperresonance with percussion and a decrease in fremitus
- prolonged expiration Hypoxemia and hypercarpnia,
- Anorexia, weight loss, weakness, and inactivity
- Inflammatory reactions and infections from
- morning headaches in advance stages pooled secretions

NURSING INTERVENTIONS

- Encourage the client to be in a smoking cessation program
- Encourage the client to do pursed- lip breathing which can help to slow and control the rate and depth of expiration, prevents lung collapse and airways
- Instruct the client about having a proper activity pacing
- Instruct client to have inspiratory muscle training
- Encourage lifestyle modifications
- Administer oxygen therapy at low volumes as prescribed

Nursing Management

- Patient education
- Breathing exercises
- Inspiratory muscle training

- Activity pacing
- Self-care activities
- Physical conditioning
- Oxygen and nutritional therapy
- Coping measures

MEDICATIONS

- Bronchodilators;
- Albuterol (Ventolin), levalbuterol (Xopenax)
- Corticosteroids;
- Budesonide (Pulmicort), beclomethasone (Beclovent)

Surgical Management

- Bullectomy
- Lung Volume Reduction Surgery
- Lung Transplantation

3. CHRONIC BRONCHITIS

DEFINITION

- A disease of the airways
- The presence of cough and sputum production for at least three months in each of two consecutive years.
- Chronic exposure to smoke or other pollutant irritates the airways, resulting in hypersecretion of mucus and inflammation, thickened bronchial walls and narrow bronchial lumen.

PREDISPOSING FACTORS

- Hereditary
- Exposure to irritants
- History of cigarette smoking
- Frequent respiratory infections

Clinical Manifestation

- Chronic, productive cough in winter months (earliest sign)
- - cough is exacerbated by cold weather, dampness, and pulmonary irritants
- Shortness of breath

Nursing Interventions

- Monitor dyspnea and hypoxia.
- Encourage high fluid intake to liquefy secretions.
- Instruct client in directed or controlled coughing.
- Eliminate pulmonary irritants.
- Instruct client in effective breathing techniques.
- Recommend the client to adopt a lifestyle of moderate activity, ideally in a climate with minimal shifts in temperature and humidity.
- Encourage client to avoid emotional disturbances and stressful situations.
- Instruct client and family about signs and symptoms of infection or other complications and to report changes in physical and cognitive status.

DRUGS

- Antibiotics
- amoxicillin (Amoxil) doxycycline (Vibramycin)
- Bronchodilators ephedrine (Primatene) salmeterol (Serevent)
- salbutamol (Ventolin)
- Corticosteroids prednisone (Deltasone) ipratropium (Atrovent)

4. Asthma

Definition

- Asthma is a disease in which inflammation of the airways causes airflow into and out of the lungs to be restricted. When an asthma attack occurs, the muscles of the bronchial tree become tight and the lining of the air passages swells, reducing airflow and producing the characteristic wheezing sound. Mucus production is increased.
- The word asthma is derived from the Greek aazein, meaning "sharp breath".

Predisposing factors

- Allergens – it is one of the predisposing factors because asthma attacks are mostly caused by allergens. It is the most common predisposing factor.
- Too much activity (play) – too much activity may lead to shortness of breath that causes compensation that results to hyperventilation or increased RR.
- Air pollution – it can be a predisposing factor because pollution in the air may lead to irritation of the airway.

Clinical Manifestations

- shortness of breath (dyspnea)
- Wheezing
- cough
- rapid breathing (tachypnea)
- prolonged expiration
- a rapid heart rate (tachycardia)
- rhonchous lung sounds (audible through a stethoscope)
- over-inflation of the chest.
- in-drawing of tissues between the ribs and above the sternum and clavicles
- Presence of paradoxical pulse

Nursing Interventions

- Put patient in a comfortable position (semi-fowler's to promote lung expansion)
- Encourage the client's mother to lessen the client's activity.
- Teach about the importance of deep breathing exercises.
- Provide comfort measures.
- Health Teaching on ways to avoid asthma attack like preventing excessive exposure to allergens
- Provide good nutrition for the client for the immune system
- If possible, encourage the client to wear a mask.

DRUGS

- Albuterol Sulfate
- Ventolin
- Salbutamol

5. Pulmonary Embolism

DEFINITION

- Pulmonary embolism refers to the obstruction of the base or one or more branches of the pulmonary arteries by a thrombus (or thrombus) that originates somewhere in the venous system or in the right side of the heart. Gas exchange is impaired in the lung mass supplied by the obstructed vessel. Massive pulmonary embolism is life-threatening and can cause death within the first 1 to 2 hours after the embolic event.
- It is a common disorder associated with trauma, surgery (orthopedic, major abdominal, pelvic, gynecologic), pregnancy, oral contraceptive use, congestive heart failure, age older than 50 years, hypercoagulable states, and prolonged immobility. Most thrombi originate in the deep veins of the legs.

PREDISPOSING FACTORS

- Inactivity
- Prolonged bed rest
- Certain surgical procedures
- Some medical conditions
- Being overweight
- Pacemakers or venous catheters
- Pregnancy and childbirth
- Supplemental estrogen
- Family history Smoking

CLINICAL MANIFESTATIONS

- Symptoms depend on the size of the thrombus and the area of the pulmonary artery occlusion.
- Dyspnea is the most common symptom.
- Tachypnea is the most frequent sign.
- Chest pain is common, usually sudden in onset and pleuritic in nature; it can be substernal and may mimic angina pectoris.
- Fever
- Tachycardia

Others...

- Apprehension
- Cough
- Diaphoresis
- Hemoptysis
- Syncope
- Shock
- Sudden death may occur

- Multiple small emboli in the terminal pulmonary arterioles simulate symptoms of bronchopneumonia or heart failure.

Nursing Management

1. Providing General Care Ensure

- Understanding of need for continuous oxygen therapy.
- Provide nebulizers, incentive spirometry, or percussion and postural drainage.
- Encourage deep-breathing exercises.

2. Preventing Thrombus Formation

- Encourage early ambulation and active and passive leg exercises.
- Instruct patient to move legs in a "pumping" exercise.
- Advise patient to avoid prolonged sitting, immobility, and constrictive clothing.
- Do not permit dangling of legs and feet in a dependent position.
- Instruct patient to place feet on floor or chair and to avoid crossing legs.
- Do not leave intravenous catheters in veins for prolonged periods.

3. Monitoring Anticoagulant and Thrombolytic Therapy

- < Advise bed rest, monitor vital signs every 2 hours, limit invasive procedures.
- < Measure PT or activated PTT every 3 to 4 hours after thrombolytic infusion is started to confirm activation of fibrinolytic systems.
- < Perform only essential ABG studies on upper extremities, with manual compression of puncture site for at least 30 minutes.

4. Minimizing Chest Pain, Pleuritic

- Place patient in semi-Fowler's position; turn and reposition frequently.<
- Administer analgesics as prescribed for severe pain.<

5. Alleviating Anxiety

- Encourage patient to express feelings and concerns.<
- Answer questions concisely and accurately.<
- Explain therapy, and describe how to recognize untoward effects early.<

6. Managing Oxygen Therapy

- < Assess for hypoxia (pulse oximetry), deep breathing, incentive spirometry, nebulizer therapy, percussion, and postnasal drainage.

7. Providing Postoperative Nursing Care

- < Measure pulmonary arterial pressure and urinary output.
- < Assess insertion site of arterial catheter for hematoma formation and infection.
- < Maintain blood pressure to ensure perfusion of vital organs.
- < Encourage isometric exercises, antiembolism stockings, and walking when permitted out of bed; elevate foot of bed when patient is resting.
- < Discourage sitting; hip flexion compresses large veins in the legs.

8. Promoting Home and Community-Based Care Teaching Patients Self-Care

- < Before discharge and at follow-up clinic or home visits, teach patient how to prevent recurrence and which signs and symptoms should alert patient to seek medical attention.
- < Teach patient to look for bruising and bleeding when taking anticoagulants and to avoid bumping into objects.
- < Advise patient to use a toothbrush with soft bristles to prevent gingival bleeding.
- < Instruct patient not to take aspirin (an anticoagulant) or antihistamine drugs while taking warfarin sodium (Coumadin).
- < Advise patient to check with physician before taking any medication, including over-the-counter drugs.
- < Advise patient to continue wearing antiembolism stockings as long as directed.
- < Instruct patient to avoid laxatives, which affect vitamin K absorption (vitamin K promotes coagulation). Teach patient to avoid sitting with legs crossed or for prolonged periods.
- < Recommend that patient change position regularly when traveling, walk occasionally, and do active exercises of legs and ankles.
- < Advise patient to drink plenty of liquids.
- < Teach patient to report dark, tarry stools immediately.
- < Recommend that patient wear identification stating that he or she is taking anticoagulants.

DRUGS

- • Anti-coagulant: – Heparin – Warfarin
- • Thrombolytics: – Reteplase (Retavase) – Tenecteplase (Tnkase) – Streptokinase (Streptase)

6. Cystic Fibrosis

- This is an autosomal recessive inheritance disease caused by a defective gene which causes the body to produce thick, sticky mucus that clogs the lungs, making it difficult to breathe and causing life-threatening lung infections.

PREDISPOSING FACTORS

- Caucasian people
- Cystic fibrosis is an autosomal recessive condition - that means that a person needs two defective genes (one from each parent) to develop the condition. The gene that has been thought to cause cystic fibrosis is called cystic fibrosis transmembrane conductance regulator or CFTR. This gene has been located on chromosome 7

Clinical Manifestations

- Productive cough
- Wheezing
- Gastrointestinal problems (eg. abdominal pain, weight loss)
- Hyperinflation of the lung fields on chest x-ray
- Nasal polyps
- Sinusitis

- Male and female infertility
- Clubbing of the extremities

MANAGEMENT

- Assist the patient to manage pulmonary symptoms and to prevent complication of cystic fibrosis
- Promote removal of pulmonary secretions; chest physiotherapy, including postural drainage, chest percussion, and vibration, and breathing exercises
- Remind client to avoid exposure to crowds and to persons with known infection
- Emphasize the importance of adequate fluid and dietary intake to promote removal of secretions and to ensure an adequate nutritional status
- Teach to modify daily activities to accommodate their symptoms and treatment modalities
- Improved nutrition (high calorie diet, vitamin and mineral rich) to maintain weight and ensure essential nutrients are consumed
- Refer for counselling and support groups as chronic diseases can cause a great amount of stress for the patient and family

DRUGS

- < Bronchodilators (such as albuterol or salmeterol), which are used to make breathing easier. Bronchodilators may also make it easier to cough up mucus.
- < DNase (such as Pulmozyme), which is used to thin mucus in the lungs.
- < Mucolytics (such as Mucomyst), to thin mucus in the lungs and also in the intestines. These are not used very much, because they can irritate the lungs.
- < An inhaled saltwater solution (hypertonic saline), sometimes used to help clear mucus from the lungs. It is low-cost, and it may help reduce inflammation in the airways.
- < Antibiotics are medicines that kill bacteria that cause infections.

7. Respiratory Arrest

Definition

- Previously known as the adult respiratory distress syndrome
- Severe form of lung injury
- Characterized by a sudden and progressive pulmonary edema, increasing bilateral infiltrates, on chest x-ray, hypoxemia, refractory to oxygenation, and reduced lung compliance

8. Acute Respiratory Failure

- Decreased respiratory drive
- Dysfunction of the chest wall
- Dysfunction of lung parenchyma
- Inadequate ventilation
- Treat underlying cause

9. Acute Respiratory Distress Syndrome

- Sudden and progressive pulmonary edema, increasing bilateral infiltrates, hypoxemia refractory to oxygen supplementation and reduced lung compliance
- Result of inflammatory trigger
- Treat underlying condition

- Ventilator considerations

Predisposing Factors

- Aspiration
- Drug ingestion and overdose
- Hematologic disorders such as DIC, massive transfusions, cardiopulmonary bypass
- Prolonged inhalation of high concentrations of oxygen, smoke and corrosive
Metabolic< Localized infection such as viral pneumonia <substances diseases
such as pancreatitis and uremia
- Shock
- Trauma such as pulmonary contusion, multiple fractures, and head injury
- Major surgery
- Fat or air embolism
- Systemic Sepsis

Clinical Manifestation

- Dyspnea
- Increased respiratory rate
- Increased heart rate
- Bilateral edema
- Shortness of breathe
- Hypoxia
- Signs and symptoms of the incumbent respiratory disease

Nursing Management

- Close monitoring in ICU
- Nebulizer therapy
- Tracheostomy care
- Suctioning
- Assisting on ET intubation and bronchoscopy
- Enteral feeding of 35-45 kg/cal per day
- Turn the patient frequently to improve ventilation and perfusion of the lungs and
secretion drainage
- Oxygenation on prone position
- Mechanical ventilation with PEEP
- Fluid Management

Drugs

- METHYLPREDNISOLONE(glucocorticoids)
- Oral: Medrol, Meprolone (CAN) methylprednisolone sodium succinate
- IV, IM injection: A-Methapred, Solu-Medrol Pregnancy Category C

Bronchiectasis

- Chronic, irreversible dilation of bronchi and bronchioles
- Chronic cough and purulent sputum production
- Postural drainage promotes clearing of secretions
- Antibiotics may be prescribed

10. Atelectasis

- Atelectasis - Closure or collapse of alveoli
- Pleural effusion
- Pneumothorax
- Hemothorax

Respiratory Infections

- Acute tracheobronchitis
- Pneumonia
- Shock and respiratory failure

Nursing Management

- Improving airway patency
- Promoting rest
- Promoting fluid intake and nutrition
- Monitoring and managing complications

11. Pulmonary Tuberculosis

- Mycobacterium tuberculosis
- Airborne transmission
- Tuberculin skin testing
- Pharmacologic therapy- multi-drug regimens and prophylaxis

12. Lung Abscess

- Complication of bacterial pneumonia or caused by aspiration or oral anaerobes
- Mild productive cough may lead to acute illness
- Pleural friction rub
- IV antibiotics

13. Pleural Conditions

- Pleurisy
- Pleural effusion
- Empyema

14. Pulmonary Edema

- Most often occurs as result of abnormal cardiac function
- Crackles
- Orthopnea
- Treat underlying disease

15. Pulmonary Hypertension

- Systolic pulmonary artery pressure > 30 mm Hg. or mean pulmonary artery pressure >25 mm Hg.
- Primary is idiopathic
- Secondary results from existing cardiac or pulmonary disease
- Manage underlying disease

16. Pulmonary Heart Disease (Cor Pulmonale)

- Right ventricle enlarges with or without right-sided heart failure
- Caused by severe COPD

- Improve ventilation with supplemental oxygen, chest physical therapy, and bronchial hygiene

17. Sarcoidosis

- Multisystem granulomatous disease of unknown etiology
- Involves lungs, lymph nodes, liver, spleen, CNS, skin, eyes, fingers, and parotid glands
- Hypersensitivity response
- Corticosteroid therapy or other cytotoxic and immunosuppressive agents may be used

18. Chest Trauma

- Blunt trauma
- Flail chest
- Penetrating trauma
- Pneumothorax

Management of Patients with Upper Respiratory Tract Disorders

19. Upper Airway Infections

- Rhinitis vs. Viral Rhinitis
- Acute Sinusitis vs. Chronic Sinusitis
- Chronic Pharyngitis
- Tonsillitis and Adenoiditis
- Peritonsillar Abscess
- Laryngitis

Nursing Management

- Maintain a patent airway
- Promote comfort
- Promote communication
- Encourage fluid intake
- Teaching self-care

20. Obstruction and Trauma of the Upper Respiratory Airway

- Obstruction during sleep
- Epistaxis
- Nasal obstruction
- Fractures
- Laryngeal obstruction

21. Cancer of Larynx

- Hoarseness of more than 2 weeks duration
- Cough and/or sore throat
- Pain and/or burning
- Laryngectomy

New Edition Respi 102 - Presentation Transcript

RESPIRATORY SYSTEM

□ PRIMARY FUNCTIONS

- Provides O₂ for metabolism in the tissues
- Removes CO₂, the waste product of metabolism

□ SECONDARY FUNCTIONS

- Facilitates sense of smell
- Produces speech
- Maintains acid-base balance
- Maintains body water levels
- Maintains heat balance

A. UPPER RESPIRATORY TRACT

1. NOSE

- Humidifies, warms & filters inspired air

2. SINUSES

- Air-filled cavities within the hollow bones that surround the nasal passages
- Provide resonance during speech

3. PHARYNX

- Located behind the oral & nasal cavities
- Divided into the nasopharynx, oropharynx & laryngopharynx
- Passageway for both the respiratory & digestive tracts

4. LARYNX

- Located above the trachea & just below the pharynx at the root of the tongue
- Commonly called the "VOICE BOX"
- Contains 2 pairs of vocal cords, the false & true cords
- The opening between the true vocal cords is the GLOTTIS -Valsalva Maneuver

5. EPIGLOTTIS

- Leaf-shaped elastic structure that is attached along one end to the top of the larynx
- Prevents the food from entering the tracheo-bronchial tree by closing over the glottis during swallowing

B. LOWER RESPIRATORY TRACT

6. TRACHEA

- Located in front of the esophagus
- Branches into the right & left mainstem bronchi at the carina

7. MAINSTREAM BRONCHI

- Begin at the carina
- RIGHT BRONCHUS is slightly wider, shorter, & more vertical than the left bronchus
- Mainstream bronchi divide into 5 secondary or lobar bronchi that enter each of the 5 lobes of the lung

- The bronchi are lined with cilia which propel mucus up & away from the lower airway to the trachea where it can be expectorated or swallowed

8. BRONCHIOLES

- Branch from the secondary bronchi & subdivide into small terminal & respiratory bronchioles
- Contain no cartilage & depend on the elastic recoil of the lung for patency
- Terminal bronchioles contain no cilia & don't participate in gas exchange

9. ALVEOLAR DUCTS & ALVEOLI

- used to indicate all structures distal to the terminal bronchiole
- Alveolar ducts branch from the respiratory bronchioles
- Alveolar sacs which arise from the ducts contain clusters of alveoli which are basic units of gas exchange
- Cells in the walls of the alveoli secrete surfactant
 - phospholipid CHON the reduces the surface tension in the alveoli
 - without surfactant the alveoli would collapse

10. LUNGS

- Located in in the pleural cavity in the thorax
- Extend from just above the clavicles to the diaphragm - the diaphragm is the major muscle of respiration
- RIGHT LUNG - is larger than the left; divided into 3 lobes: the upper, middle & lower lobes
- LEFT LUNG - somewhat narrower than the right lung to accommodate the heart ; divided into 2 lobes
- Innervation of the respiratory structures is accomplished by the PHRENIC NERVE, VAGUS NERVE & THORACIC NERVES
- PARIETAL PLEURA - lines the inside of the thoracic cavity including the upper surface of the diaphragm
- VISCERAL PLEURA - covers the pulmonary surfaces
 - A thin fluid layer produced by the cells lining the pleura, lubricates the visceral & parietal pleura

11. ACCESSORY MUSCLES OF RESPIRATION

a. SCALENE MUSCLES

- Elevate the first 2 ribs

b. STERNOCLEIDOMASTOID MUSCLES

- Raises the sternum

c. TRAPEZIUS & PECTORALIS MUSCLES

- Fix the shoulders

- the diaphragm descends into the abdominal cavity during inspiration causing (-) pressure in the lungs
- the (-) pressure draws the air from the area of greater pressure (THE ATMOSPHERE) into an area of lesser pressure (THE LUNGS)

- In the lungs, air passes thru the terminal bronchioles into the alveoli to oxygenate the body tissues
- At the end of inspiration, the diaphragm & intercostal muscles relax & the lungs recoil
- As the lungs recoil, pressure within the lungs becomes greater than atmospheric pressure, causing the air which now contains the cellular waste products of CO₂ & H₂O to move from the alveoli in the lungs to the atmosphere
- Expiration is a passive process

THE RESPIRATORY PROCESS

1. RISK FACTORS FOR RESPIRATORY DISEASE

- Smoking
- Use of chewing tobacco
- Allergies
- Frequent respiratory illnesses
- Chest injury
- Surgery
- Exposure to chemicals & environmental pollutants
- Family history of infectious disease
- Geographic residence & travel to foreign countries

2. DIAGNOSTIC TESTS

a. CHEST X-RAY (CXR) FILM (RADIOGRAPH)

- - information on the anatomic location & appearance
- PRE-PROCEDURE NURSING CARE
- Remove all jewelry & other metal objects
 - Assess ability to inhale & hold the breath
 - Question regarding pregnancy or possibility of pregnancy

b. SPUTUM SPECIMEN

- - obtained by expectoration or tracheal suctioning
- - identify organisms or abnormal cells

PRE-PROCEDURE NURSING CARE

- Determine specific purpose
- Early morning sterile specimen
- 5-15 ml of sputum
- Rinse the mouth with water prior to collection
- Take several deep breaths and then cough forcefully
- Collect the specimen before antibiotics

SUCTIONING PROCEDURE IN OBTAINING SPUTUM SPECIMEN

- Aseptic technique
- Hyperoxygenate
- Lubricate the catheter with sterile water
- Tracheal suctioning : 4 inches
- Nasotracheal suctioning : insert to induce cough reflex

- Don't apply suction while inserting
 - Suction intermittently for 10-15 seconds
 - Rotate and withdraw
 - Hyperoxygenate & deep breaths
- c. SPUTUM SPECIMEN
- POST-PROCEDURE NURSING CARE
- Transport specimen to lab stat
 - Mouth care
- d. BRONCHOSCOPY
- - visual examination of the larynx, trachea & bronchi with a fiber-optic bronchoscope
- PRE-PROCEDURE NURSING CARE
- Informed consent
 - NPO prior
 - Assess coagulation studies
 - Remove dentures or eyeglasses
 - Prepare suction
 - Sedatives as Rx
 - Have resuscitation equipment available
- POST-PROCEDURE NURSING CARE
- V/S
 - Fowler's position↑↑
 - Assess gag reflex
 - NPO until gag reflex returns
 - Monitor for bloody sputum
 - Monitor respiratory status
 - Monitor for complications: bronchospasm, bronchial perforation, crepitus, dysrhythmia, fever, hemorrhage, hypoxemia, and pneumothorax
 - Notify the MD if complications occur
- e. PULMONARY ANGIOGRAPHY
- - insertion of a fluoroscopy via the antecubital or femoral vein into the pulmonary artery
 - - it involves iodine or radiopaque or contrast material
- PRE-PROCEDURE NURSING CARE
- Informed consent
 - Assess for allergies to iodine, seafood & dyes
 - NPO prior to procedure
 - V/S
 - Assess coagulation studies
 - Establish an IV
 - Administer sedation
 - Client must lie still during the procedure
- f. PULMONARY ANGIOGRAPHY
- PRE-PROCEDURE NURSING CARE

- Urge to cough, flushing, nausea, or a salty taste
 - Emergency equipment available
- POST-PROCEDURE NURSING CARE
- V/S
 - No BP for 24 hrs in the affected extremity
 - Monitor peripheral neurovascular status
 - Assess for bleeding
 - Monitor dye reaction

g. THORACENTESIS

PRE-PROCEDURE NURSING CARE

- Informed consent
- V/S
- CXR or U/S prior to the procedure
- Assess coagulation studies
- Upright
- Do not to cough, breath deeply, or move during the procedure

POST-PROCEDURE NURSING CARE

- V/S
- Monitor respiratory status
- Pressure dressing
- Assess site for bleeding and crepitus
- Monitor for signs of PNEUMOTHORAX, AIR EMBOLISM & PULMONARY .

h. LUNG BIOPSY

- - a percutaneous lung biopsy - culture or cytologic examination
- - a needle biopsy - pulmonary lesions, changes in lung tissue and the cause of pleural effusion

PRE-PROCEDURE NURSING CARE

- Informed consent
- NPO prior
- Local anesthetic
- Pressure during insertion and aspiration
- Administer analgesics & sedatives as Rx

POST-PROCEDURE NURSING CARE

- V/S
- Pressure dressing
- Monitor for bleeding
- Monitor for respiratory distress
- Monitor for complications: pneumothorax and air emboli
- Prepare for CXR

i. SKIN TESTS

PRE-PROCEDURE NURSING CARE

- Determine hypersensitivity or previous reactions to skin tests

PROCEDURE

- It Shouldn't be of excessive body hair & dermatitis
- Upper 1/3 of inner surface
- Circle, document the date, time and test site

POST-PROCEDURE NURSING CARE

- Do not scratch
- Do not wash
- Assess for induration (hard swelling), erythema and vesiculation (small blister-like elevations)

j. PULSE OXIMETRY

- - a non-invasive test that registers arterial O₂ saturation (SaO₂)
- - NORMAL VALUE: 95%-100%
- - alert hypoxemia before clinical signs occurs

PROCEDURE

- A sensor is placed: finger, toe, nose, earlobe or forehead
- Don't select an extremity with an impediment to blood flow
- Results lower than 91% - immediate treatment
- If the SaO₂ is below 85% - hypo-oxygenation
- If the SaO₂ is 70% - life-threatening situation↓

k. PULMONARY FUNCTION TEST (PFTs)

- - include a number of different tests used to evaluate lung mechanics, gas exchange, & acid-base disturbance thru spirometric measurements, lung volumes, and arterial blood gases

PRE-PROCEDURE NURSING CARE

- Determine if an analgesic that may depress the respiratory function is being administered
- Consult with MD regarding holding bronchodilators prior to testing
- Instruct the client to void prior to procedure and to wear loose clothing
- Remove dentures
- Instruct the client to refrain from smoking or eating a heavy meal for 4-6 hrs prior to the test

POST-PROCEDURE NURSING CARE

- Resume normal diet and any bronchodilators & respiratory treatments that were held prior to the procedure

l. ARTERIAL BLOOD GASES (ABGs)

- - measure the dissolved O₂ & CO₂ in the arterial blood and renal acid-base state & how well the O₂ is being carried to the body
- - the ventilation scan determines the patency of the pulmonary airways and detects abnormalities in ventilation

PRE-PROCEDURE NURSING CARE

- Perform Allen's test prior to drawing radial artery specimens
- Have the client rest for 30 mins prior to specimen collection

- Avoid suctioning prior to drawing ABGs
 - Don't turn off O₂ unless the ABGs are ordered to be drawn at room air
- POST-PROCEDURE NURSING CARE
- Place the specimen on ice
 - Note the client's temperature on the laboratory form
 - Note the O₂ & type of ventilation that the client is receiving on the laboratory form
 - Apply pressure on the puncture site for 5-10 mins & longer if the client is on anticoagulant therapy or has bleeding disorder
 - Transport the specimen to the laboratory within 15 mins

3. ACID-BASE BALANCE

- Respiratory System: CO₂ (acid)
- Metabolic acidosis – (Lungs) excrete CO₂
- Metabolic alkalosis – (Lungs) retain CO₂
- Renal or Metabolic System: H⁺ ion(acid) ; HCO₃(base)
- Respi. acidosis – (Kidney) excrete H⁺ ; retain HCO₃
- Respi. alkalosis – (Kidney) retain H⁺ ; excrete HCO₃
- Normal ABG Values :
- Ph : 7.35 – 7.45
- PCO₂ : 35 – 45 mgHG
- HCO₃ : 22-26 meq/L
- PO₂ : 80-100 mgHg
- Base excess : (+2 or –2)

4. ARTERIAL BLOOD GAS SITE: Radial Artery TEST: Allens Test Ph - ↓↓ acidosis ↑↑ alkalosis PCO₂ - ↓↓ alkalosis ↑↑ acidosis HCO₃ - ↓↓ acidosis ↑↑ alkalosis

5. ARTERIAL BLOOD GAS

- 1. Assess ph, PCO₂ & HCO₃
- 2. Identify imbalance. If ph is normal use 7.4
- ↓↓ 7.4 – acidosis
- ↑↑ 7.4 – alkalosis
- Identify if compensated or uncompensated
- uncompensated- if one component is normal & the other is abnormal
- compensated – if both PCO₂ & HCO₃ are abnormal in opposite directions
- 4. If compensated, identify if partially or fully
- partially – if ph is abnormal
- fully - if ph is normal

6. RESPIRATORY TREATMENTS

a. CHEST PHYSIOTHERAPY (CPT)

NURSING CARE

- Best time - morning upon arising, 1 hr before meals or 2-3 hrs after meals

- Stop if pain occurs
 - Provide mouth care
- CONTRAINDICATIONS OF CHESTPHYSIOTHERAPY (CPT)
- ↑ respiratory distress
 - Hx of fractures
 - Chest incisions

b. POSTURAL DRAINAGE

- - use of the gravity
- NURSING CARE
- Position the client
 - Best time – A.M. upon arising, 1 hr before meals, 2-3 hrs after meals
 - Stop if cyanosis or exhaustion occurs
 - Maintain position 5-20 mins after
 - Provide mouth care after the procedure

CONTRAINDICATIONS OF POSTURAL DRAINAGE

- Unstable V/S
 - Increased ICP
-
- CLIENT INSTRUCTIONS FOR INCENTIVE SPIROMETRY
 - Use the lips to form seal around the mouth piece
 - Inspire deeply
 - Hold inspiration for a few seconds
 - Forcefully exhale
 - Avoid the use of spirometry at mealtimes
 - - it may cause nausea

c. OXYGEN (O₂) ADMINISTRATION

NURSING CARE

- V/S
- OXYGEN IN USE sign
- Humidify the O₂

d. NASAL CANNULA (NASAL PRONGS) - flow rates of 1-6L/min; 24% (at 1L/min) to 44% (at 6L/min) - flow rates higher than 6L/min don't significantly increase oxygenation
 NOTE: Client who retains CO₂ should never receive O₂ at rates higher than 2-3 L/min unless on a mechanical ventilator - effective O₂ concentration can be delivered to both nose breathers & mouth breathers with the use of a nasal cannula

- F I O₂ DELIVERED VIA NASAL CANNULA
- 24% at 1L/min
- 28% at 2L/min
- 32% at 3L/min
- 36% at 4L/min
- 40% at 5L/min
- 44% at 6L/min

NURSING CARE

- Add humidification
- Monitor humidifier
- Assess RR
- Assess the mucosa
- - high flow rates have a drying effect & increase mucosal irritation
- Assess the skin integrity
- - O₂ tubing can irritate the skin
- Provide water-soluble jelly

d. SIMPLE FACE MASK

- - 40%-60% for short term O₂ therapy or to deliver O₂ in an emergency
- - minimal flow rate of 5L/min - to prevent the rebreathing of exhaled air

NURSING CARE

- Be sure the mask fits
- Provide skin care
- - pressure & moisture under the mask may cause skin breakdown
- Monitor for aspiration
- - the mask limits the client's ability to clear the mouth esp if vomiting occurs
- Provide emotional support to decrease anxiety in the client who feels claustrophobic

F I O₂ DELIVERED VIA SIMPLE FACE MASK

- 40% at 5L/min
- 45% to 50% at 6L/min
- 55% to 60% at 8L/min
- NOTE:
- PYRAMID POINT :
- Flow rate must be set to at least 5L/min to flush the mask of CO₂

e. PARTIAL REBREATHING MASK

- - 70%-90% with flow rates of 6-15L/min
- - the client rebreathes 1/3 of the exhaled tidal volume

NURSING CARE

- Make sure that the reservoir does not twist or kink
- Keep the reservoir bag inflated 2/3 full during inspiration
- - deflation results in decreased O₂ delivered & rebreathing of exhaled air

f. NON-REBREATHING MASK - ↑ 90% - most frequently deteriorating respiratory status requiring intubation - has a one-way valve between the mask & reservoir and two flaps over the exhalation ports - entire quantity of O₂ from the reservoir bag - the flaps prevent room air from entering thru the exhalation ports

- F I O₂ DELIVERED: 60% to 100% F I O₂ at a liter flow that maintains

- the bag 2/3 full
- NURSING CARE
- Remove the mucus or saliva from the mask
- Assess the client
- Ensure the valve & flaps are functional
- Valves should open during expiration & close during inspiration
- Monitor for kinks & twisting

g. HIGH-FLOW OXYGEN DELIVERY SYSTEM - 24% to 100% at 8-15L/min - high-flow systems include the Venturi mask, aerosol mask, face tent, tracheostomy collar, and T-piece - deliver a consistent and accurate O₂ concentration VENTURI MASK - give accurate O₂ concentration - an adapter is located between the bottom of the mask & the O₂ source - the adapter contains holes of different sizes that allow only specific amounts of air to mix with the O₂ - the adapter allows selection of the amount of O₂ desired

h. VENTURI MASK

- F IO₂ DELIVERED: 24% to 55% F IO₂ with flow rates of 4-10L/min
- NURSING CARE
- Monitor closely to ensure an accurate flow rate
- Keep the orifice for the Venturi adapter open uncovered to ensure adequate oxygen delivery
- Ensure the mask fits snugly & that tubing is free of kinks
- Monitor mucous membranes
-

i. FACE TENT - fits over the client's chin, with top extending halfway across the face - the O₂ concentration varies - useful for the client who has facial trauma or burns because it is not tight

j. AEROSOL MASK - used for the client who has thick secretions

k. TRACHEOSTOMY COLLAR OR T-PIECE - the tracheostomy collar can be used to deliver high humidity & the desired O₂ to the client with a tracheostomy - a special adapter, called T-piece can be used to deliver any desired FIO₂ to the client with a tracheostomy, laryngectomy or endotracheal tube

- FACE TENT, AEROSOL MASK, TRACHEOSTOMY COLLAR & T-PIECE
- F IO₂ DELIVERED: 24% to 100% F IO₂ with flow rates of at least 10L/min
- NURSING CARE
- Change to nasal cannula during meals
- Empty condensation
- Monitor water in the canister & change the aerosol water container as needed
- Keep the exhalation port in the T-piece open
- Position the T-piece so that it does not pull on the

- tracheostomy or endotracheal tube
- - it may cause erosion of the skin at the tracheostomy
- insertion site

j. ARTIFICIAL AIRWAY

a. Endotracheal Tube

- Purpose:
- Tracheal Suctioning
- Positive Pressure Breathing
- Nsg. Care:
- Humidify air
- Suction PRN
- NGT
- Promote Communication
- Confirm placement
- Monitor the cuff

b. Tracheostomy Tube

PURPOSE : SAME AS ET

TYPES :

- Plastic
- Metal
- PARTS:
- Outer Cannula
- Inner Canula
- Obstructor

NSG. CARE:

- Asepsis
- No sedative
- Suction PRN
- Hemostats
- NGT, TPN & Oral nutrition
- Wash the stoma
- Tub bath
- Avoid swimming
- Weaning

7. Pediatric RESPIRATORY DISORDERS

1. SUDDEN INFANT 's DEATH SYNDROME (SIDS)

- - unexpected death of an apparently healthy infant under
- the age of 1year
- - unknown

MATERNAL RISK FACTORS

- Maternal smoking
- Substance abuse

- Younger mothers
- BIRTH RISK FACTORS
- Prematurity
 - Low-birth-weight infants
 - Multiple births
 - Infants with CNS problems
- TIME OF YEAR - winter, cold weather
- TIME OF DEATH - during sleep
- AGE - 2 months to 4 months of life; less than 1 year
- SEX & RACE

- - males
- - native Americans & blacks

SLEEP RISK FACTORS

- Prone position
- Use of soft bedding
- Overheating (thermal stress)
- Possibly: sleeping with an adult

APPEARANCE WHEN FOUND

- Apneic & blue
- Typically found in a disheveled bed, with blankets over the head, and huddled in a corner

PREVENTION

- Supine position for sleep
- If with gastroesophageal reflux – side lying
- Avoid mattresses & bedding
- Avoid pillows
- Stuff toys should be removed

2. CROUP SYNDROME

- -The term croup describes a group of conditions characterized by edema and inflammation of the respiratory tract.

Types:

- Acute epiglottitis
- Acute laryngotracheobronchitis
- Acute spasmodic laryngitis

3. EPIGLOTTITIS - a bacterial croup - caused by Haemophilus influenzae type B or Streptococcus pneumoniae - age group 2-5 yrs. old - onset is abrupt - often occurs in winter - SITUATION

EMERGENCY

ASSESSMENT

- ↑ fever
- Sore, red and inflamed throat
- Spontaneous cough
- Drooling
- Dysphagia
- Muffled voice

- Inspiratory stridor
 - Agitation
 - TRIPOD POSITIONING
 - NURSING CARE
 - Airway
 - Assess respiratory status
 - Assess temperature
 - Do not visualize
 - Prepare for lateral neck films
 - NPO status
 - Don't leave the child unattended
 - ↑ fowlers
 - Don't restrain
 - IV fluids
 - Antibiotics
 - Analgesics & antipyretics
 - Cool-mist O₂
 - ↑ humidification
 - Resuscitation equipment available, Endotracheal intubation for obstruction
 - Immunization (Haemophilus type B)
4. LARYNGOTRACHEOBRONCHITIS Cebu Nursing Review Center
- - inflammation of the larynx, trachea, & bronchi
 - - most common type of croup & may be viral or bacterial
 - - has gradual onset & may be preceded by URTI
 - ASSESSMENT
 - Fever, low-grade to high
 - Irritability & restlessness
 - Hoarse voice
 - Seal bark & brassy cough
 - Inspiratory stridor & suprasternal retractions
 - Use of accessory muscle for breathing
 - Crackles & wheezing on lung auscultation
 - Anorexia, nausea & vomiting
 - Signs of anoxia & CO₂ retention
 - Cyanosis
 - NURSING CARE
 - Maintain a patent airway
 - Assess respiratory status, monitoring for nasal flaring, sternal retractions & inspiratory stridor
 - Monitor for pallor or cyanosis
 - Elevate the head of the bed & provide bed rest
 - Provide humidified O₂ via cool-mist tent for the hospitalized child
 - Instruct the parents to use cool-air vaporizer or humidifier at home
 - - other measures include: having the child breathe in the cool

- night air or the air from an open freezer, or taking the child to a
 - cool basement or garage
 - Provide & encourage fluid intake; IVs may be Rx
 - - to maintain hydration status if the child is unable to take oral
 - fluids
 - Administer Acetaminophen (Tylenol) as Rx
 - - to reduce fever
 - Administer bronchodilators if Rx
 - - to relax smooth muscle & relieve stridor
 - Administer corticosteroids if Rx
 - - for its anti-inflammatory effect
 - Administer antibiotics as Rx
 - - Note: they are not indicated unless a bacterial infection is
 - present
 - Have resuscitation equipment available
5. ACUTE SPASMODIC LARYNGITIS Cebu Nursing Review Center
- Mildest form of croup; generally occurs in children 1-4 years old.
 - Cause: unknown
 - **Clinical manifestations.**
 - Characterized by paroxysmal attacks.
 - Occurs at night
 - Mild respiratory distress
 - noisy inspiration
 - Child uses accessory muscles of respiration
 - anxious
 - d) No fever
 - After the attack, the child appears well
 - **Treatment:**
 - the child is generally cared for at home
 - Same with LTB

6. BRONCHIOLITIS/RESPIRATORY SYNCYTIAL VIRUS (RSV) - an inflammation of the bronchioles

- - ↑ mucus production
- - RSV
- **ASSESSMENT**
- Rhinorrhea & ↓ fever
- Lethargy
- Poor feeding
- Irritability
- Tachypnea
- Dyspnea
- Nasal flaring
- Wheezing
- Diminished breath sounds

NURSING CARE

- Airway
- ↑ fowler's
- Cool, humidified O₂
- Oral & IV fluids
- Private room
- Hand washing
- Avoid contamination to others
- Gowns
- Ribavirin (Virazole)
- Pregnant health care providers should not care for a child receiving Ribavirin
- The nurse wearing contact lenses should wear goggles when coming in contact with Ribavirin
- - the mist may dissolve the lenses
- Prepare for the administration of respiratory syncytial virus immune globulin (RSV-IGIV or RespiGam)
- - used prophylactically to prevent RSV in high-risk infants
- - RespiGam is an IV preparation of immunoglobulin G & is administered before the RSV epidemic season (Nov-Apr)
- - subsequent doses are given every month to maintain protection
- - not administered to infants or children with congenital heart disease (CHD) or with cyanotic CHD
- Inflammation of the tonsils
- Group A betahemolytic strep
- Filtering membrane of the respiratory tract
- Protects your respiratory and alimentary tract
- Responsible for formation of the antibodies
- Locations of tonsils:
- Falatine- on each side of the oropharynx. (faucial)
- Adenoid/ pharyngeal- posterior wall of the nasopharynx
- Lingual- base of tongue
- Tubal- posterior naso-pharyngeal; opening of eustachian tube

7. TONSILLITIS

Sign and symptoms:

- enlarged red tonsils
- fever because of infection
- increase WBC
- sore throat
- white exudate
- pain referred towards the ears

Management:

- penicillins, if allergic may give erythromycin as alternative.

- Antipyretic
- Lozenges (benzocaine) anesthetic effect
- Prepare the child for hospitalization and surgery
- Tonsillectomy- removal of tonsils
- 3-4 years old
- Below 3 y.o. children are prone to bleeding
- Possible regrowth of tonsils
- Signs of bleeding post op:
 - restlessness
 - Frequent swallowing
 - Increase RR and PR, decrease BP
 - Emesis of bright red blood
- PREVENTION OF BLEEDING:
 - Avoid gargling
 - Discourage coughing
 - Avoid valsalva maneuver
 - POST OP POSITION: side lying or abdomen and prone
 - POST OP CARE MEASURES:
 - Use of ice collar- vasoconstriction
 - Cool liquid
 - Avoid exposure to infections
 - Diet- soft with adequate fluid intake
 1. no acidic foods or liquids
 2. avoid dairy products and that contains milk
 3. no straw post tonsillectomy
 4. avoid colored foods

8. PNEUMONIA - inflammation of the alveoli caused by a virus mycoplasmal agents, bacteria or the aspiration of foreign substances TYPES A. VIRAL PNEUMONIA B. PRIMARY ATYPICAL PNEUMONIA (MYCOPLASMA PNEMONIAE) - A ges 5 - 12 y.o. - occurs primarily in the fall & winter months and is more prevalent in crowded living conditions

TYPES

- BACTERIAL PNEUMONIA - hospitalization is indicated when pleural effusion or empyema occur - staphylococcal pneumonia.
- ASPIRATION PNEUMONIA - occurs when food, secretions, liquids, or other materials enter the lung & cause inflammation
- VIRAL PNEUMONIA Cebu Nursing Review Center

ASSESSMENT

- Whitish sputum
- Fever, cough, malaise and prostration

NURSING CARE

- 2 with cool mist
 - Wheezing
 - increase fluid
 - Antipyretics
 - Chest physiotherapy
 - Antimicrobial / anti-viral
- PRIMARY ATYPICAL PNEUMONIA Cebu Nursing Review Center
ASSESSMENT
 - Fever
 - Malaise
 - Headache
 - Rhinitis
 - Sore throat
 - Cough
 - Nonproductive cough initially then produces seromucoid sputum that becomes mucopurulent or bld. streaked
- Nursing care: SYMPTOMATIC
 - BACTERIAL PNEUMONIA Cebu Nursing Review Center
ASSESSMENT
 - Fever
 - INFANT: irritability, lethargy, poor feeding, abrupt fever, respiratory distress
 - OLDER CHILD: headache, chills, abdominal pain, chest pain, meningeal symptoms
 - Hacking, nonproductive cough
 - Diminished breath sounds or scattered crackles
 - Purulent sputum

NURSING CARE

- Antimicrobial therapy
- Administer O₂
- Mist tent
- Suction PRN
- Chest physiotherapy
- Bed rest
- Lie on the affected side
- Oral & IV
- Antipyretics
- Isolation precaution
- Anti-tussives
- Thoracentesis

9. ASPIRATION OF FOREIGN OBJECT

- Relatively common airway problem of children

- Severity depends on objects (ex. Pins, coins, nuts, buttons, parts of toys, beans) aspirated and the degree of obstruction.
- The curious toddler is most frequently affected
- Causes 400 deaths per year in children under 4 years of age.
- Assessment:
- Sudden onset of coughing
- Dyspnea
- Wheezing
- Stridor
- Persistent or recurrent pneumonia
- Nursing Interventions:
- Reassure the scared toddler
- Abdominal thrust (heimlich maneuver)
- conscious victim: standing or sitting
- unconscious victim: lying supine
- After removal, place child in high humidity environment and treat secondary infection if applicable
- Counsel parents regarding age-appropriate behavior and safety precautions.

10. ASTHMA Asthma is an intermittent, reversible, obstructive airway problem. It is characterized by exacerbation and remissions. Between attacks the client is generally asymptomatic. It is a common disorder of childhood that may continue to cause problems throughout adult life.

Risk factors/etiology:

- Familial tendencies
- Hypersensitivity and airway inflammation
- Complication:
- Status asthmaticus is severe asthma that is unresponsive to treatment

ASTHMA - is commonly caused by physical & chemical irritants - bronchial obstruction - coughing at night STATUS ASTHMATICUS - child displays respiratory distress despite vigorous treatment - may result in respiratory failure & death if untreated

ASSESSMENT

- Wheezing
- Dyspnea
- Chest tightness
- Exacerbations
- - air is trapped behind occluded or narrow airways
- and hypoxemia can occur
- ASTHMATIC EPISODE
- Restlessness, apprehension and diaphoresis occur
- Younger children assume the TRIPOD POSITION
- - older children sit upright with the shoulders in a hunches-over position with the hands on the bed or chair and the arms braced to facilitate the use of accessory muscles of breathing
- (child refuses to lie down)

- Child speaks in short, broken phrases
- Retractions
- Hyper-resonance on percussion of the chest
- Breath sounds are coarse & loud with crackles & coarse rhonchi
- and inspiratory & expiratory wheezing
- Expiration are prolonged

NURSING CARE

- Airway
- Humidified O₂
- Monitor respiratory status
- Oral & IV fluids
- Nutrition & electrolyte
- Prepare the child for a CXR
- Prepare to obtain ABG & serum electrolytes

ASTHMA MEDICATIONS

1. B₂ agonists - Albuterol (Proventil HFA, Ventolin) - Metaproterenol sulfate (Alupent - Terbutaline sulfate (Brethaire, Brethine, Bricanyl)

2. ANTICHOLINERGICS - Atropine sulfate, Ipratropium bromide (Atrovent)

3. SYSTEMIC CORTICOSTEROIDS

4. Antibiotics, if infection is present 5. Bronchodilator 6. Expectorants 7. Supplemental O₂ for hypoxia

ASTHMA HOME CARE MEASURES - Allergens control - Avoid extremes of temperature - Avoid exposure to viral respiratory infection - Recognize early symptoms - Instruct the child in the administration of medications as Rx - Adequate rest, sleep, and a well-balanced diet - Adequate fluid intake - Exercise as tolerated

11. CYSTIC FIBROSIS - a multi-system disorder (autosomal recessive trait disorder) - abnormality characterized by generalized dysfunction of the exocrine glands. - mean life expectancy of 20 years The disease primarily affects the lungs, pancreas, and sweat glands

CYSTIC FIBROSIS RESPIRATORY SYSTEM - Stagnation of the mucus in the airway - Emphysema & atelectasis - Chronic hypoxemia - Pneumothorax - Wheezing & dry non-productive cough - Dyspnea - Cyanosis - Clubbing of the fingers & toes - Repeated episodes of bronchitis & pneumonia

CYSTIC FIBROSIS GASTROINTESTINAL SYSTEM - Meconium ileus in the neonate - Intestinal obstruction S/S: pain, abdominal distention N&V - Steatorrhea - voracious appetite - weight loss, tissue wasting - Deficiency of A,D, E & K - Malnutrition & failure to thrive - Rectal prolapse - foul smelling flatus

CYSTIC FIBROSIS INTEGUMENTARY SYSTEM - ↑ of Na & Cl in sweat - Dehydration & electrolyte imbalances during ↑ weather REPRODUCTIVE SYSTEM - Delayed puberty in females - Infertility - Sterility

CYSTIC FIBROSIS DIAGNOSTIC TESTS 1. Sweat Chloride Test 2. Chest X-ray 3. Pulmonary function test 4. Stool / fat or Enzyme analysis

CYSTIC FIBROSIS NURSING CARE (RESPIRATORY SYSTEM) - Do not give cough suppressants - Forced expiratory technique (huffing) - Physical exercise - Antibiotics prophylactically - O₂ as needed - Monitor for hemoptysis - Possible lung transplant
CYSTIC FIBROSIS NURSING CARE (RESPIRATORY SYSTEM) - Monitor for HEMOPTYSIS - 300 ml/24 hrs↑ for the older child & lesser for a younger child needs to be treated immediately - Hemoptysis can be controlled thru bed rest, cough suppressants, antibiotics & vitamin K - If it persists, the site of bleeding may be cauterized or embolized - LUNG TRANSPLANTATION is the final therapeutic option for the end-stage child

CYSTIC FIBROSIS NURSING CARE FOR THE GIT SYSTEM - Pancreatic enzymes - Encourage a well-balanced diet - Monitor for failure to thrive - Monitor for constipation & intestinal obstruction - Supplement salt during extremely hot weather

CYSTIC FIBROSIS HOME CARE - Instruct the parents about the prescribed treatment measures and their importance - Instruct the parents to be sure immunizations are up to date - Inform the parents that the child should be vaccinated yearly for pneumococcus & influenzae - Inform the parents about the Cystic Fibrosis Foundation

12. ADULT RESPIRATORY DISORDERS

1. CHEST INJURIES

A. RIB FRACTURE

- - results from blunt chest trauma
- - causes a potential for intra-thoracic injury:
 - pneumothorax or pulmonary contusion
- ASSESSMENT
- Pain
- Tenderness
- Shallow respirations
- Client splints chest
- Fractures noted on CXR

NURSING CARE

- Note that ribs unite spontaneously
- Fowler's↑
- Pain medications
- Monitor for respiratory distress
- Instruct the client to self-splinting

B. FLAIL CHEST

- - a blunt chest trauma associated w/ accidents
- - resulting to loose chest wall
- ASSESSMENT
- Paradoxical respirations
- Severe chest pain
- Dyspnea
- Cyanosis
- Tachycardia

- Hypotension
- Tachypnea
- Diminished breath sounds

NURSING CARE

- Fowler's ↑
- Humidified O₂
- Monitor respiratory distress
- Coughing & deep breathing
- Pain meds
- Bed rest
- Prepare for intubation with mechanical ventilation with positive end-expiratory pressure (PEEP) for severe respiratory failure

C. PULMONARY CONTUSION

- - intra-alveolar hemorrhage resulting to ADULT RESPIRATORY DISTRESS SYNDROME (ARDS)

ASSESSMENT

- Dyspnea
- Hypoxemia
- ↑ bronchial secretions
- Hemoptysis
- Restlessness
- Decreased breath sounds
- Rales & wheezes

NURSING CARE

- Maintain airway
- Fowler's ↑
- O₂ as Rx
- Monitor respiratory distress
- Maintain bed rest
- Prepare for mechanical ventilation with positive end-expiratory pressure (PEEP) if required

D. PNEUMOTHORAX - accumulation of atmospheric air in the pleural space - may lead to lung collapse

KINDS

1. SPONTANEOUS PNEUMOTHORAX
2. OPEN PNEUMOTHORAX
3. TENSION PNEUMOTHORAX

ASSESSMENT

- Dyspnea
- Tachycardia
- Tachypnea
- Sharp chest pain
- Absent breath sounds

- ↓↓ chest expansion unilaterally
- Cyanosis
- Hypotension
- Sucking sound on breathing
- Tracheal deviation to the unaffected side
- with tension pneumothorax

NURSING CARE

- Apply dressing over an open chest wound
- O₂ as Rx
- ↑ Fowler's
- Chest tube placement
- Monitor for chest tube system
- Monitor for subcutaneous emphysema

CHEST TUBE DRAINAGE SYSTEM

- returns (-) pressure to the intra-pleural space - remove abnormal accumulation of air & fluids - serves as lungs while healing is going on

A. COLLECTION CHAMBER

B. WATER SEAL CHAMBER

C. SUCTION CONTROL CHAMBER

PRINCIPLES:

1. a. Gravity b. Suction c. Waterseal
2. Drainage
3. Waterseal
4. Suction
5. Bottle should be below the chest
6. Hemostats

Patient To patient To suction 1 2 1 2 3 Collection Water sealed To patient To suction

- Nasal fracture often results injuries received during falls, sport activities, motor vehicle accidents, or physical assaults.
- Displacement of either the bone or cartilage can cause airway obstruction or deformity and is potential source of infection.
- Assessment:
- Nasal deviation
- Malaligned nasal bridge
- Change in nasal breathing
- Crepitus on palpation
- Midface bruising
- pain

Intervention:

- RHINOPLASTY is a surgical reconstruction of the nose for cosmetic purposes and to improve airflow.
- Gauze packing to prevent bleeding and provide support for the reconstructed nose.

- A “moustache” dressing or a drip pad is usually under the nose.
- Splint or cast may cover the nose for additional alignment and protection.
- Epistaxis or nose bleed is a common problem because of rich capillary network within the nose.
Cause:
 - Trauma
 - HPN
 - Blood dyscrasia
 - Nose blowing
 - Nose picking
 - Chronic cocaine use
 - Nasogastric suctioning
 Assessment:
 - Reports of bleeding after sneezing or blowing the nose
 Interventions:
 - Position upright and leaning forward
 - Apply direct lateral pressure to the nose for 5 mins, and apply ice or cool compress to the nose.
 - Instruct client not to blow the nose for several hours after the bleeding stops.
- Nasal polyps are benign grapelike clusters of mucous membrane and connective tissue.
- If polyps become too large, airway obstruction may result.
- Caused by irritation to the nasal mucosa or sinuses, allergies, or infection (chronic sinusitis)
- Assessment:
 - Obstructed nasal breathing
 - Change in character of nasal discharge
 - Change in speech quality
 - Clients who have had polyps are at risk for recurrence

ADULT RESPIRATORY DISTRESS SYNDROME (ARDS) Cebu Nursing Review Center -
caused by a lung injury leading to extravascular lung fluid - interstitial edema -
respiratory acidosis & hypoxemia - the CXR film shows interstitial edema - can quickly
lead to acute respiratory failure

13. ADULT RESPIRATORY DISTRESS SYNDROME (ARDS)

ASSESSMENT

- Tachypnea
- Dyspnea
- ↓ breath sounds
- Deteriorating blood gas
- ↓ O₂

NURSING CARE

- Identify & treat the cause

- O₂ as Rx
- ↑ Fowler's
- Restrict fluid
- Respiratory ttt
- Administer diuretics, anticoagulants, or corticosteroids as Rx
- Prepare the client for intubation & mechanical ventilation

14. CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD - a group of diseases that includes EMPHYSEMA, BRONCHIECTASIS & CHRONIC BRONCHITIS - COPD leads to pulmonary insufficiency, pulmonary hypertension & cor pulmonale

A. CHRONIC BRONCHITIS

- Bronchial Inflammation ⇒ ↑ mucus ⇒ ↓ cilia ⇒ r.acidosis
- Causes:
 - Smoking
 - Pollution
 - Allergens

Assessment

1. Chronic Cough

2. Blue Bloater: cyanotic edema chronic cough RR↑ exertional dyspnea, hypoxia polycythemia- ↑ RBC hypercapnia cor pulmonale-RVH & resp. acidosis ↑ dilatation incidence in heavy cigarette smokers

Air Trapping ↓ EMPHYSEMA Destruction and Overdistension of the Alveoli Respi. Acidosis ↓

B. EMPHYSEMA

CAUSES:

- Smoking, Pollution and Allergens
- ↓ alpha-antitrypsin – causes expansion of the alveoli
- - strengthens the walls of the alveoli(blebs)

Assessment:

- pink puffer:
- ↑ mucus speaks in short & jerky sentence
- coughing anxious
- orthopneic pos. Frequently develop URTI
- barrelled chest Prolonged expiratory time
- SOB digital clubbing
- wheezing

C. BRONCHIECTASIS

- Permanent dilation & distension of the bronchi; may lead to ↑ mucus production ⇒ respi. Acidosis

CAUSES:

- Infection
- Atelectasis
- Aspiration

ASSESSMENT:

- Mucopurulent mucus
- Dyspnea
- Fever
- Orthopneic position
- Anxiety

13. CHRONIC OBSTRUCTIVE PULMONARY DISEASE

- 1. Bronchodilators:
- Xanthines, aminophylline, theophylline
- Adrenergics:
- Isoproterenol(Isuprel), Terbutaline,(Brethine),
- Metaproterenol(Alupent)
- Expectorants: Guaifenesin(Robitusin)
- Mucolytics: Acetylcysteine(Mucomyst)
- Steroids: Prednisone
- Prophylaxis (anti-allergy): Cromolyn Na(Intal)

NURSING CARE

- V/S
- ↓ O₂ conc. (2-3L/min) as Rx
- Monitor pulse oximetry
- Respiratory ttt & chest physiotherapy
- Pursed-lip breathing
- Record the color, amount & consistency of sputum
- Suction
- Daily wt.
- Small, frequent feedings
- ↑ calorie & CHON diet with supplements
- Encourage fluids
- ↑ Fowler's
- Stop Smoking
- Activity as tolerated
- Avoid powerful odors

14. ASTHMA

- Characterized by recurring episodes of paroxysmal dyspnea, wheezing on inspiration/expiration caused by constriction of the bronchi and viscous mucus secretions.

TYPES :

- Extrinsic
- Intrinsic – asthma w/ physiological cause

- Status Asthmaticus – severe form of constriction & inflammation despite treatment; may lead to respiratory or cardiac failure.

ASSESSMENT:

- Severe dyspnea
- Wheezing
- Anxiety
- Fever - ↓↓ grade fever
- Orthopneic position

NURSING INTERVENTION

- Assess precipitating factor and eradicate these sources
- Instruct px to avoid 3 E's (exercise specially in cold weather, environmental factors like dust, emotional factors).
- Position px in orthopneic position and encourage to do pursed lip breathing.
- Administer medications- bronchodilators and corticosteroids usually via nebulization
- Liberal fluid intake

A- aminophylline

S- steroid

T- theophylline

M - mucolytics

A - antibiotics

B- bronchodilators

R- rest

O- oxygen

C- chest physiotherapy

H- high fowlers

I - intermittent positive pressure breathing

A -aerosol

L- liberal fluid intake

15. PNEUMONIA

-grade fever Chills Chest pain Grating sound Rusty Sputum Rales or crackles on auscultation Dullness or hyperesonance Dx test: x-ray gram-staining sputum culture & sensitivity

NURSING CARE for PNEUMONIA

- ↑ Fluids
- Chest Physiotherapy
- Chest splinting
- Incentive Spirometer
- ↑ calorie & CHON diet
- Small frequent meals
- Rest & activity as tolerated
- Administer antibiotics as Rx – Penicillin DOC

- Administer antipyretics, bronchodilators, cough suppressants, mucolytic agents & expectorants as Rx
- Handwashing & proper disposal of secretions
- Thoracentesis – POC

16. LUNG CANCER

- Tumor in the Bronchial Epithelium; men 40 & ↑
- TYPES:
 - Epidermoid/Squamous:
 - Adenocarcinoma
 - Small cell(Oat cell)
 - Large cell

17. LUNG CANCER

CAUSES:

- 1. Genetics
- 2. Carcinogens
- Infection
- Smoking

ASSESSMENT:

- Respiratory Pattern Changes
- Hemoptysis
- Dyspnea
- Chest Pain
- Fatigue
- Anorexia
- Persistent Dry Cough
- Dx Test:
 - Sputum cytology
 - Lung biopsy
 - Bronchoscopy

NSG. RESPONSIBILITIES :

- Early detection
- Radiation – Cobalt
- Chemotherapy – does not distinguish normal from abnormal
- 4. Surgery – ttt of choice
 - a. Pneumonectomy
 - b. Lobectomy
 - * Segment resection
 - * Wedge resection

18. PULMONARY TUBERCULOSIS

- Highly communicable disease caused by a gram + acid-fast bacilli (mycobacterium tuberculosis)
- Causes/ ↑ Risk groups :
- Immunosuppression

- Overcrowding
- 3 rd world country
- Children 5 yrs.old↓
- Alcoholics
- Smoking

ASSESSMENT:

- Asymptomatic
- Anorexia
- Wt. Loss
- Fatigue
- Low grade P.M. fever
- Night sweats
- Sputum – yellow green or blood streaked
- Hemoptysis
- Chest pain
- ↑ tactile fremitus

Dx Test: Sputum test Sputum Culture – TOC Tuberculin test – Check for the presence of antibodies due to exposure a. Mantoux test b. Multiple puncture test(Tine or Monovac)

NSG. CARE:

- Chemoprophylaxis – only indicated in primary infection
- Multi-drug therapy
- 1 st line drug: 2 nd line drugs:
- Rifampicin Kanamycin
- INH Capneomycin
- Streptomycin Para aminosalycilic acid
- Pyrazinamid
- Ethambutol

19. PLEURAL EFFUSION

- - the collection of fluid in the pleural space

ASSESSMENT

- Sharp pleuritic pain
- Dyspnea
- Dry non-productive cough
- Tachycardia
- ↑ temperature
- ↓ breath sounds
- CXR shows pleural effusion & a mediastinal shift away from the fluid

NURSING CARE

- Identify & treat underlying cause
- Monitor breath sounds
- Monitor pulse oximetry
- Fowler's↑

- Coughing & DBE
- Thoracentesis
- If pleural effusion is recurrent, prepare the client for pleurectomy or pleurodesis

20. PLEURECTOMY & PLEURODESIS

PLEURECTOMY - surgically stripping the parietal pleura

PLEURODESIS - involves instillation of a sclerosing substance into the pleural space via a thoracotomy tube

21. EMPYEMA

- - pus within the pleural cavity
 - - fluid is thick, opaque & foul smelling
- ASSESSMENT
- Fever & chills
 - Chest pain
 - Cough
 - Dyspnea
 - Anorexia & wt. loss
 - Malaise
 - Night sweats
 - Diminished chest wall movement on the affected side
 - Pleural exudates on chest CXR

NURSING CARE

- Monitor breath sounds
- Fowler's ↑↑
- Coughing & DBE
- Antibiotics as Rx
- Chest splinting
- If marked pleural thickening occurs, prepare the client for decortication, if Rx

22. PLEURISY

- - inflammation of the visceral & parietal membranes
- - may be caused by pulmonary infarction or pneumonia

ASSESSMENT

- Knife-like pain
- Dyspnea
- Pleural friction
- Apprehension

NURSING CARE

- Identify & treat cause
- Monitor lung sounds
- Analgesics as Rx
- Apply hot & cold applications as Rx
- Coughing & DBE
- Instruct the client to lie on affected side to splint chest

23. PULMONARY EMBOLISM

- Dislodgement of thrombus to the pulmonary artery
- Caused by thrombus & pulmonary emboli
- Other risk factors: deep vein thrombosis, immobilization, surgery, obesity, pregnancy, CHF, advanced age, prior history of thromboembolism

ASSESSMENT

- Dyspnea
- Chest pain
- Tachypnea & tachycardia
- Hypotension
- Shallow respirations
- Rales on auscultation
- Cough
- Blood-tinged sputum
- Distended neck veins
- Cyanosis

NURSING CARE

- O₂ as Rx
- ↑ Fowler's
- Maintain bed rest
- Incentive spirometry as Rx
- Pulse oximetry
- Prepare for intubation & mechanical ventilation
- IV heparin (bolus)
- Warfarin (Coumadin)
- Monitor PT & PTT closely
- Prepare the client for embolectomy, vein ligation, or insertion of an umbrella filter as Rx

24. RESPIRATORY FAILURE

- Inadequate ventilation
- Results from inability of the lungs to adequately maintain arterial oxygenation or eliminate carbon dioxide.
- Common cause of respiratory failure:
- Bronchitis
- Bronchospasm
- Pneumonia
- Pulmonary emboli

ASSESSMENT

- Dyspnea
- Headache
- Restlessness
- Confusion
- Tachycardia
- Cyanosis

- Dysrhythmias
- Decreased level of consciousness
- Alterations in respirations & breath sounds
- Identify & treat the cause of respiratory failure
- Administer O₂ to maintain the PaO₂ level above 60-70 mm Hg
- Position the client in high Fowler's
- Encourage DBE
- Administer bronchodilators as Rx
- Mechanical ventilation with an endotracheal tube, if needed to provide adequate oxygenation and reverse acidosis