

Preconference Form

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Medical Diagnosis/Disease: COPD (chronic obstructive pulmonary disease)

NCLEX IV (8): Physiological Integrity/Physiological Adaptation

Anatomy and Physiology

Normal Structures

nose- humidifies, warms, filters, inspired air; nasal vibrissae(hairs) coated with mucus and traps large particles; pharynx- connects nasal cavity, larynx, oral cavity and esophagus; nasopharynx- region connecting nasal cavity to pharynx, is air only passageway; laryngopharynx, part of pharynx continuous with larynx, food airway passageway; larynx connects pharynx to trachea, houses vocal cords; epiglottis- routes food/air into appropriate passageways and voice production; trachea- windpipe, provides support to maintain open passage for air; right and left mainstem bronchus- right is wider, more vertical, if something is aspirated most likely goes there; bronchioles- transport air to alveoli where gas exchange occurs; alveoli- facilitate the exchange of gases between the air we breathe and the blood, respiratory membrane formed by the alveoli and capillary membranes that allows oxygen to be picked up by the blood and carbon dioxide to be released into the air (diffusion of the two); pulmonary veins- carry oxygenated blood from the lungs to the heart; mechanical barriers- the nasopharynx and airway structure prevent particles and organisms from entering the lower airways; mucus and cilia- cilia move the mucus that traps pathogens and other particles and prevent bacteria from attaching to the epithelium' cough reflexes- expel microbes that may bypass initial defenses; alveolar capillary membranes- where diffusion happens bc alveoli come in contact with the pulmonary capillaries and gas exchange occurs; hemoglobin- bus for O₂; two forms of circulation- pulmonary and bronchial; chest wall is ribs and sternum- protects heart and lungs; pleura- parietal (chest cavity) and visceral (lung cavity) intrapleural space normally contains 20-25mL of fluid; diaphragm- major muscle of respiration (goes down on inhalation- up on expiration); ventilation= inspiration expiration; the medulla is the respiratory center of the brain; mechanical receptors in the conducting upper airways which sent responses to peripheral chemoreceptors which stimulate respiratory center to increase RR and central chemoreceptors in the brain which regulates respiration

Pathophysiology of Disease

a progressive lung disease characterized by persistent airflow limitations, associated with enhanced chronic inflammatory response in the airways and lungs. this inflammation is of the lung parenchyma (respiratory bronchioles and alveoli) and pulmonary blood vessels. airflow limitation is not fully reversible during forced exhalation. main cause is the loss of elastic recoil and airflow obstruction from mucus hypersecretion, mucosal edema, and bronchospasms. the inflammatory process starts with inhaling noxious particles and gases such as cigarette smoke which causes tissue destruction and disrupts the normal defense mechanisms and repair process of the lungs. sometimes may be genetically determined. inflammatory cells are neutrophils, macrophages, and lymphocytes. the inflammatory process results in structural changes in the lungs. after the inhaling of tobacco or air pollution, the activity of proteases (which break down connective tissue of the lungs) increases and antiproteases (which protect against breakdown) are inhibited. this increases alveolar destruction and loss of elastic recoil. the main characteristic of COPD is not being able to expire air. main site of airflow limitation is in the smaller airways which is where the air is trapped during expiration. as air is trapped in the lungs, chest hyper-expands and becomes barrel shaped because respiratory muscles can't function effectively. as the air trapping increases walls of alveoli are destroyed. bullae (large air spaces in the parenchyma) and blebs (air spaces next to pleurae) can form in and on the lungs.

NCLEX IV (7): Reduction of Risk

Anticipated Diagnostics

Labs

ABG
CBC: WBC- 4500-11000, RBC- 4.5-5mil, hemoglobin 14-17.5
sputum cytology (if sputum produced in the cough)

Additional Diagnostics

chest Xray
spirometry
CT scan
Alpha-1 testing (to test for AAT and abnormal forms of the protein, which is a protein produced by the liver and protects the lungs and liver from damage.

NCLEX II (3): Health Promotion and Maintenance

Contributing Risk Factors

smoker
infection
asthma
air pollution
occupational chemicals and dusts
aging
genetics
Alpha 1 antitrypsin deficiency

Signs and Symptoms

SOB
coughing up mucus
chest pain
fatigue
increased mucus
high levels of CO₂
swelling in lower legs
wheezing or whistling
cyanosis
lack of energy

NCLEX IV (7): Reduction of Risk

Possible Therapeutic Procedures

Non-surgical

apply O₂ therapy, use of IS, health promotion (not smoking, diet, avoid others who are sick) activity/rest ratio, psychosocial care)

Surgical

lung volume reduction surgery (reduce diseased lung so healthy lung can perform better)
bronchoscopic lung volume reduction bullectomy

Prevention of Complications

(What are some potential complications associated with this disease process)

pulmonary hypertension
cor pulmonale (results from pulmonary hypertension)
acute exacerbation
acute respiratory failure

NCLEX IV (6): Pharmacological and Parenteral Therapies

Anticipated Medication Management

bronchodilators, nebulizers, short or long-acting adrenergic agonist, anticholinergics, roflumilast (decrease exacerbation)

NCLEX IV (5): Basic Care and Comfort

Non-Pharmacologic Care Measures

O₂ treatments, nutrition care, respiratory treatments, hydration, avoid smoking, non-invasive ventilation, steamy showers/baths

NCLEX III (4): Psychosocial/Holistic Care Needs

What stressors might a patient with

this diagnosis be experiencing?
anxiety about not being able to breathe, death, coping, having trouble performing ADLS

Client/Family Education

List 3 potential teaching topics/areas

- support groups for former smokers
- educate on medications and how to take
- ways to manage disease at home with holistic care

NCLEX I (1): Safe and Effective Care Environment

Multidisciplinary Team Involvement

(Which other disciplines do you expect to share in the care of this patient)

respiratory therapist	CNA
dietitian	caregivers
physical therapist	pharmacists
occupational therapist	radiologist
primary care	thoracic surgeons
nurse	patient
pulmonologist	