

OBSTRUCTIVE PULMONARY DISEASES

NUR 142: Linda Mollino

TABLE 37–5 Selected Causes of Respiratory Failure

TYPE OF DYSFUNCTION	EXAMPLES
Impaired ventilation:	
■ Airway obstruction	Laryngospasm, foreign body aspiration, airway edema
■ Respiratory disease	Asthma, COPD
■ Neurologic causes	Spinal cord injury, poliomyelitis, Guillain-Barré syndrome, drug overdose, stroke
■ Chest wall injury	Flail chest, pneumothorax
Impaired diffusion:	
■ Alveolar disorders	Pneumonia, pneumonitis, COPD
■ Pulmonary edema	Heart failure, acute respiratory distress syndrome (ARDS), near-drowning
Ventilation-perfusion mismatch	Pulmonary embolism

Ventilation-perfusion mismatch

Impaired gas diffusion

Hypoventilation

Hypoxemia

Hypercapnia

Respiratory failure

Manifestations:

- Dyspnea, tachypnea
- Cyanosis
- Restlessness, apprehension
- Confusion, impaired judgment
- Tachycardia, dysrhythmias
- Hypertension
- Metabolic acidosis

Manifestations:

- Dyspnea → respiratory depression
- Headache
- Papilledema
- Tachycardia, hypertension
- Drowsiness, coma
- Systemic vasodilation, heart failure
- Respiratory acidosis

Disorders of the Airways

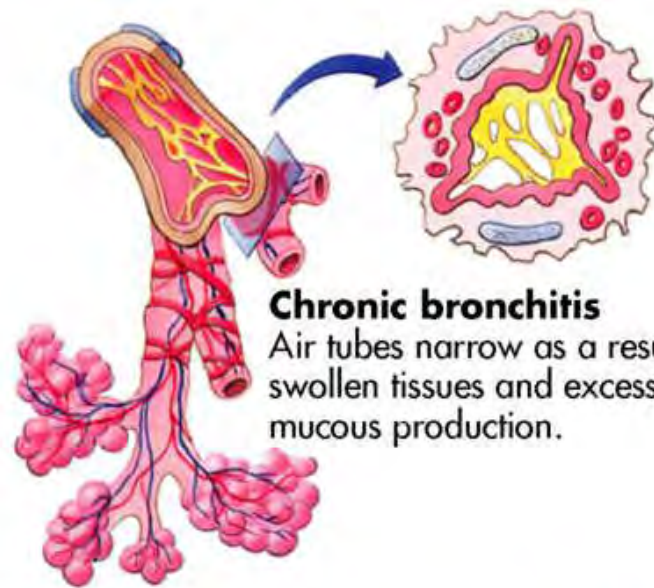
- A group of diseases that include

- Asthma
- Emphysema
- Bronchitis
- Bronchiectasis

- Characterized by

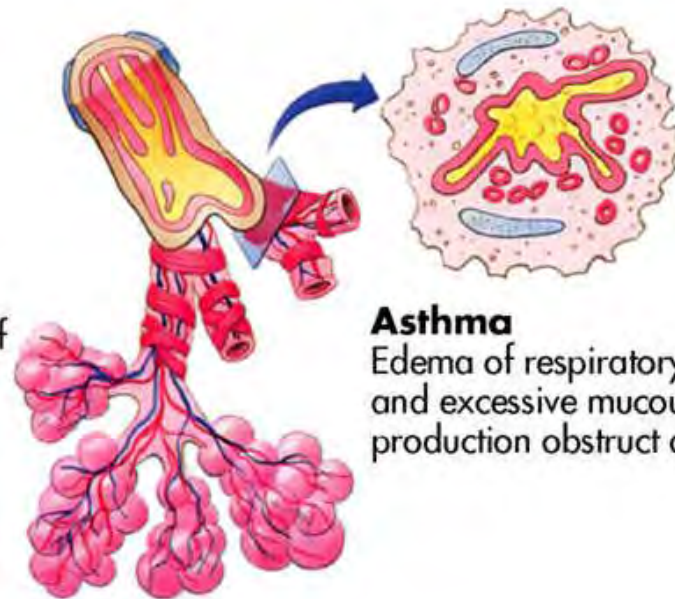
- progressive airflow limitations into and out of the lungs
- elevated airway resistance
- irreversible lung distention
- arterial blood gas imbalance

Disorders of the Airways



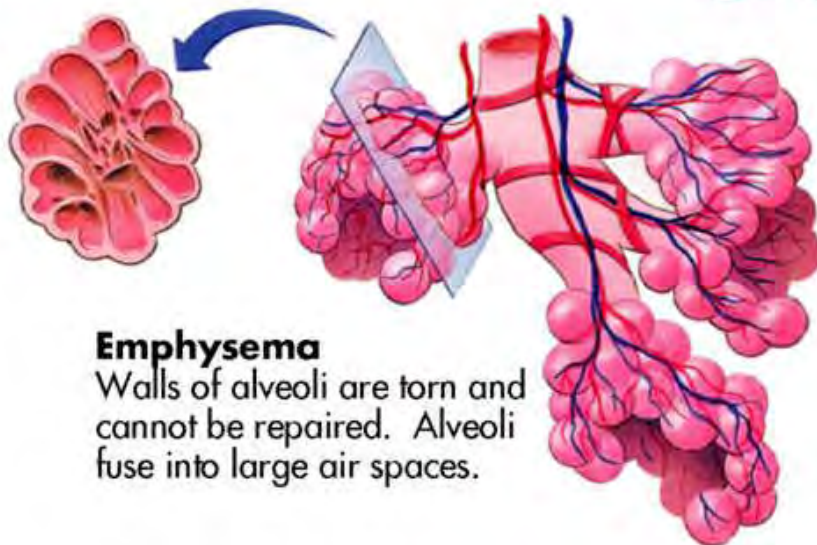
Chronic bronchitis

Air tubes narrow as a result of swollen tissues and excessive mucous production.



Asthma

Edema of respiratory mucosa and excessive mucous production obstruct airways.



Emphysema

Walls of alveoli are torn and cannot be repaired. Alveoli fuse into large air spaces.

Chronic Inflammatory Disorder of the Airways

- Generally brief
- Acute asthma can be fatal
- Persistent inflammation of the airways
- Potentially Reversible
- 1 in 20 Americans
- Increasing Incidence

Asthma

- ❑ Intermittent airway obstruction in response to a variety of stimuli
- ❑ Epithelial lining of the airways responds by becoming inflamed and edematous
- ❑ Bronchospasm occurs in the smooth muscle of the bronchi and bronchioles
- ❑ Secretions increase in viscosity
- ❑ Elastic recoil decreases
- ❑ Reduction of the diameter of the airways and in breathing difficulty on inspiration

Asthma

- Pathophysiology
 - ▣ Inflammatory mediators are released
 - ▣ Activation of inflammatory cells
 - ▣ Bronchoconstriction
 - ▣ Airway edema
 - ▣ Impaired mucociliary clearance
 - ▣ Work of breathing increases
 - ▣ Trapping of air impairs gas exchange

Asthma

□ Triggers

- ▣ Allergens
- ▣ Dust
- ▣ Pollen
- ▣ Animal Dander
- ▣ Mold
- ▣ Foods/Additives
- ▣ Respiratory tract infection
- ▣ Exercise

□ Triggers

- ▣ Smoke
- ▣ Medications
- ▣ Cold Air/Hot Air
- ▣ Inhaled irritants
 - Chemicals
- ▣ Emotional upsets

Asthma

□ Clinical Manifestations

- ▣ Chest tightness
- ▣ Cough, dyspnea, and wheezing
- ▣ Tachycardia, tachypnea, prolonged expiration
- ▣ Fatigue, anxiety, apprehension

□ Respiratory failure

- ▣ Breath sounds can “improve” right before failure

Stages of Asthma

- Reactive Airway Disease
 - ▣ Mild Intermittent
 - ▣ Mild Persistent
 - ▣ Moderate Persistent
 - ▣ Severe Persistent

Asthma

- Status Asthmaticus
 - ▣ Severe asthma
 - ▣ Does not respond to routine treatment
- Cough-Variant Asthma
 - ▣ Persistent cough without wheezing or dyspnea
 - ▣ Significant airway inflammation

Asthma

- Status Asthmaticus
 - ▣ Severe prolonged asthma
 - ▣ Does not respond to routine treatment
 - ▣ Severe: Life Threatening Emergency
 - ▣ Cause- ? Failure to Act When Situation First Starts to Get Worse
 - ▣ Leads to Respiratory Arrest
 - ▣ Give Epinephrine and IV Steroids
- Cough-variant Asthma
 - ▣ Persistent cough without wheezing or dyspnea
 - ▣ Significant airway inflammation

Asthma

- Interdisciplinary Care
 - ▣ Control of symptoms
 - ▣ Prevention of acute attacks
 - ▣ Restoring airway patency
 - ▣ Restoring alveolar ventilation

Asthma

▶ Treatment

- ▶ Avoid Triggers - Avoid Smoking
- ▶ Control of symptoms

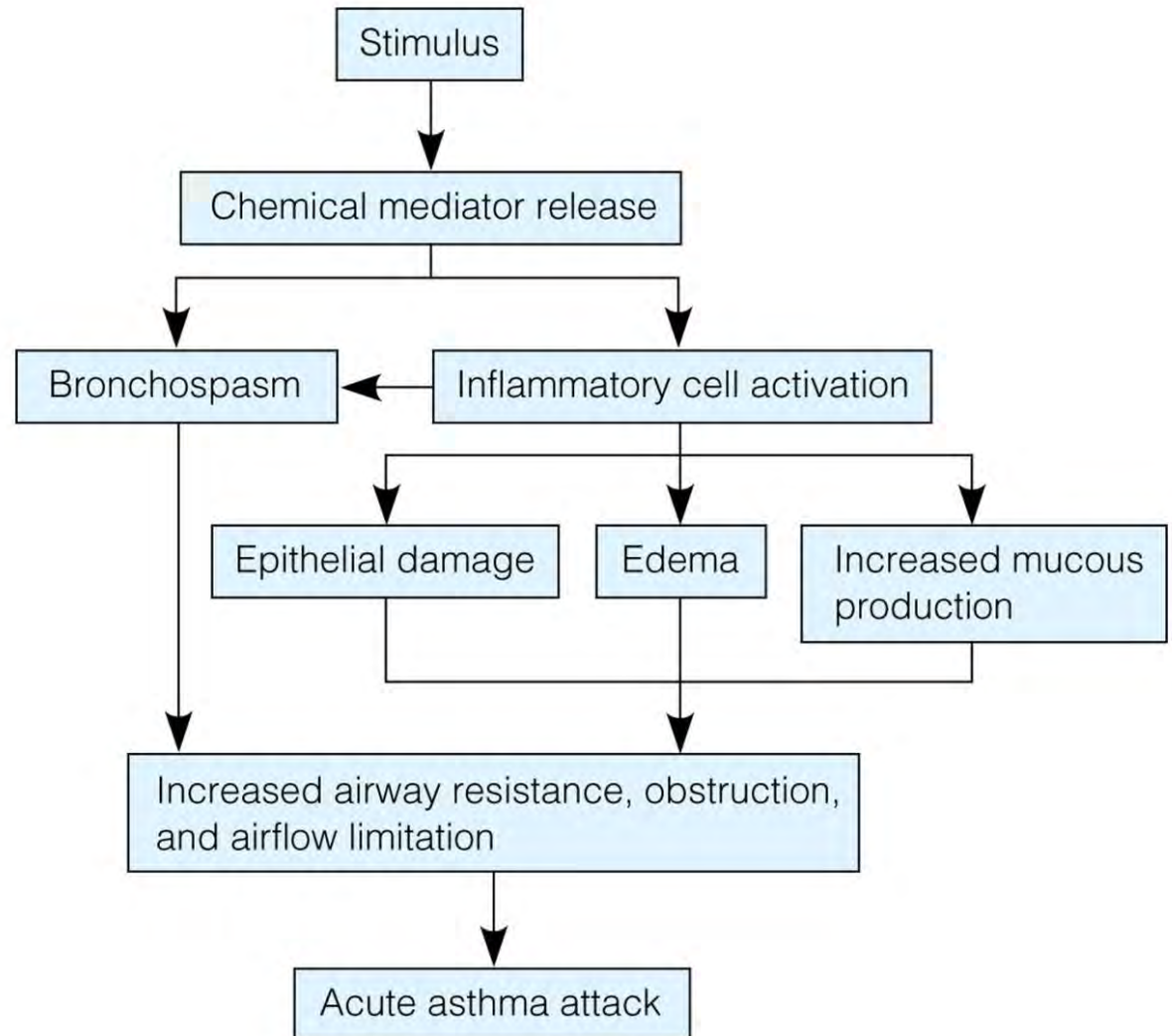
▶ Medications

- Bronchodilators
- Inhaled Steroids
- Mast Cell Stabilizers
- Leukotriene Modulators
- Antihistamines
- Oral/IV Steroids
- Theophylline

□ Interdisciplinary Care

- ▣ Prevention of acute attacks
- ▣ Restoring airway patency
- ▣ Restoring alveolar ventilation
- ▣ Peak expiratory flow Rate (PEFR)
- ▣ Prevention

Asthma





Florida State University College of Medicine

TABLE 37–1 Classification of Asthma Severity

CLASSIFICATION	SYMPTOM FREQUENCY	NIGHTTIME SYMPTOMS
Mild intermittent	■ No more than twice a week ■ Brief attacks (hours to days) of varied intensity ■ Asymptomatic and normal peak expiratory flow (PEF) rate between attacks	No more than twice a month
Mild persistent	■ More than twice a week but less than once a day ■ Exacerbations may affect activity	More than twice a month
Moderate persistent	■ Daily symptoms ■ Daily short-acting bronchodilator use ■ Exacerbations affect activity ■ Exacerbations more than twice a week; may last for days	More than once a week
Severe persistent	■ Continual symptoms ■ Limited physical activity ■ Frequent exacerbations	Frequent

Note: Adapted from National Education and Prevention Program. (1997). Expert panel report 2: Guidelines for the diagnosis and management of asthma, Publication No. 97-4051. Bethesda, MD: National Institutes of Health.

Intervention

- Monitor vital signs
- Administer oxygen at
- 2 to 3L/min.
- Record the color, amount, and consistency of sputum.
- Suction the client if necessary to clear the airway and prevent infection.
- Encourage fluids up to 3000 mL/day to keep secretions thin unless contraindicated.
- Position in High Fowler's and leaning forward to aid in breathing.
- Provide a high-calorie, high-protein
- Encourage small, frequent meals to prevent dyspnea.
- Activity as tolerated
- Steroids, mucolytics, antibiotics, bronchodilators

TABLE 37–2 Stepwise Approach to Asthma Management for Adults

STEP/DISEASE SEVERITY	PREFERRED TREATMENT	ALTERNATE OR AS NEEDED TREATMENT
Step 1 Mild Intermittent	No daily medication needed	Systemic corticosteroids for severe exacerbations
Step 2 Mild Persistent	Low-dose inhaled corticosteroids	Cromolyn, leukotriene modifier, nedocromil, or sustained release theophylline
Step 3 Moderated Persistent	Low-to-moderate dose inhaled corticosteroids <i>and</i> long-acting inhaled beta-2 agonist	Increase inhaled corticosteroid dose <i>or</i> combine inhaled corticosteroid with leukotriene modifier or theophylline
Step 4 Severe Persistent	High-dose inhaled corticosteroid <i>and</i> long-acting inhaled beta-2 agonist	Add systemic corticosteroid

Note: Adapted from National Education and Prevention Program. (2007). Expert panel report 3: Guidelines for the diagnosis and management of asthma, update on selected topics 2007, Publication No. 08-5846. Bethesda, MD: National Institutes of Health.

BOX 37-1 Patient Teaching: Using a Metered-Dose Inhaler or Dry Powder Inhaler

Metered-Dose Inhaler

- Firmly insert a charged metered-dose inhaler (MDI) canister into the mouthpiece unit or spacer (if used).
- Remove mouthpiece cap. Shake canister vigorously for 3 to 5 seconds.
- Exhale slowly and completely.
- Holding the canister upside down, place the mouthpiece in the mouth, closing lips around it, if a spacer is being used. When no spacer is used, hold the mouthpiece directly in front of the mouth.
- Press and hold the canister down while inhaling deeply and slowly for 3 to 5 seconds (see accompanying figure).
- Hold breath for 10 seconds, release pressure on the container, remove from mouth, and exhale. Wait 20 to 30 seconds before repeating the procedure for a second puff.
- Rinse the mouth after using the inhaler to minimize systemic absorption and drying the mucous membranes.
- Rinse the inhaler mouthpiece and spacer after use; store in a clean location.

Dry Powder Inhaler

- Keep the inhaler and medication in a clean, dry location. Do not refrigerate or store in a humid place (for example, the bathroom).
- Remove the cap and hold the inhaler upright. Inspect to be sure that the mechanism is clean and the mouthpiece is clear.
- If necessary, load the dose into the inhaler following manufacturer's directions.
- Hold the inhaler level with the mouthpiece end facing down.
- Breathe slowly and completely. Tilt your head back slightly.
- Place the mouthpiece in your mouth with your teeth over the mouthpiece. Seal your lips around the mouthpiece. Do not block the inhaler with your tongue.

- Breathe in rapidly and deeply through your mouth over 2 to 3 seconds to activate the flow of medication.
- Remove the inhaler from your mouth and hold your breath for 10 seconds.
- Exhale slowly through pursed lips to allow the medication to enter distal airways. Never exhale into the inhaler mouthpiece to prevent clogging.
- Rinse your mouth or brush your teeth after using the inhaler to avoid a bad taste from the medication and to prevent a yeast infection (if a corticosteroid medication is being used).
- Store the inhaler in a clean, sealed plastic bag; do not wash the inhaler unless so directed by the manufacturer. The mouthpiece should be cleaned weekly using a dry cloth.



FREQUENCY OF ASTHMA

Among adults, women of all races have higher rates of illness and death from asthma than do men. Death from asthma is two to six times more likely to occur among African Americans and Hispanics than among whites. Rates for African Americans hospitalized for asthma are almost triple those for whites. African Americans were four times more likely than whites to visit an emergency department because of asthma. Asthma clients in general, and high-risk inner-city clients in particular, need to be able to recognize the signs and symptoms of uncontrolled asthma and know how to respond appropriately (U.S. Department of Health and Human Services, 2000).

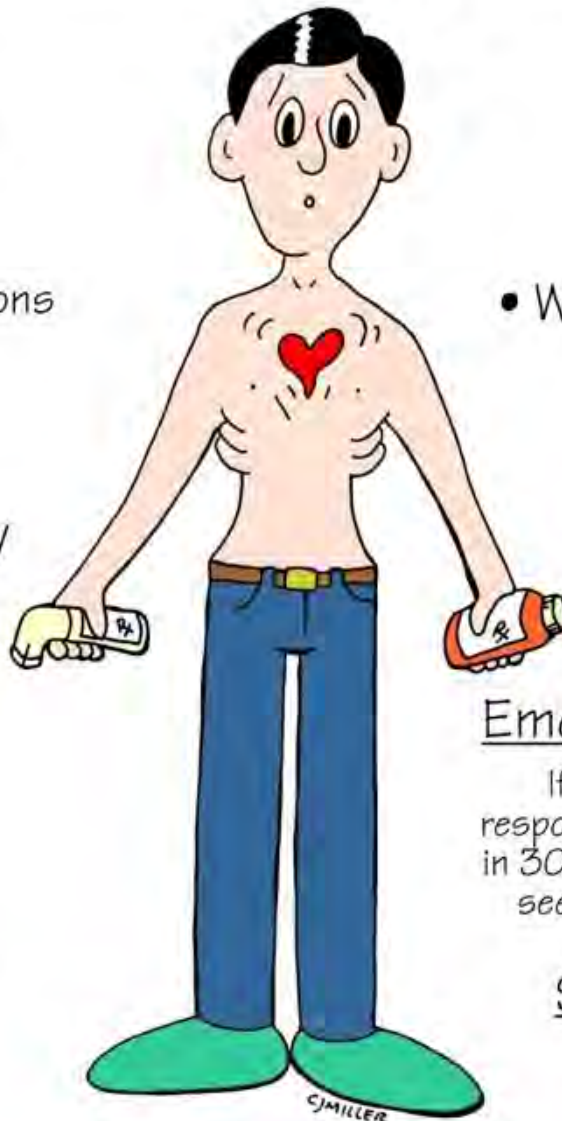
ASTHMA

(Reactive Airway Disease)

- Triggers
 - Hypersensitivity
 - URI
 - Exercise
 - Air Pollutants
 - Respiratory Infections
 - GERD

- Familial Tendency

- Hypoxemia:
 - Tachycardia
 - ↑ Restlessness
 - Tachypnea



- Cough
- ↑ Mucus
- Shortness of Breath
- Wheezing & Prolonged Expiration
- ↑ CO₂ Retention
- Chest Tightness
- Retractions

Emergency:

If symptoms do not respond to usual treatment in 30 minutes, client should seek medical attention.

Status Asthmaticus

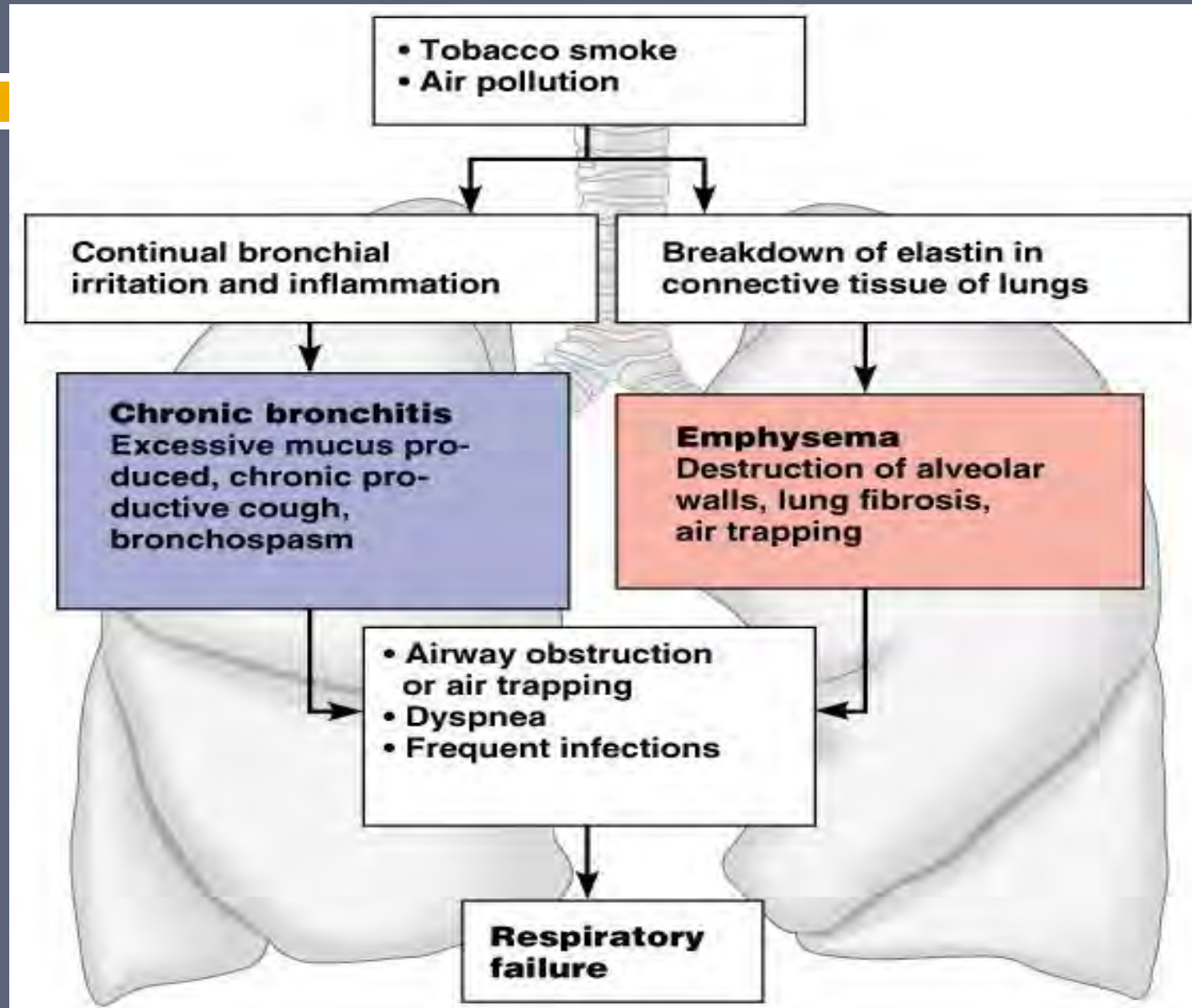
Can be life threatening!

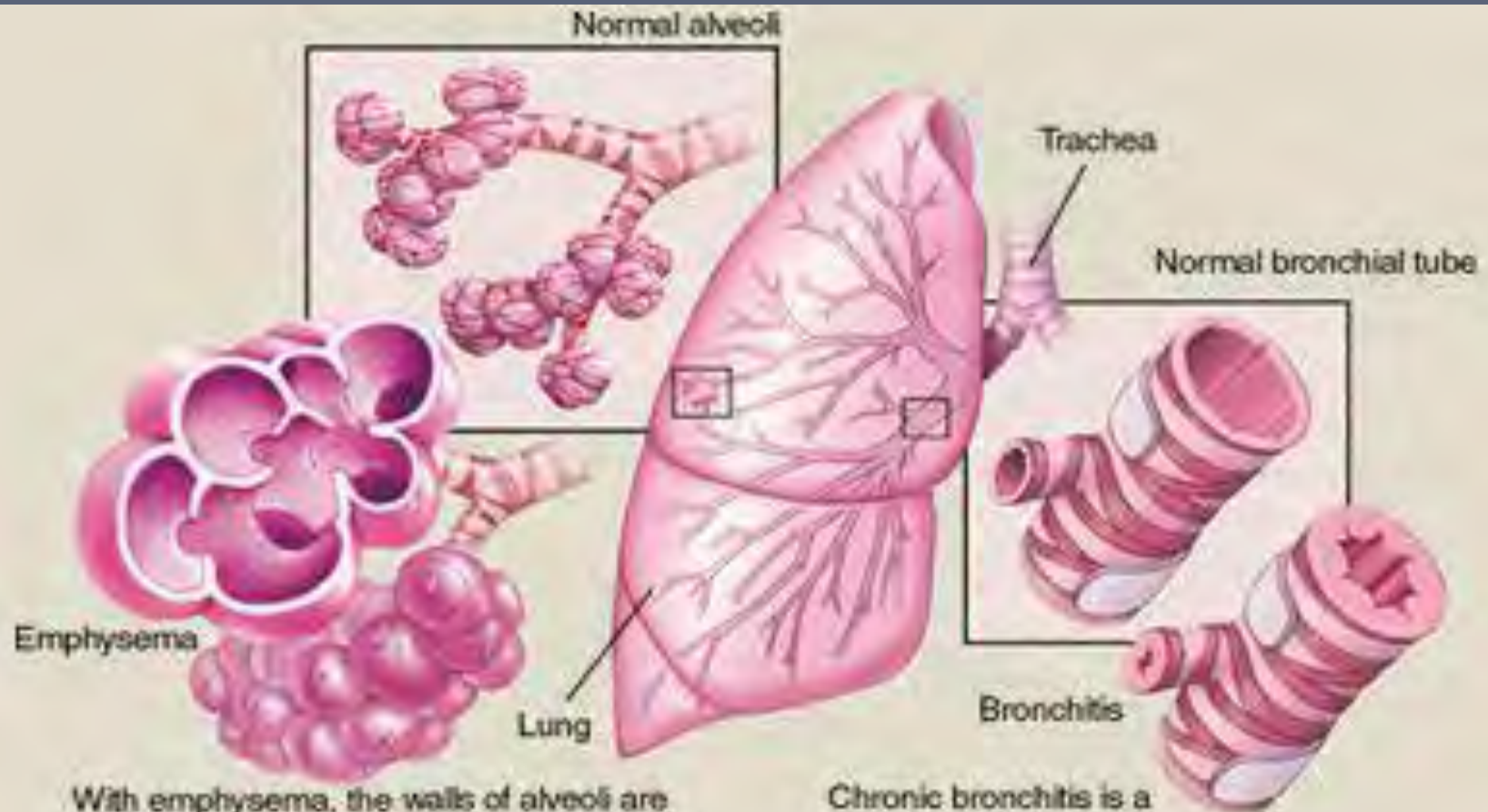
MANAGEMENT OF ASTHMA



- A** • Adrenergics (Beta 2 Agonists)
(Albuterol)
- S** • Steroids
- T** • Theophylline
- H** • Hydration (IV)
- M** • Mask O₂
- A** • Anticholinergics

Chronic Obstructive Pulmonary Disease (COPD)





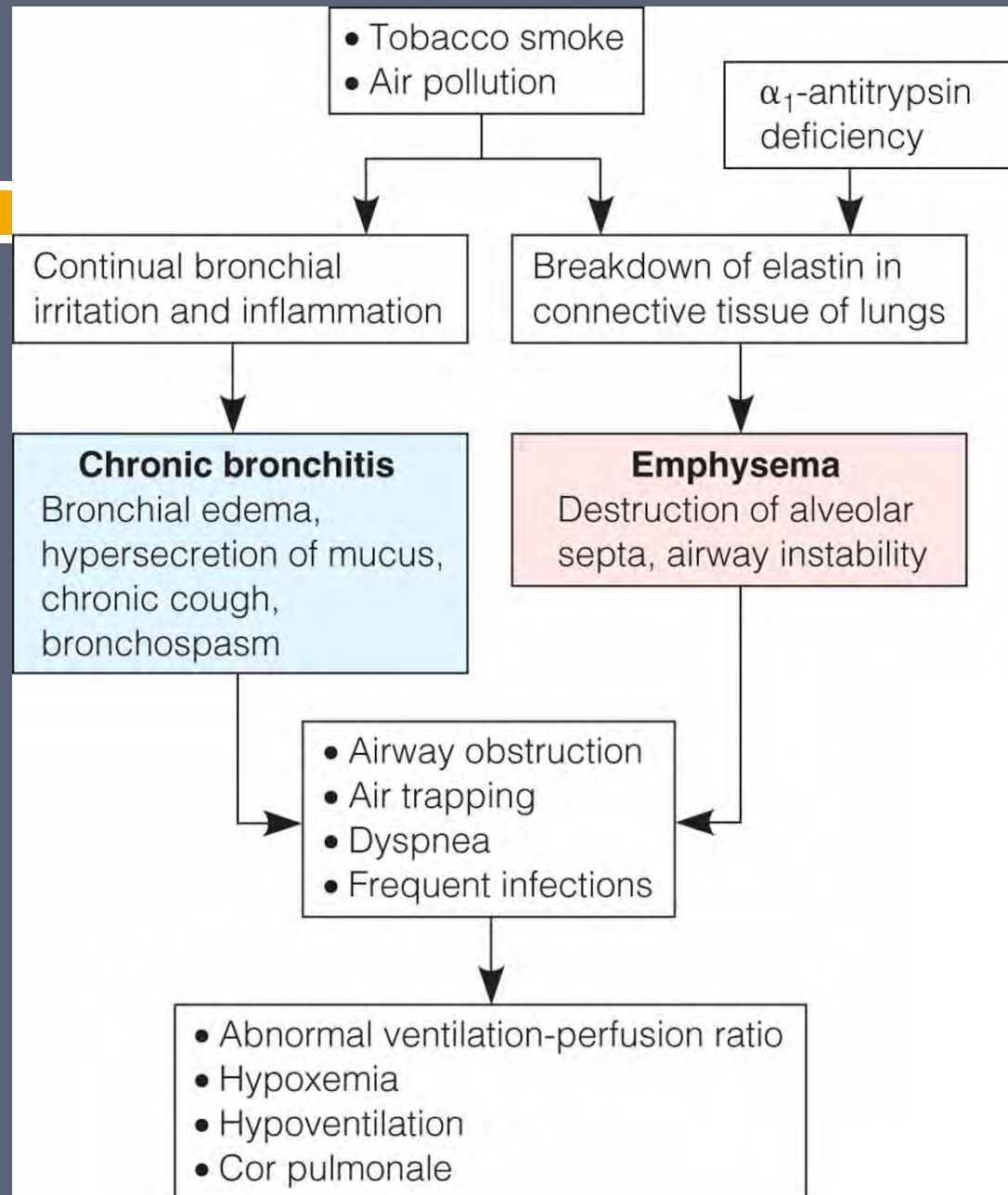
With emphysema, the walls of alveoli are damaged by inflammation. Alveoli can lose their natural elasticity, become overstretched and rupture. Several adjacent alveoli may rupture, forming one large space instead of many small ones.

Chronic bronchitis is a chronic inflammation and thickening of the walls of your bronchial tubes, which narrows them. It often induces coughing spells.

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CLIENTS WITH COPD

Low-flow oxygen systems are essential for clients with COPD. People with COPD may have a chronically high carbon dioxide level. Their stimulus to breathe is not high levels of carbon dioxide but low levels of oxygen (*hypoxemia*). High flows of oxygen can potentially relieve this hypoxemia, but they may also remove the stimulus to breathe. Low flows maintain a slightly hypoxemic state, thus maintaining the respiratory drive. Clients who have COPD and are receiving oxygen therapy should be observed carefully (especially when therapy is first initiated) for respiratory depression or arrest.



Chronic Obstructive Pulmonary Disease (COPD)

- Chronic airflow obstruction
- Chronic bronchitis and/or emphysema
- Characterized by slow progressive obstruction of airways
 - ▣ Resistance to airflow to increase
 - ▣ Expiration becomes slow or difficult
 - ▣ Mismatch between alveolar ventilation and perfusion
 - ▣ Impaired gas exchange
- Progressive (not reversible)
- 4th Leading Cause of Death (U.S.)
- Primary Risk- Smoking

Chronic Obstructive Pulmonary Disease

- Risk Factors
 - ▣ Cigarette smoking
 - ▣ Air pollution
 - ▣ Occupational exposures
 - ▣ Airway infection
 - ▣ Familial and genetic factors

Why Does Smoking Lead to COPD?

- Smoke is an irritant- causes hyperplasia of cells
- Hyperplasia of cells narrows the airway
- Hyperplasia of goblet cells increases mucus
- Smoke reduces ciliary activity
 - reduces # of ciliated cells
- Produces abnormal dilation of alveolar walls
- Establishes chronic inflammation
- Reduces available Oxygen

Chronic Obstructive Pulmonary Disease (COPD)

- Manifestations of COPD:
 - Morning cough
 - Dyspnea with activity
 - Presence of a barrel-shaped chest

Chronic Obstructive Pulmonary Disease

□ Diagnosis

- Pulmonary function tests
- Ventilation–perfusion scanning
- Serum alpha 1 -antitrypsin levels
- ABGs
- Pulse oximetry
- Capnogram
- CBC with WBC differential
- Chest x-ray

Chronic Obstructive Pulmonary Disease

- Interdisciplinary Care
 - ▣ Symptom relief
 - ▣ Minimization of obstruction
 - ▣ Slowing development of disability

Chronic Obstructive Pulmonary Disease

□ Treatments

- Smoking cessation
- Avoidance of airway irritants and allergens
- Pulmonary hygiene measures
- Adequate hydration
- Regular aerobic exercise if applicable
- Breathing exercises
- Long-term oxygen therapy
- Transplant
- Complimentary therapies

Chronic Obstructive Pulmonary Disease

- Nursing diagnoses
 - ▣ Ineffective Airway Clearance
 - ▣ Imbalanced Nutrition: Less than Body Requirements
 - ▣ Compromised Family Coping
 - ▣ Decisional Conflict: Smoking

Chronic Obstructive Pulmonary Disease (COPD)

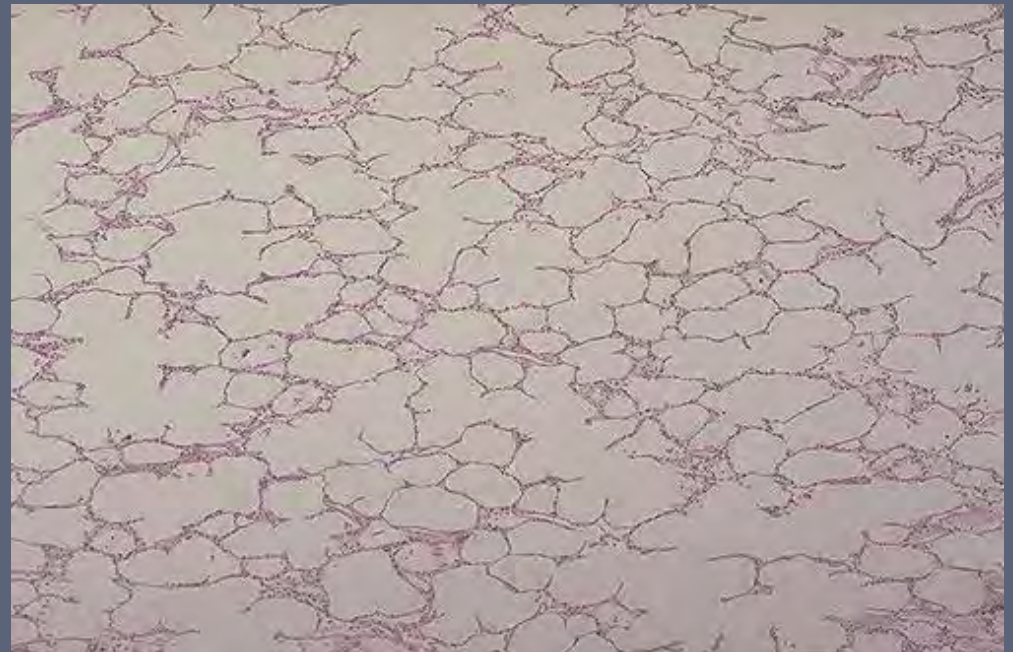
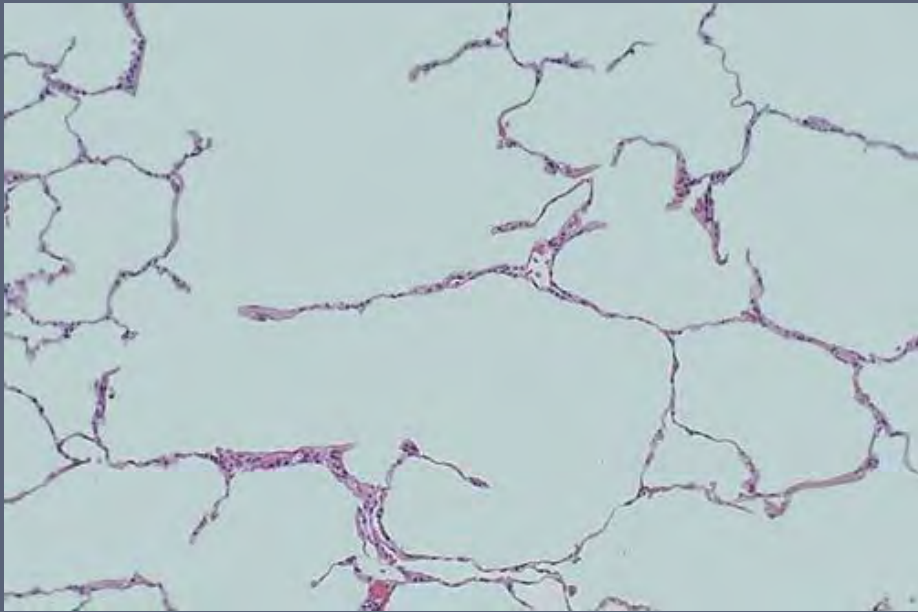
- Emphysema
 - ▣ Destruction of the walls of the alveoli
 - ▣ Enlargement of abnormal air spaces
 - ▣ Airway collapse
 - ▣ Loss of alveolar surface area for gas exchange

Emphysema

- ❑ Destructive lung disease where air accumulates in the tissues of the lungs.
- ❑ Lungs become fibrotic and lose their elasticity resulting in narrower lumens.
- ❑ Airflow is impeded as it leaves the lungs.
- ❑ Alveoli become over distended with trapped air.
- ❑ Rupture of the alveolar wall may occur.
- ❑ Alveolar capillary membrane is destroyed resulting in loss of available area for gas exchange.

Emphysema

- ❑ Manifests severe dyspnea even at rest.
- ❑ Barrel chest shape
- ❑ Tachypnea
- ❑ Use of accessory muscles to breathe
- ❑ Prolongation of the expiratory phase
- ❑ Breath sounds are diminished.
- ❑ Hyperresonant percussive tone might be heard.



Emphysema (Pink Puffer)





BOX 37–2 Classification of COPD by Severity

Stage 0 – At risk. Lung function normal, but chronic cough and sputum production are present

Stage 1 – Mild COPD. Mild airflow limitation, usually with chronic cough and sputum production

Stage 2 – Moderate COPD. Worsening airflow limitation, usually with progressing manifestations including dyspnea on exertion

Stage 3 – Severe COPD. Further worsening of airflow limitation, increased shortness of breath, and repeated exacerbations impacting quality of life

Stage 4 – Very Severe COPD. Severe airflow limitation with significantly impaired quality of life and potentially life-threatening exacerbations

Note: Adapted from Global Strategy for the Diagnosis, Management and Prevention of Chronic Obstructive Pulmonary Disease. (2008). Media Communications, Inc.

Clinical Manifestations

- ▶ Dyspnea
- ▶ Hypoxia
- ▶ Sputum is usually scant
- ▶ If infection is present usually sputum is purulent
- ▶ Complexion is ruddy or reddish in color
- ▶ Expiratory phase becomes increasingly difficult
- ▶ Weight loss
- ▶ Barrel Chest
- ▶ Variable with Individuals
- ▶ SOB, Wheezes, Tight Chest, Cough, Anxiety
- ▶ Decreased Peak Flow Results
- ▶ Decreased Exercise/Activity Tolerance
- ▶ Tachypneic, Use of Accessory Muscles, Hypoxia
- ▶ Diminished Breath Sounds



TABLE 37–3 Clinical Features and Manifestations of COPD

	FEATURE	CHRONIC BRONCHITIS	EMPHYSEMA
History	Onset	After age 35; recurrent respiratory infections	After age 50; insidious progressive dyspnea
	Smoking	Usual	Usual
	Cough	Persistent, productive of copious mucopurulent sputum	Absent or mild with scant clear sputum, if any
Physical Examination	Appearance	Often obese; edematous and cyanotic; distended neck veins and other symptoms of right-sided heart failure	Usually thin and cachectic; barrel chest; prominent accessory muscles of respiration
	Chest	Adventitious sounds with wheezing and rhonchi; normal percussion note	Distant or diminished breath sounds; hyperresonant percussion note
Other Features	Blood gases	Hypercapnia and hypoxemia; respiratory acidosis	Normal or mild hypoxemia; normal pH
	Pulmonary function studies	Normal or decreased total lung capacity; moderately increased residual volume	Increased total lung capacity; markedly increased residual volume
	Pulmonary hypertension	May be severe	Only when advanced



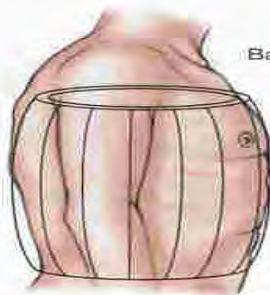
Do You Know ...

Why does this person's chest look like a barrel?

This person has **emphysema**, a condition characterized by damaged tissue in the lower respiratory structures and overinflated alveoli. As a result, the lungs cannot exhale the proper amount of air, and the air remains trapped in the alveoli. Consequently, the alveoli and lungs become overinflated and cause the chest to be shaped like a barrel. A person with severe emphysema is described as barrel-chested.

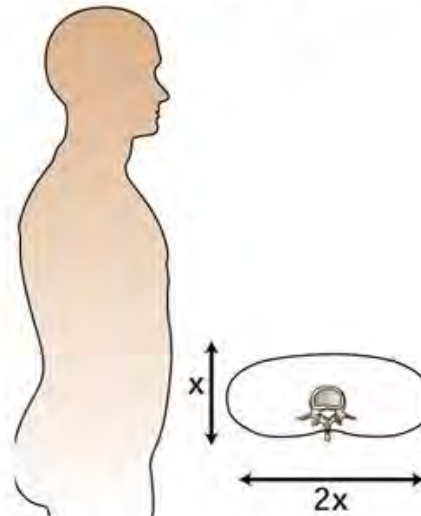


Normal adult



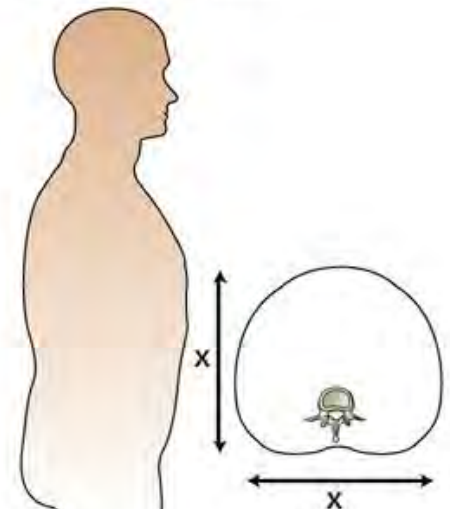
Barrel — chest

A. Normal adult



1:2 ratio

B. Barrel chest

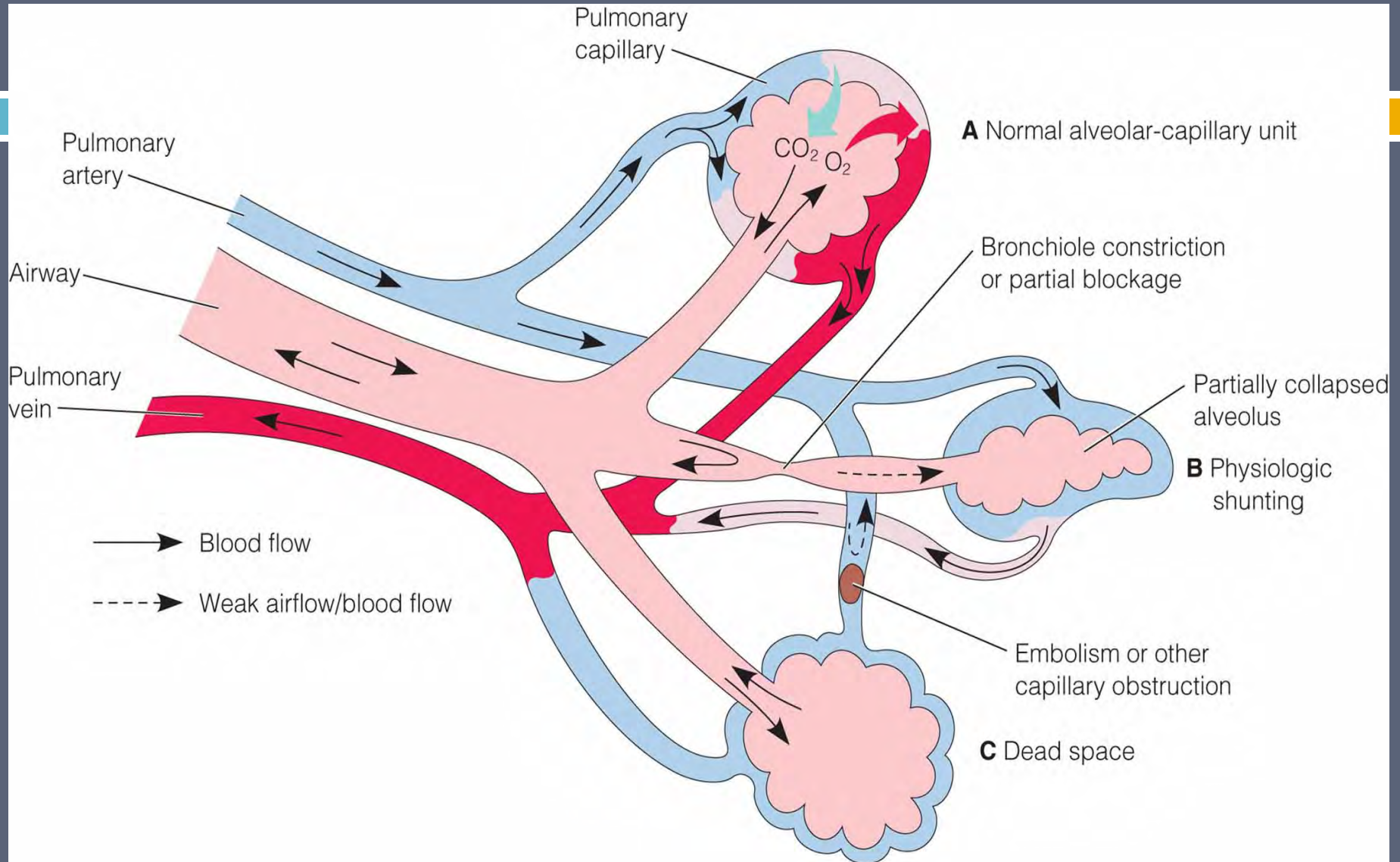


1:1 ratio

Interdisciplinary Care

- Symptom relief
- Minimization of obstruction
- Slowing development of disability
- Diagnosis
 - Pulmonary function tests
 - Ventilation-perfusion scanning
 - Serum alpha 1-antitrypsin levels
 - ABGs
 - Pulse oximetry
 - CBC with WBC differential
 - Chest x-ray
- Nursing Diagnoses
 - Ineffective airway clearance
 - Ineffective breathing pattern
 - Anxiety
 - Ineffective therapeutic regimen management





The use of tobacco reaches back to early civilizations, when it was used in religious ceremonies and as an offering of friendship. At one time, tobacco was thought to have medicinal qualities effective against all common diseases. Widespread use of tobacco among the male population of the industrialized world began during World War I.

Tobacco is now recognized as the leading cause of preventable illness in the world. Diseases directly related to tobacco use are responsible for the deaths of more than 438,000 Americans every year. Smoking will lead to the deaths of about half of all regular cigarette smokers (ALA, 2006). In spite of this knowledge, aggressive marketing of the product continues, and its worldwide use is increasing, especially in underdeveloped countries.

The link between tobacco use and lung cancer was reported as early as 1912. In 1987, lung cancer became the leading cause of cancer-related death in the United States among both men and women.

Cigarette smoke contains over 4,800 (69 of which are known to cause cancer) chemicals, including nicotine (Fiore et al., 2008). Nicotine is a highly addictive psychoactive substance that is relatively cheap and readily available. It produces euphoria, which acts as a positive reinforcer for continued use. In North American society, tobacco is more acceptable than many other dependency-producing drugs.

Tar is the particulate matter in cigarette smoke that is responsible for most of its carcinogenic and pathologic effects on the lungs. Smoke also paralyzes the cilia, reducing their ability to remove tars from contact with the respiratory epithelium. The risk for cancer and other lung diseases is dose related, affected by the age at which smoking began, the number of cigarettes smoked per day, and the number of years smoked. Smoking cessation reduces the risks associated with tobacco use. For some,

such as the risk of coronary heart disease, quitting smoking yields rapid benefits. For others, the degree of risk reduction is less immediate, but still significant.

Nurses need to do more than simply advise patients to quit smoking and talk about the risks of smoking. Nurses can take an active role in smoking cessation. Identify smoking habits, smoking-related illnesses, and previous efforts to quit. Work with the patient to identify barriers and obstacles to quitting. Educate about the addictive nature of nicotine, and explain the manifestations of nicotine withdrawal (anxiety, irritability, headache, and disturbed sleep). Develop a plan with the patient that specifies a target date to quit and includes ways to deal with obstacles to quitting, withdrawal symptoms, and the temptation to resume smoking. Offer self-help material at an appropriate reading level. Refer to a counselor, physician, self-help group, or smoking cessation clinic. If a relapse occurs, accept it as a normal part of rehabilitation from any addictive substance. Continue to provide support and encouragement, helping the patient avoid further relapses.

Nurses can be especially effective in primary prevention of cigarette smoking and the diseases associated with it. Just as tobacco companies direct advertising at women and teens, nurses can target these populations and younger children for programs to prevent smoking. In addition, nurses need to become active in reducing minors' access to tobacco products, especially cigarettes and chewing tobacco (often the first product used by teens).

Nursing diagnoses that may be appropriate related to smoking include the following:

- *Ineffective Health Maintenance* related to tobacco use
- *Decisional Conflict* related to tobacco use
- *Ineffective Denial* related to acknowledgment of substance abuse and dependence

BOX 37–5 Patient Teaching: Effective Coughing and Breathing Techniques

Pursed-lip and diaphragmatic breathing techniques help minimize air trapping and fatigue. Pursed-lip breathing helps maintain open airways by maintaining positive pressures longer during exhalation. Teach the patient to do the following:

1. Inhale through the nose with the mouth closed.
2. Exhale slowly through pursed lips, as though whistling or blowing out a candle, making exhalation twice as long as inhalation.

Diaphragmatic or abdominal breathing helps conserve energy by using the larger and more efficient muscles of respiration. Teach the patient to do the following:

1. Place one hand on the abdomen, the other on the chest.
2. Inhale, concentrating on pushing the abdominal hand outward while the chest hand remains still.
3. Exhale slowly, while the abdominal hand moves inward and the chest hand remains still.

Repeat these exercises as often as necessary until the techniques become incorporated into normal breathing.

Several different coughing techniques may be useful. For controlled cough technique, teach the patient to do the following:

1. Following prescribed bronchodilator treatment, inhale deeply, and hold breath briefly.
2. Cough twice, the first time to loosen mucus, the second to expel secretions.
3. Inhale by sniffing to prevent mucus from moving back into deep airways.
4. Rest. Avoid prolonged coughing to prevent fatigue and hypoxemia.

For huff coughing, teach the patient to do the following:

1. Inhale deeply while leaning forward.
2. Exhale sharply with a “huff” sound, to help keep airways open while mobilizing secretions.

Treatments

- Smoking cessation.
- Avoidance of airway irritants and allergens
- Pulmonary hygiene measures
- Adequate hydration
- Regular aerobic exercise if applicable
- Breathing exercises
- Long-term oxygen therapy
- Immunizations against pneumococcal pneumonia and influenza
- Broad-spectrum antibiotics
- Bronchodilators
- Corticosteroids
- Alpha 1-antitrypsin replacement therapy



<http://images.google.com/images>

EMPHYSEMA

“PINK PUFFER”



- * ↑CO₂ Retention (Pink)
- * Minimal Cyanosis
- * Purse Lip Breathing
- * Dyspnea
- * Hyperresonance on Chest Percussion
- * Orthopneic
- * Barrel Chest
- * Exertional Dyspnea
- * Prolonged Expiratory Time
- * Speaks in Short Jerky Sentences
- * Anxious
- * Use of Accessory Muscles to Breathe
- * Thin Appearance

Acute Bronchitis

□ Pathophysiology

- ▣ Inflammation of lung parenchyma
- ▣ Infectious
- ▣ Noninfectious
- ▣ Classified as community-acquired, nosocomial, or opportunistic
- ▣ Aspiration of oropharyngeal secretions
- ▣ Inhalation of contaminated air or water
- ▣ Through the bloodstream

Chronic Bronchitis

- ❑ Inflammation of the bronchial tree accompanied by hypersecretion of mucus.
- ❑ The condition becomes chronic if an individual has an infection with a productive cough at least 3 months a year for two consecutive years.
- ❑ Constant irritation of the bronchi results in hypertrophy of the mucous secreting glands.
- ❑ The bronchioles fill with exudate and subsequent infections are common.

Chronic bronchitis

- COPD is classified according to severity, staged from 0 to 4.
 - Chronic bronchitis manifestations:
 - Cough productive of copious amounts of thick sputum
 - Cyanosis
 - Evidence of right-sided heart failure
 - Inhaled irritants cause chronic inflammation.
 - Production of thick mucus
 - Narrowing of airways
 - Common recurrent infection

Clinical Manifestations



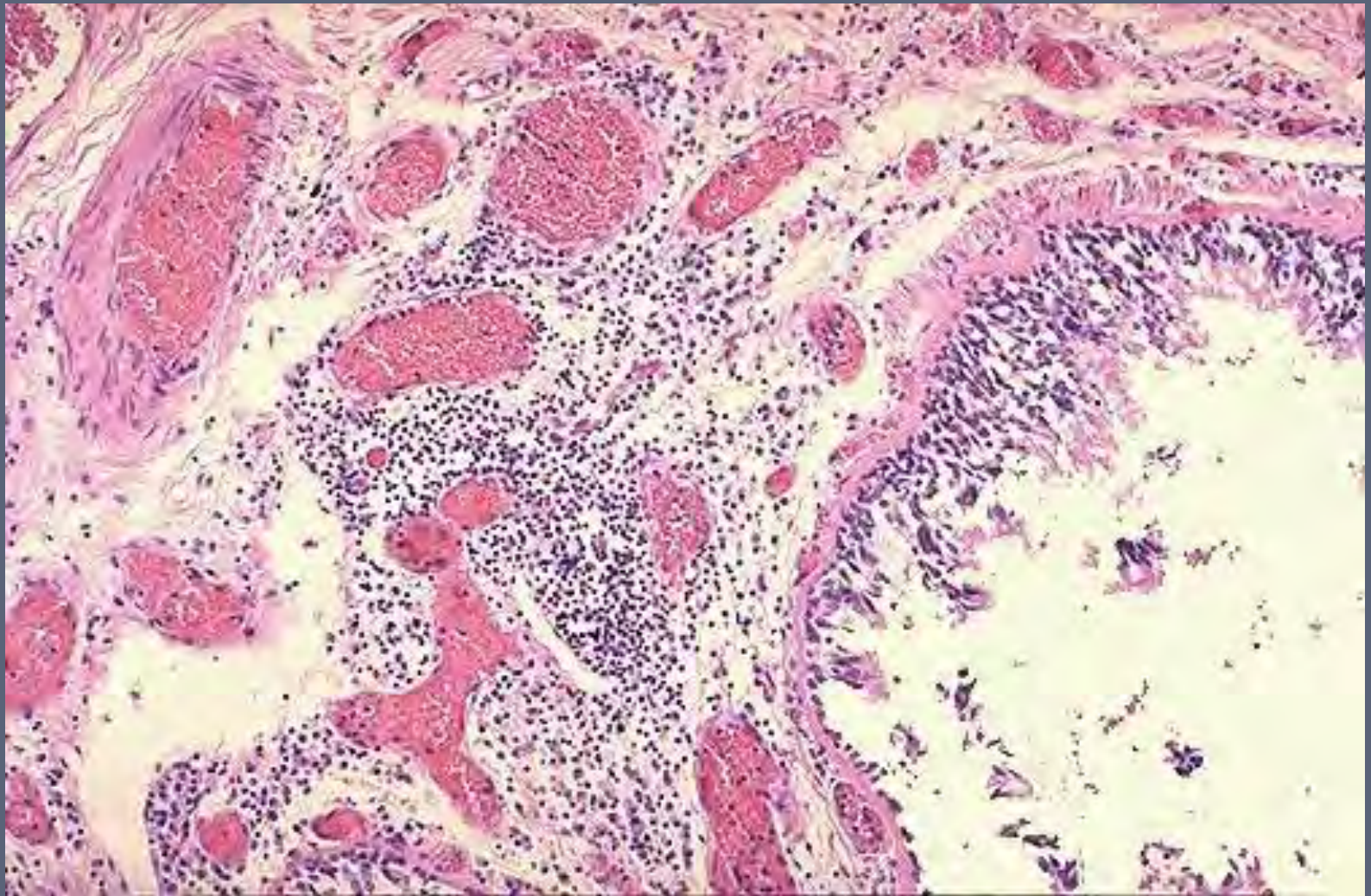
- Cough
- Exertional dyspnea
- Wheezing and crackles
- Sputum production
- Weight loss
- Chest wall configuration becomes slightly distended.
- Use of accessory muscles
- Cyanosis
- Digital clubbing
- Often purulent sputum
- Chronic or recurrent cough yielding copious amounts of sputum
- Coarse crackles throughout lung fields but breath sounds may be diminished in the periphery
- ABGs: reveal; increased PaCO₂ and decreased PaO₂
- Right sided heart failure

Complications of COPD

- ❑ Cor Pulmonale- right sided cardiac hypertrophy without heart failure: caused by hypoxia and pulmonary hypertension
- ❑ Polycythemia Vera- increased red cell production
- ❑ Recurrent episodes of acute bronchitis
- ❑ Acute Respiratory Failure
- ❑ GERD/PUD
- ❑ Pneumonia

Chronic Bronchitis (Blue Bloater)





Treatment

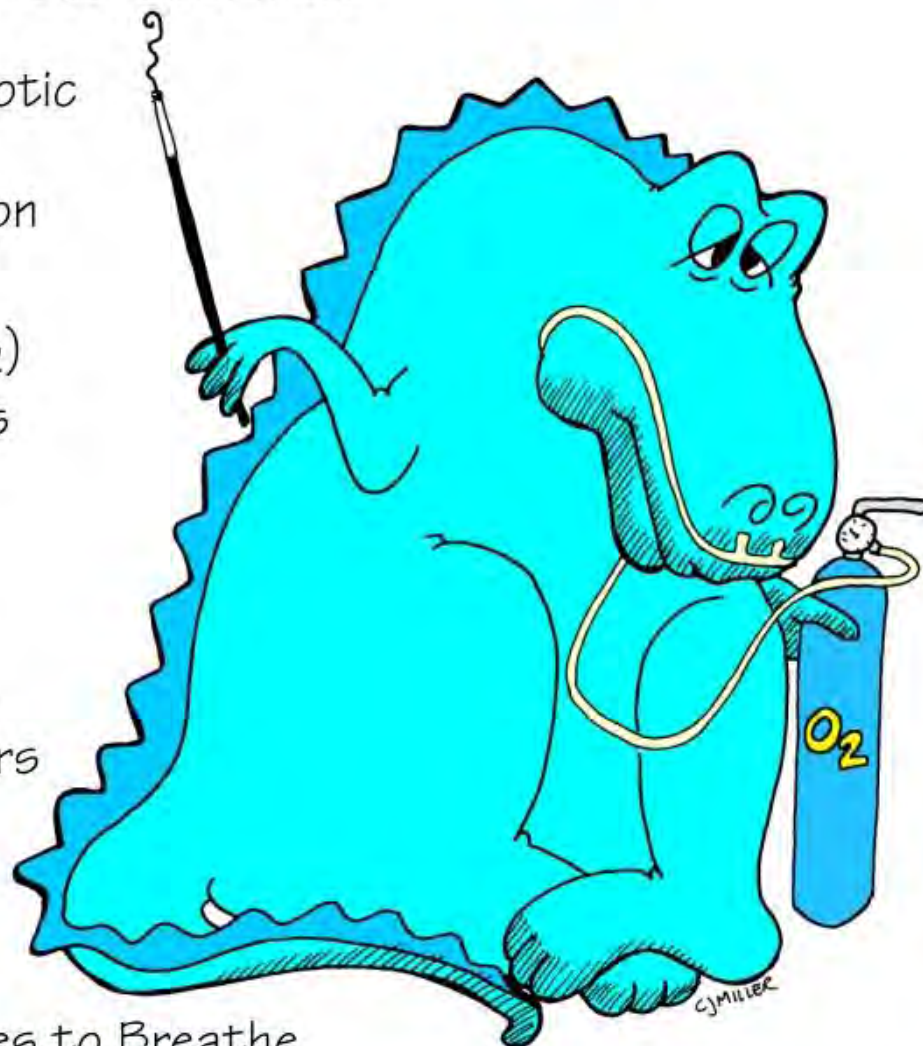
- ❑ Smoking Cessation
- ❑ Aggressive Treatment of Infections- immunize & antibiotics
- ❑ Bronchodilators- Beta Adrenergic Agonists
Albuterol/Xopenex
- ❑ Anticholinergics : Atrovent
- ❑ Corticosteroids- esp. if also Asthmatic
- ❑ Oxygen Therapy
- ❑ Humidification
- ❑ Nutritional Therapy
- ❑ Pulmonary Exercises
- ❑ Physiotherapy
- ❑ Postural Drainage
- ❑ Breathing Retraining/Effective Coughing

CHRONIC BRONCHITIS

“BLUE BLOATER”

- * Color Dusky to Cyanotic
- * Recurrent Cough &
↑ Sputum Production
- * Hypoxia
- * Hypercapnia (↑ pCO₂)
- * Respiratory Acidosis
- * ↑ Hbg
- * ↑ Resp Rate
- * Exertional Dyspnea
- * ↑ Incidence in Heavy
Cigarette Smokers
- * Digital Clubbing

- * Cardiac Enlargement
- * Use of Accessory Muscles to Breathe
- * Leads to Right-Sided Failure



A Word about Oxygen Therapy

- ❑ Oxygen can be toxic! – prolonged high level O₂ may lead to decreased surfactant and ARDS
- ❑ Use least amount of O₂ to maintain satisfactory paO₂
- ❑ CO₂ Narcosis- CO₂ levels normally stimulate respiration, but for COPD clients O₂ levels drive respiration instead
- ❑ But O₂ therapy does not stop breathing
- ❑ Fires love Oxygen!

Nursing Interventions

- Teaching, teaching, teaching
- Stop smoking, stop smoking, stop smoking
- Promote exercise, proper breathing, proper coughing
- Get and stay immunized
- Avoid people with respiratory illnesses
- Proper use of medications and Oxygen
- Proper Nutrition
- Anxiety plan
- Advanced Directives

□ Nursing Diagnoses

- Ineffective airway clearance
- Imbalanced nutrition: Less than body requirements
- Compromised family coping
- Decisional conflict: Smoking

Differentiating Chronic Bronchitis and Emphysema

- ❑ Productive Cough
- ❑ Dyspnea
- ❑ Wheezing
- ❑ Barrel Chest
- ❑ Prolonged Expiration
- ❑ Chronic Hypoventilation
- ❑ Polycythemia
- ❑ Cor Pulmonale

COPD

CHRONIC AIRFLOW LIMITATION
"EMPHYSEMA AND CHRONIC BRONCHITIS"

- Easily Fatigued
- Frequent Respiratory Infections
- Use of Accessory Muscles to Breathe
- Orthopneic

- Wheezing
- Pursed-Lip Breathing
- Chronic Cough
- Barrel Chest
- Dyspnea
- Prolonged Expiratory Time
- Bronchitis - Increased Sputum
- Digital Clubbing

- Cor Pulmonale (Late in Disease)

- Thin in Appearance

