



# ***SCREENING FOR PULMONARY DISEASE***

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**Larynx** --Air passes over the larynx and down the trachea

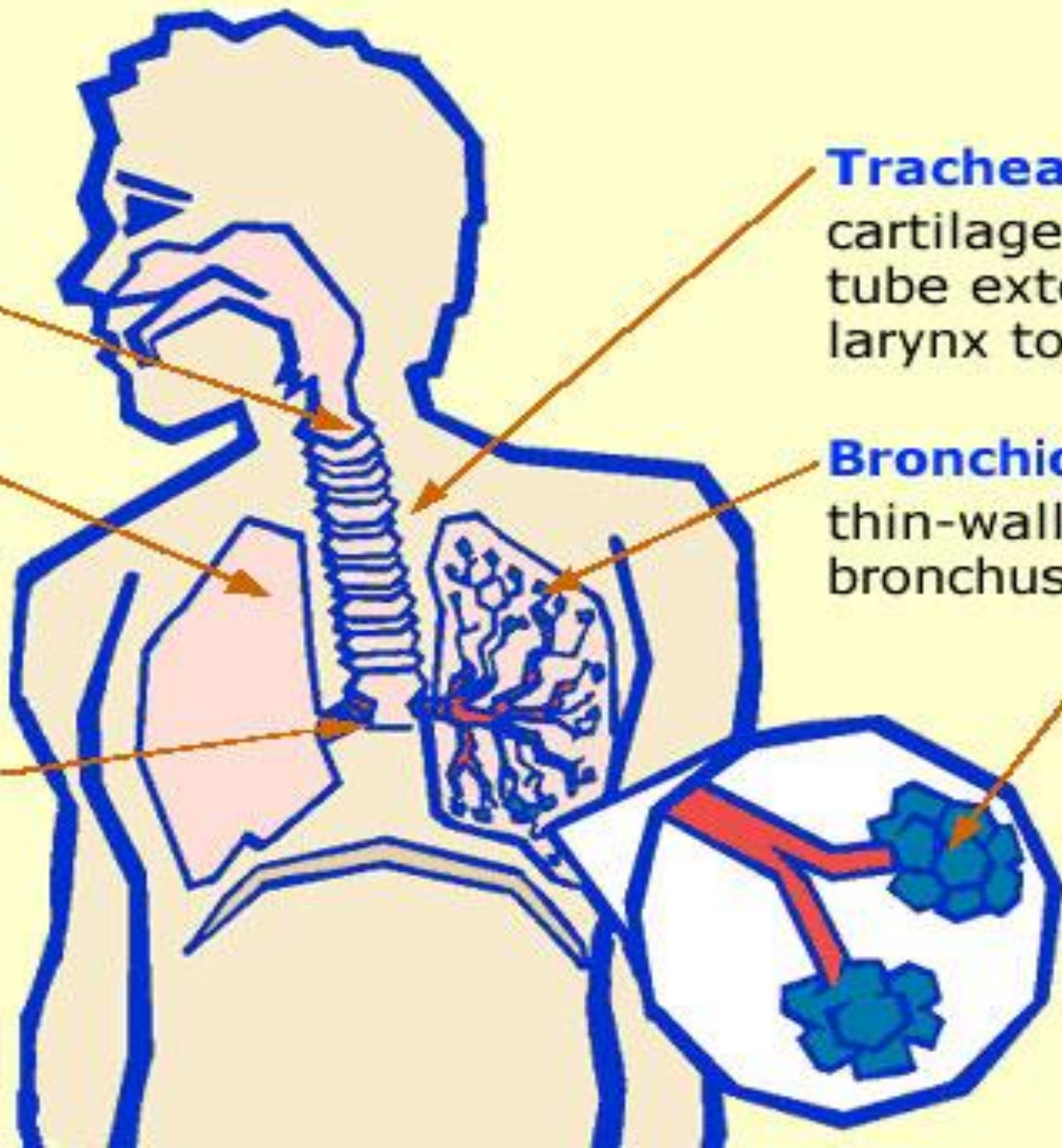
**Lung** --Organ specialized for the exchange of gases between the blood and the atmosphere

**Bronchus** --One of the two primary divisions of the trachea that leads into the lungs

**Trachea** --Windpipe; cartilage-reinforced tube extending from larynx to bronchi

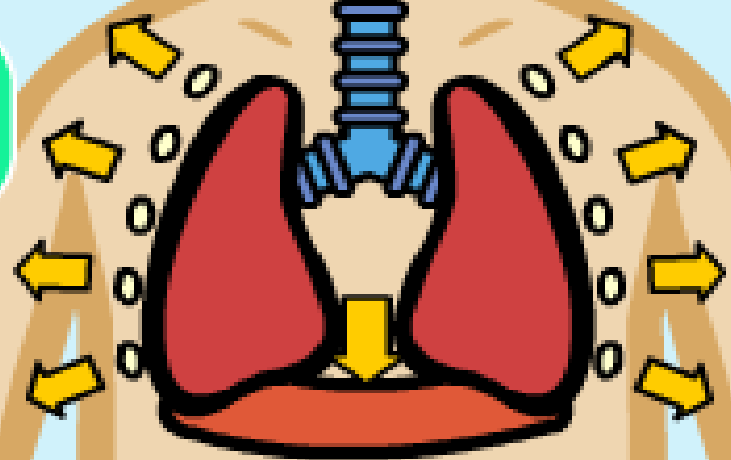
**Bronchiole** --A thin-walled branch of a bronchus

**Alveoli** --Clusters of air sacs that are the site of gas exchange for the human body



Air inhaled

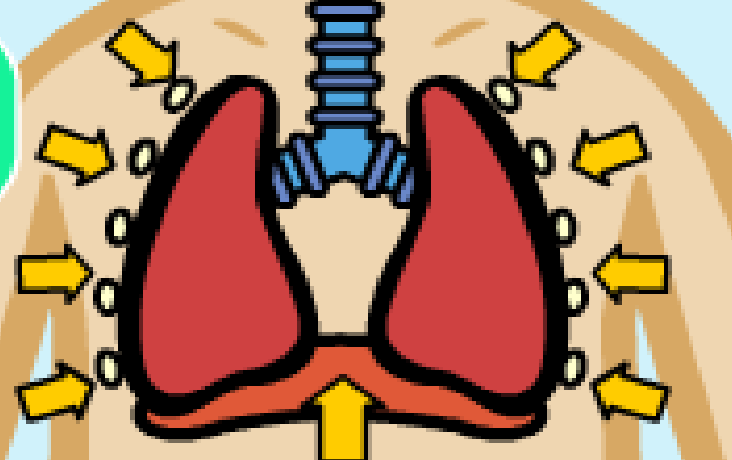
Rib cage expands as rib muscles contract



**Inhalation**  
Diaphragm contracts (moves down)

Air exhaled

Rib cage gets smaller as rib muscles relax



**Exhalation**  
Diaphragm relaxes (moves up)





# ASTHMA

is a reversible obstructive lung disease caused by increased reaction of the airways to various stimuli.

OR

- Broncho-constrictive disorder in which the airways narrowed, causing wheezing and breathing difficulties.



## *IMMUNE SENSITIZATION AND INFLAMMATION*

- When the immune system becomes **sensitized to an allergen**, usually through heavy exposure in early life, an inflammatory response occurs, extending beyond the upper airways into the lungs.



- The lungs become hyper-reactive, responding to allergens and other irritants in an exaggerated way. This hyper-responsiveness causes the muscles of the airways to constrict, making breathing more difficult.
- The second component is **inflammation**, which causes the air passages to swell and the cells lining the passages to produce excess mucus, further impairing breathing.



## ASTHMA MAY BE CATEGORIZED AS

- Conventional asthma
- Occupational asthma
- Exercise-induced asthma





## SIGN & SYMPTOMS

Shortness of breath, wheezing, tightness in the chest, and cough are the most commonly reported symptoms, but other symptoms may also occur.

- **Wheezing**
- **Irregular breathing with prolonged expiration**
- **Noisy, difficult breathing**
- **Episodes of dyspnea**
- **Cough with or without sputum production**

# LOOK FOR

- Skin rétraction
- **Hunched-over** body posture; inability to stand, sit straight, or relax
- Pursed-lip breathing
- Nostrils **flaring**
- Unusual pallor or unexplained sweating





# PNEUMONIA

is an inflammation of the lungs and can be caused by

- (1) **Aspiration** of food, fluids, or vomitus
- (2) **Inhalation** of toxic or caustic chemicals, smoke, dust, or gases
- (3) A bacterial, viral, or mycoplasmal **infection**.



## COMMON FEATURE

is an inflammatory pulmonary response to the offending organism or agent. This response may involve one or both lungs at the level of the lobe or more distally beginning in the terminal bronchioles and alveoli.

- Bronchopneumonia is seen more frequently than lobar pneumonia and is common in clients postoperatively and in clients with chronic bronchitis, particularly when these two situations coexist.



- Infectious agents responsible for pneumonia are typically present in the upper respiratory tract and cause no harm unless resistance is lowered severely by some other factor, such as a severe cold, disease, alcoholism, or generally poor health.
- Older or bedridden clients are particularly at risk because of physical inactivity and immobility.



- Smoking, Air pollution, URI, Altered consciousness, alcoholism, head injury, seizure disorder, drug overdose, general anesthesia, Prolonged immobility, Immunosuppressive therapy, cancer chemotherapy, Nonfunctional immune system, Malnutrition, diabetes mellitus, heart disease, chronic lung disease, renal disease, cancer Prolonged debilitating disease Inhalation of noxious substances Aspiration of oral , foreign materials, Chronically ill pt etc



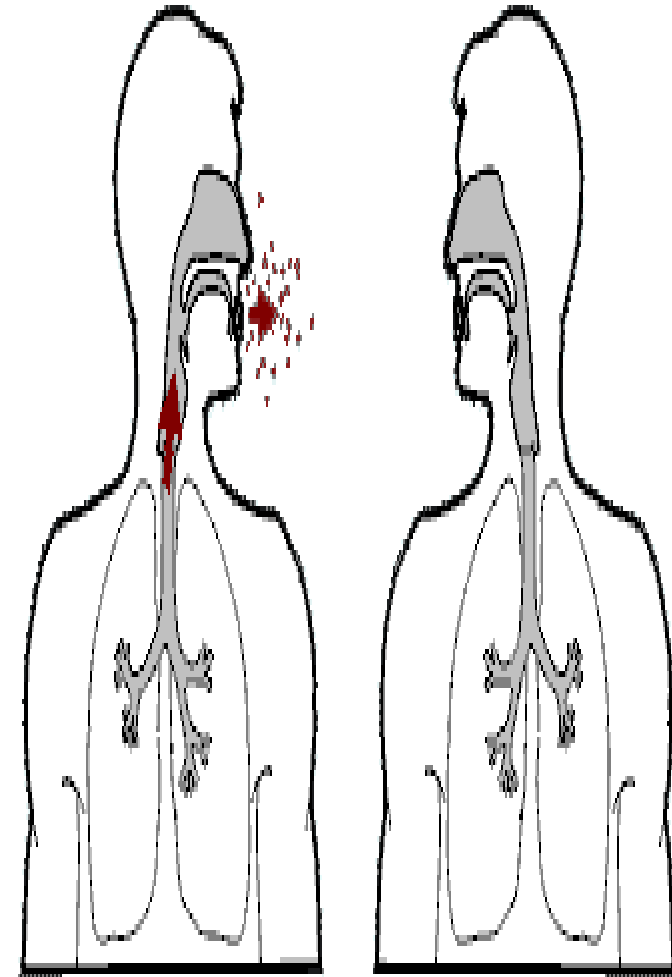
## SIGN & SYMPTOMS

- Sudden and sharp pleuritic chest pain that is aggravated by chest movement
- Hacking, productive cough (rust-colored or green, purulent sputum) Dyspnea
- Tachypnea
- Cyanosis
- Headache
- Fever and chills
- Generalized aches and myalgia
- increased confusion in client with dementia or Alzheimer's disease

# TUBERCULOSIS

Tuberculosis (TB) is a bacterial infectious disease transmitted by the gram-positive *Mycobacterium tuberculosis*.

- Health care workers
- Over-crowded housing
- People who are incarcerated
- Clients who are dependent on alcohol or other chemicals with resultant malnutrition, debilitation, and poor health
- Infants and children under the age of 5 years
- Clients with reduced immunity or malnutrition







- Persons with diagnosed rheumatoid arthritis.
- Persons with diabetes mellitus and/or end stage renal disease
- People with a history of gastrointestinal disease



- Fatigue
- Malaise
- Anorexia
- Weight loss
- Low-grade fevers
- Night sweats
- Frequent productive cough
- Dull chest pain, tightness, or discomfort



# SYSTEMIC SCLEROSIS LUNG DISEASE

is a restrictive lung disease of unknown etiologic origin characterized by inflammation and fibrosis of many organs.

Pulmonary manifestations include:

- *Common: Interstitial pneumonitis and fibrosis and/or pulmonary vascular disease*
- *Less common: Pleural disease, aspiration pneumonia, pneumothorax, neoplasm, pneumoconiosis, pulmonary hemorrhage, and drug-induced pneumonitis*



- Dyspnea on exertion
- Non-productive cough
- Peripheral edema (secondary to cor pulmonale)
- Orthopnea
- Paroxysmal nocturnal dyspnea
- Hemoptysis



# GENETIC DISEASE OF THE LUNG

## Cystic Fibrosis

is an inherited disease of the exocrine glands primarily affecting the digestive and respiratory systems

Persons with CF have a defective gene. The salt accumulates in the cells lining of the lungs and digestive tissues, making the surrounding mucus abnormally thick and sticky. These secretions, which obstruct ducts in the pancreas, liver, and lungs, and abnormal secretion of sweat and saliva are the two main features of CF.



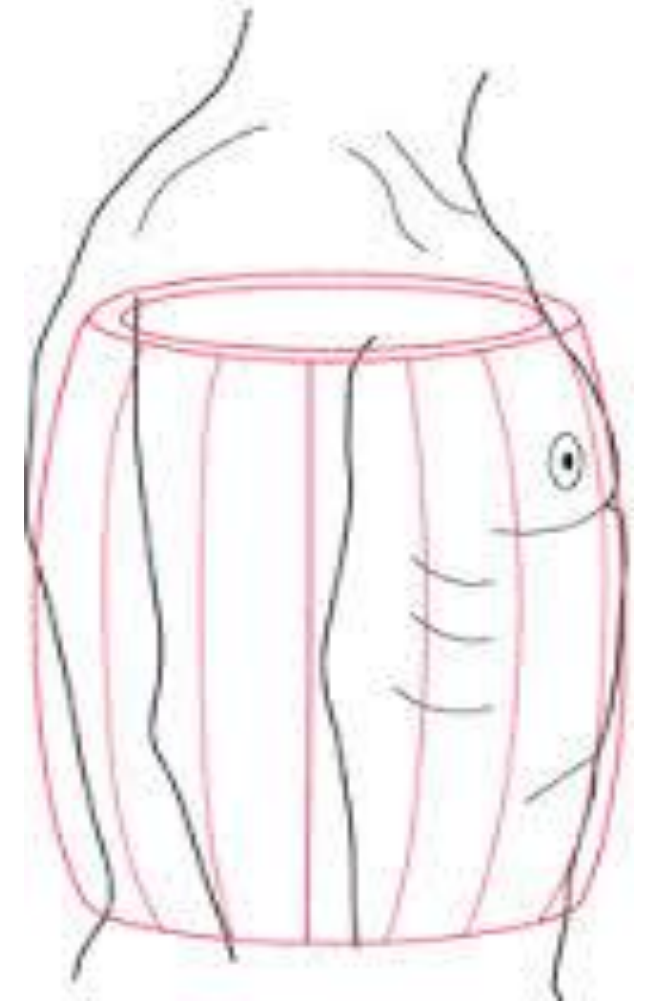
- **Persistent coughing and wheezing**
- **Recurrent pneumonia**
- **Excessive appetite but poor weight gain**
- **Salty skin/sweat**
- **Bulky, foul-smelling stools**



- **Tachypnea**
- **Sustained chronic cough with mucus production and vomiting**
- **Barrel chest**
- **Use of accessory muscles for respiration and intercostal retraction**
- **Cyanosis and digital clubbing**
- **Exertional dyspnea with decreased exercise tolerance**
- **Further complications include:**

### **Pneumothorax**

- **Hemoptysis**
- **Right-sided heart failure secondary to pulmonary hypertension**





# OCCUPATIONAL LUNG DISEASES

Caused by the inhalation of various chemicals, dusts, and other particulate matter present in certain work settings.





# MINERAL DUSTS



Particles formed from inorganic dusts.

# ORGANIC DUSTS



Particles formed from organic materials.

# CHEMICAL DUSTS



Dusts from synthetic materials.

# BIOLOGICAL HAZARDS



Bacteria, viruses, fungi, Chlamydia & parasites.

# RADIATION



Ionizing (electromagnetic waves) and non-ionizing radiation.



- **Mesothelioma** is rare cancer of the chest lining caused by asbestos exposure.
- **Byssinosis** (*brown lung disease*) caused by dusts from hemp, flax, and cotton processing, results in chronic obstruction of the small airways impairing lung function.
- **Asbestosis** is a chronic inflammatory and fibrotic medical condition affecting the parenchymal tissue of the lungs caused by the inhalation and retention of asbestos fibers.



- ❖ *Asbestosis and mesothelioma occur as a result of asbestos exposure.*
- ❖ Scarring of the lung tissue occurs in asbestosis



- *Hypersensitivity pneumonitis, or allergic alveolitis,* is most commonly due to the inhalation of organic antigens of fungal, bacterial, or animal origin.
- *Acute respiratory irritation results from the* inhalation of chemicals such as ammonia, chlorine, and nitrogen oxides in the form of gases, aerosols, or particulate matter.
- *Pneumoconioses, or "the dust diseases," result from inhalation of minerals like silica, coal dust, or asbestos*





# HOME REMODELING

- Lead poisoning is a serious problem in home remodeling projects
- Early symptoms of occupational-related lung disease depend on the specific exposure but may include noninflammatory joint & Muscle pain, cough, and dyspnea on exertion



# PLEUROPULMONARY DISORDERS

- PE involves pulmonary vascular obstruction by blood clot, an air bubble, a fat globule, a clump of bacteria etc
- Once dislodged, the obstruction travels to the blood vessels supplying the lungs, causing shortness of breath, tachypnea, tachycardia, and chest pain.

Three major risk factors linked with DVT are

- Blood stasis
- Endothelial injury
- Hyper-coagulable states



- **Dyspnea**
- • **Pleuritic (sharp, localized) chest pain**
- • **Diffuse chest discomfort**
- • **Persistent cough**
- • **Hemoptysis**
- • **Apprehension, anxiety, restlessness**
- • **Tachypnea**
- • **Tachycardia**
- • **Fever**



## COR PULMONALE

- When a PE has been sufficiently massive to obstruct 60% to 75% of the pulmonary circulation, the client may have central chest pain, and acute cor pulmonale occurs.
- Cor pulmonale is a serious cardiac condition arising from a sudden dilatation of the right ventricle as a result of PE.
- As cor pulmonale progresses, edema, and other signs of right-sided heart failure develop.
- Symptoms are similar to those of congestive heart failure



## PULMONARY ARTERY HYPERTENSION (PAH)

- Pulmonary artery hypertension (PAH) is a condition of vasoconstriction of the pulmonary arterial vascular bed.
- *Primary* occurring mostly in young and middle aged women
- *secondary occurring as a result of* pulmonary embolus, chronic lung disease, polycythemia, and heart abnormalities.
- dyspnea on exertion and later dyspnea at rest as well as dull, retrosternal chest pain, which often mimics angina pectoris



# PLEURISY

Pleurisy is an inflammation of the pleura caused by infection, injury, or tumor.

- Chest pain
- Cough
- Dyspnea
- Fever, chills
- Tachypnea



# PNEUMOTHORAX

- Pneumothorax, or free air in the pleural cavity between the visceral and parietal pleurae.
- Pneumothorax is common after surgery or after an invasive medical procedure involving the chest or thorax.



- Air may escape into the pleural space from a puncture or tear in an internal respiratory structure.
- Pneumothorax associated with scuba diving occurs as a result of arterial gas embolism (AGE).
- AGE is caused by pulmonary over-inflation if the breathing gas cannot be exhaled adequately. Inert gas bubbles cause impairment of pulmonary functions due to hypoxia





- Dyspnea
- Change in respiratory movements (affected side)
- Sudden, sharp chest pain
- Increased neck vein distention
- Weak and rapid pulse
- Fall in blood pressure
- Dry, hacking cough
- Shoulder pain-----Sitting upright is the most comfortable position



Thank you!

