

# The Aging Respiratory System

pulmonary ventilation declines steadily after 20's

- ‡ costal cartilages and joints become less flexible
- ‡ lungs have less elastic tissue
- ‡ fewer alveoli

decline in volume of inhaled air (TV) and Vital Capacity

also less capable of clearing lungs of irritants and pathogens and therefore more susceptible to respiratory infections

- ‡ pneumonia causes more deaths in old age than any other infectious disease

## Disorders of the Respiratory System

### Restrictive Disorders

- ‡ stiffen lungs, reduce compliance and vital capacity

eg. pulmonary fibrosis

respiratory tissue is replaced by fibrous scar tissue

effect of TB and black lung disease

### Obstructive Disorders

- ‡ narrow the airway and interfere with airflow

expiration requires more effort

eg. airway obstructions, bronchoconstriction, tumors or aneurysms that push on airways

chronic obstructive pulmonary diseases:

- asthma
- chronic bronchitis
- emphysema

## A. Diseases of inadequate ventilation

### 1. Pneumothorax

collapsed lung or lungs

**2. paralysis of diaphragm muscle**

due to injury to respiratory center of brainstem  
eg. caused by polio which damages respiratory center  
damage to nerves supplying diaphragm (phrenic nerve)

**3. bronchial asthma**

allergic reaction  
excessive mucous secretions and constrictions of bronchioles

**4. emphysema**

progressive degenerative disease causing destruction of alveolar walls  
may be due to chronic irritation (eg smoking)  
loss of tissue elasticity

**5. lung cancer**

uncontrolled growth of cells  
crowd out normal cells

**B. Diseases of Poor Gas Exchange**

**1. emphysema**

**2. infections**

viral or bacterial  
eg. hay fever, bronchitis  
cause lining of tubes to swell and become inflamed

**2. pneumonia**

more severe result of respiratory infection  
bacterial or viral  
alveoli fill with fluids

**3. tuberculosis**

tubercles formed to wall off bacterial infection  
if infection is not controlled may invade more lung tissue causing fibrosis  
causes extensive destruction of lung tissue

**4. Respiratory Distress Syndrome**

collapse of lungs in baby due to lack of surfactants