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 inflammed

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