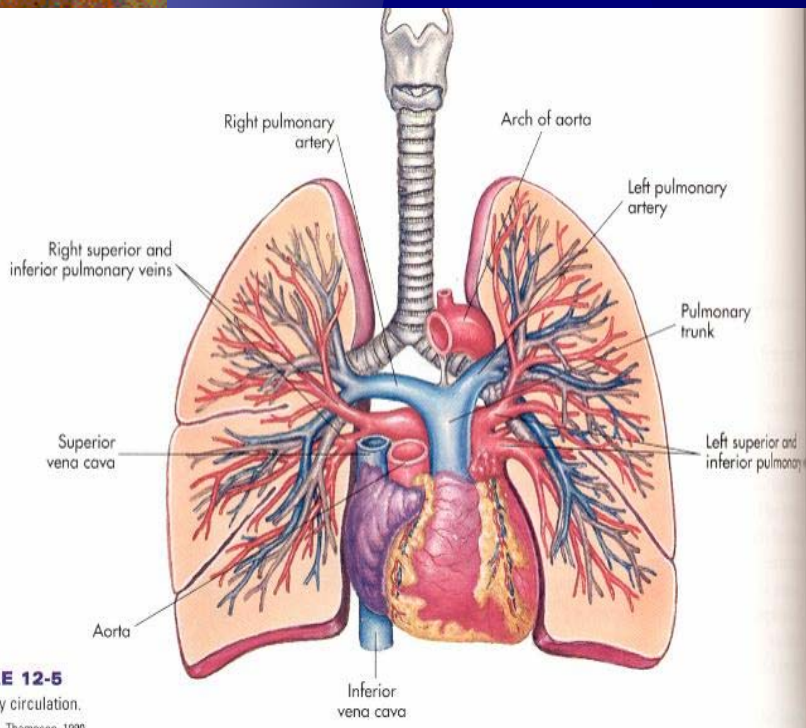


# Examination of the Chest and Lungs

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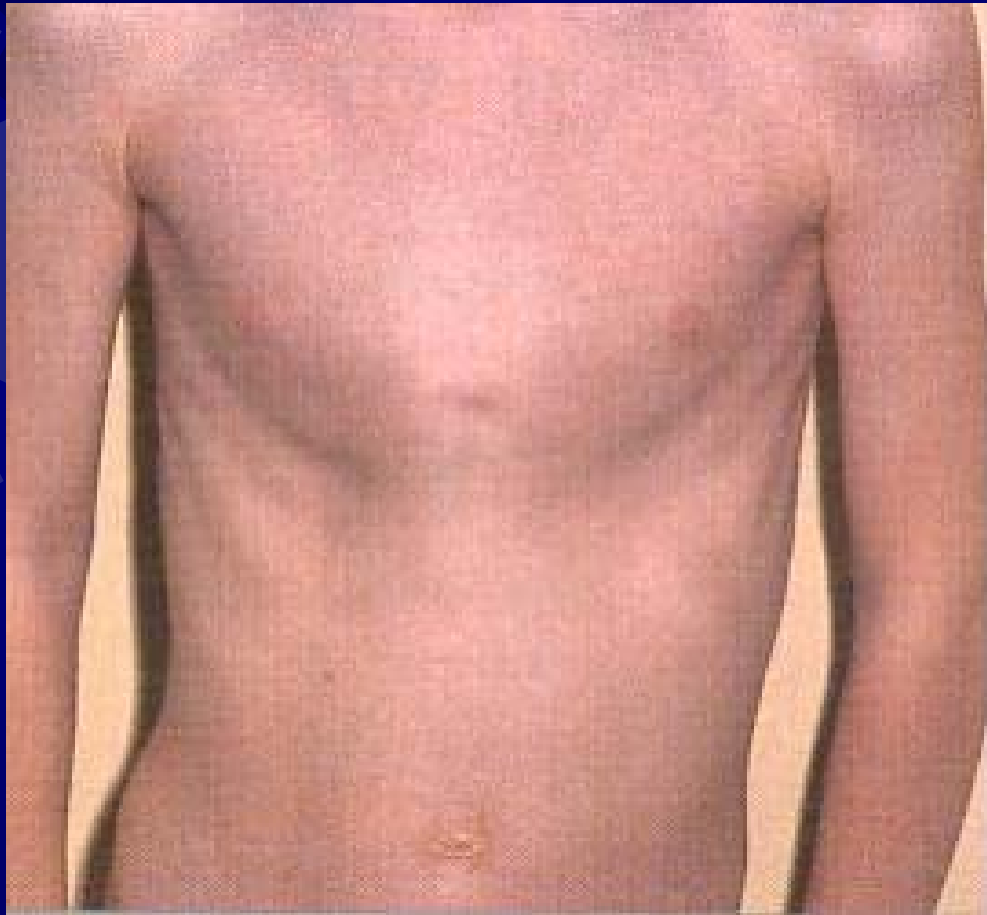
# Inspection

- ✦ Shape and symmetry of the chest.
- ✦ AP diameter of the chest is ordinarily less.
- ✦ **Barrel chest:** Asthma, emphysema, cystic fibrosis.
- ✦ Kyphosis, scoliosis, pectus carinatum, p. excavatum.
- ✦ **Skin:** cyanosis or pallor. Supernumerary nipples.
- ✦ Superficial venous pattern.

# Pectus excavatum



# Pectus carinatum



# Respiration

- ✱ Respiratory rate
- ✱ Pattern (Rhythm) of respiration
- ✱ Symmetric expansion of the chest ?
- ✱ Respiration too shallow or deep ?
- ✱ Regularity?
- ✱ Apnea ?
- ✱ Dyspnea ?

# Dyspnea

- ★ Difficult and labored breathing with shortness of breath (pulmonary ?, cardiac ?)
  - ★ Tachypnea
  - ★ Retractions at the suprasternal notch, intercostally or at the xiphoid process.
  - ★ Dilate and flare of the nares
    - Cyanosis, clubbing, barrel chest.

# Respiratory rate per minute

Newborn	1 –12 m.	1-5 age	5-12 age	>12 age
40 (30-60)	25-35	20-30	20-25	16-20

# Patterns of respiration

- ★ **Apnea**: The absence of spontaneous respiration more than 20 (15) seconds (with bradycardia and cyanosis)
- ★ **Bradypnea**: Slow respiration (Neurologic or electrolyte disturbance)
- ★ **Tachypnea**: Rapid respiration (AGE!!!)
- ★ **Hypopnea**: Shallow respiration (Pleuritic pain)

# Pattern of respiration

- ★ **Hyperpnea:** Deep breathing (Exercise, anxiety, CNS and metabolic diseases)
- ★ **Cheyne-Stokes:**
- ★ **Biot:**
- ★ **Kussmaul:**
- ★ **Periodic breathing:**

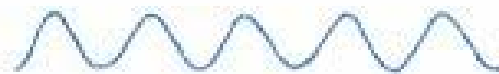
# Patterns of respiration

Normal



Regular and comfortable at a rate of 12-20 per minute

Bradypnea



Slower than 12 breaths per minute

Tachypnea



Faster than 20 breaths per minute

Hyperventilation (hyperpnea)



Faster than 20 breaths per minute, deep breathing

Sighing



Frequently interspersed deeper breath

Air trapping



Increasing difficulty in getting breath out

Cheyne-Stokes



Varying periods of increasing depth interspersed with apnea

Kussmaul



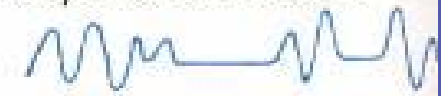
Rapid, deep, labored

Biot



Irregularly interspersed periods of apnea in a disorganized sequence of breaths

Ataxic



Significant disorganization, irregular and varying depth of respiration

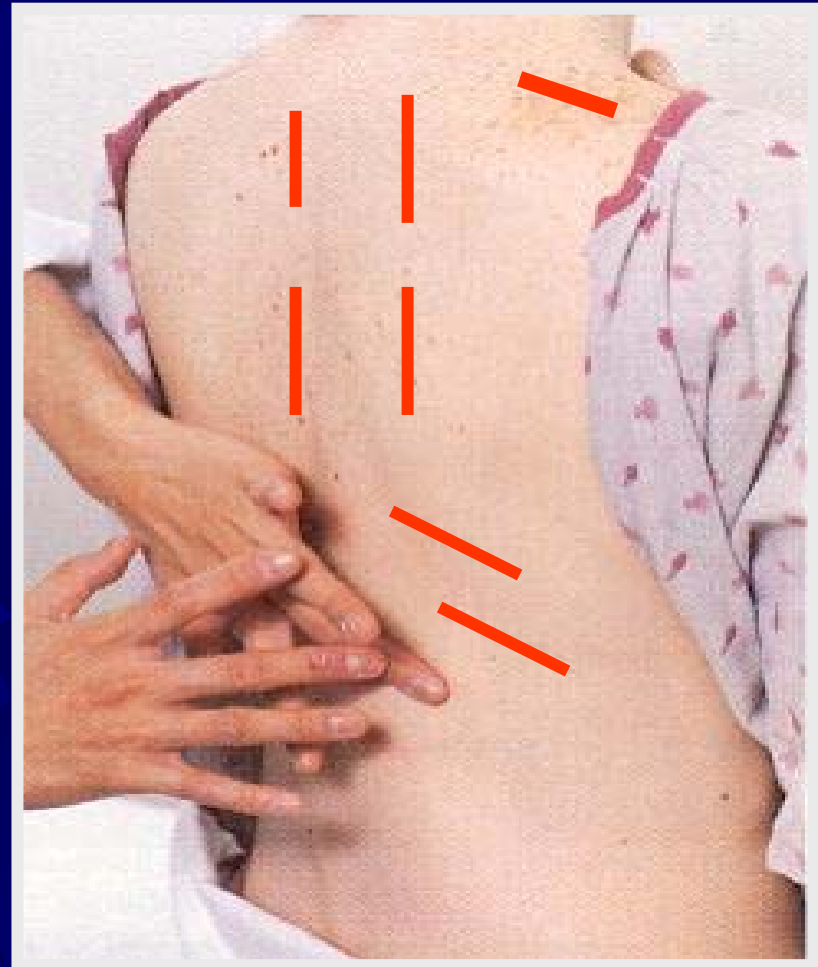
hori-  
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tion.

# Clubbing



# Percussion

- ✦ Normally: **Sonor** (!)
- ✦ **Hyperresonance**: Emphysema, asthma, pneumothorax.
- ✦ **Dullness**: Atelectasis, pleural effusion, consolidation, tm, pleural thickening
- ✦ **Tympanic**: Traube (!)



# Palpation

- ★ Pulsations, tenderness, bulges, depression, unusual position.
- ★ Crepitus:  
Subcutaneous air !
- ★ Tactile fremitus
- ★ Thoracic expansion



The thumbs are at the level of the tenth rib.

# Tactile fremitus

- ★ **Decreased or absent:**  
Excess air in the pleural space, emphysema, pleural thickening, atelectasis, massive pulmonary edema.
- ★ **Increased:**  
Consolidation, solid mass (rare)

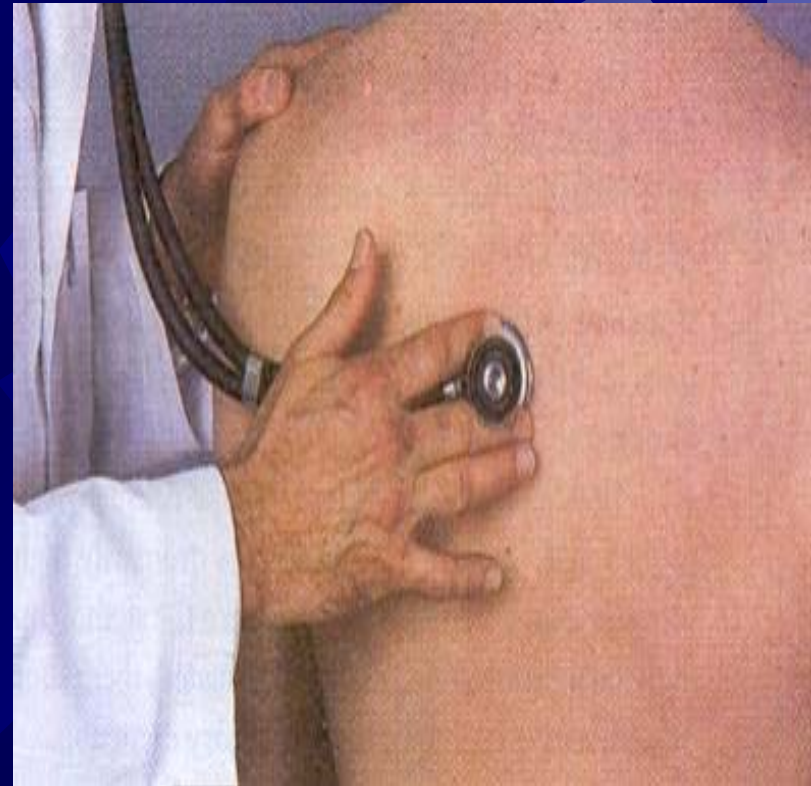


# Auscultation

- ✱ Breath sounds are absent:
  - ✱ Fluid or pus in the pleural space.
  - ✱ Air in the pleural space.
  - ✱ Atelectasis.
  - ✱ Tm in the great area.
- ✱ Breath sounds are increased (Tuber sufl, bronchial sound) : **Consolidation**

# Auscultation

- ★ Duration of the expiration is prolonged in obstructive lung diseases:
  - ★ Asthma bronchiale
  - ★ Bronchiolitis



# Rals (Pathologic breath sounds)

*Fine crackles:* high-pitched, discrete, discontinuous crackling sounds heard during the end of inspiration; not cleared by a cough

*Medium crackles:* lower, more moist sound heard during the midstage of inspiration; not cleared by a cough

*Coarse crackles:* loud, bubbly noise heard during inspiration; not cleared by a cough

*Rhonchi (sonorous wheeze):* loud, low, coarse sounds like a snore most often heard continuously during inspiration or expiration; coughing may clear sound (usually means mucus accumulation in trachea or large bronchi)

*Wheeze (sibilant wheeze):* musical noise sounding like a squeak; most often heard continuously during inspiration or expiration; usually louder during expiration

*Pleural friction rub:* dry, rubbing, or grating sound, usually caused by inflammation of pleural surfaces; heard during inspiration or expiration; loudest over lower lateral anterior surface

