

Chest X-rays

Dr. Waleed Mahafzah
Radiology Dept.- JUH

chest x-rays

- The most common radiographs
- They may not have a radiologist report
- The most difficult image to interpret

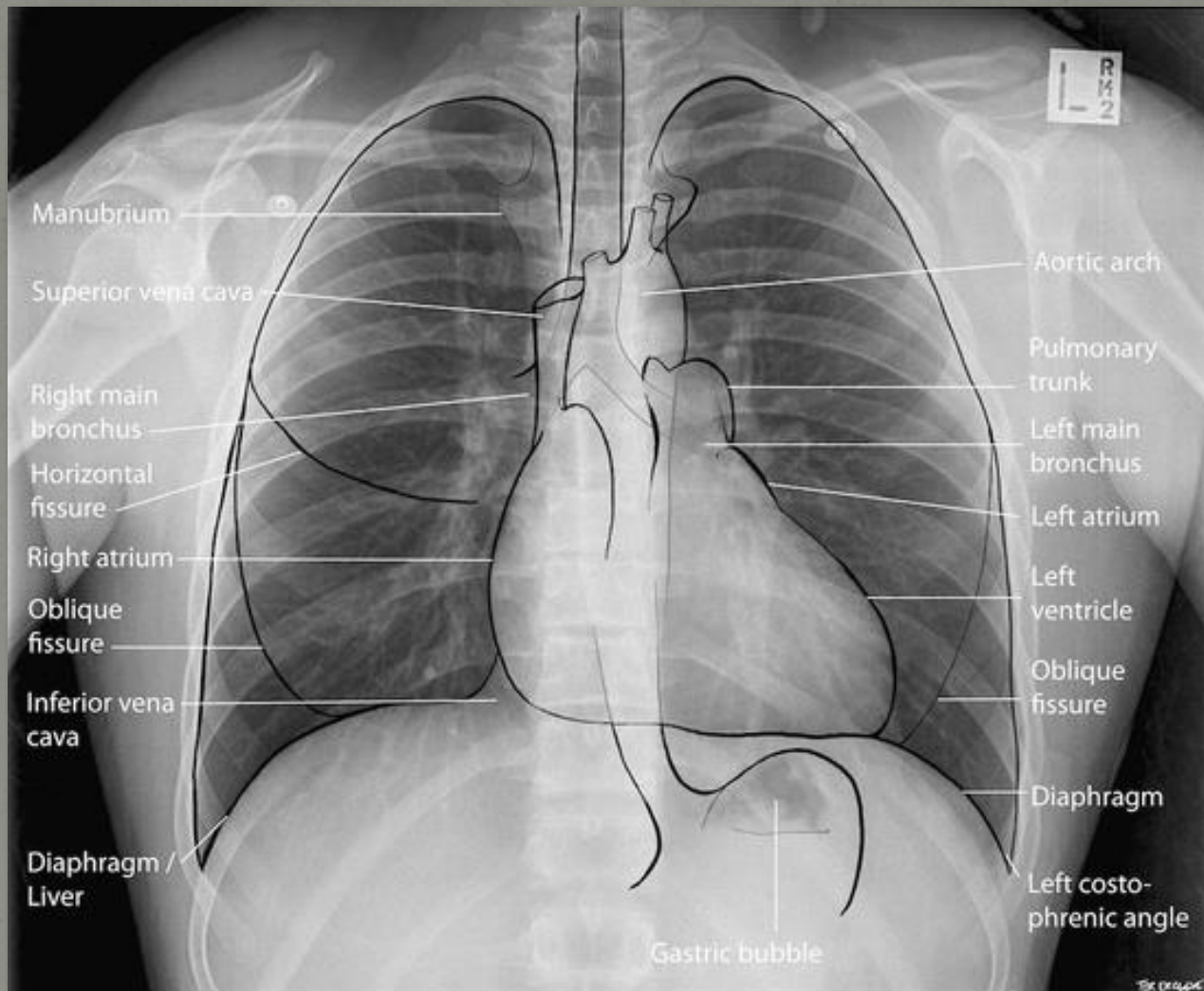
Systematic Approach

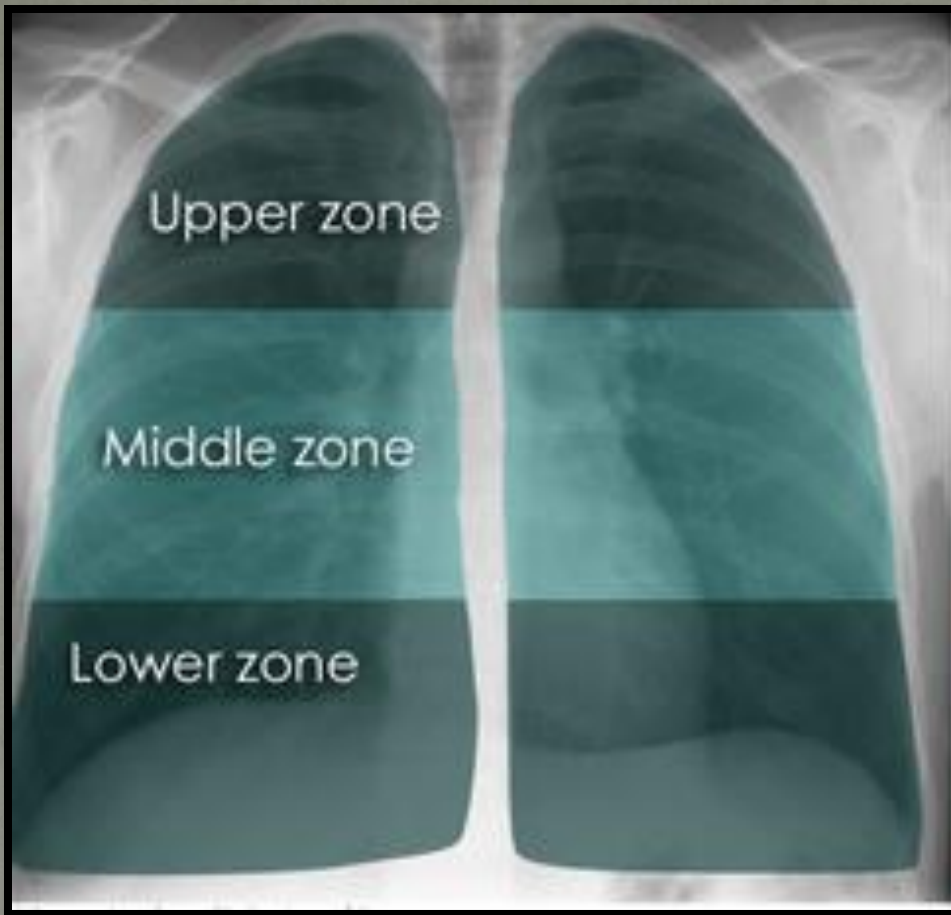
- Minimizes the chance of missing an abnormality.
- Enables a detection of second or related lesions.
- Makes complex images easier to interpret.
- Builds up a mental databank of what is normal.

Systematic Approach

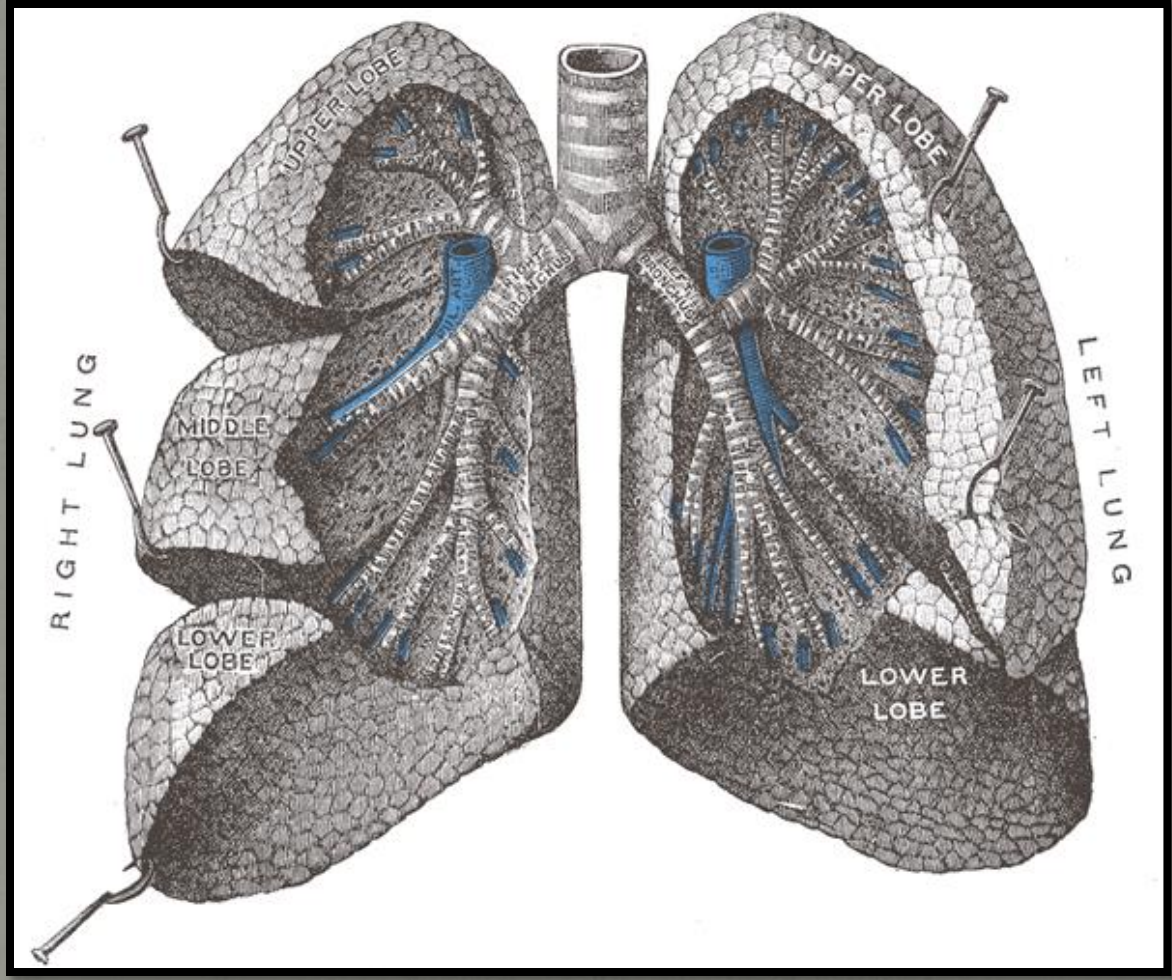
Covers the following:

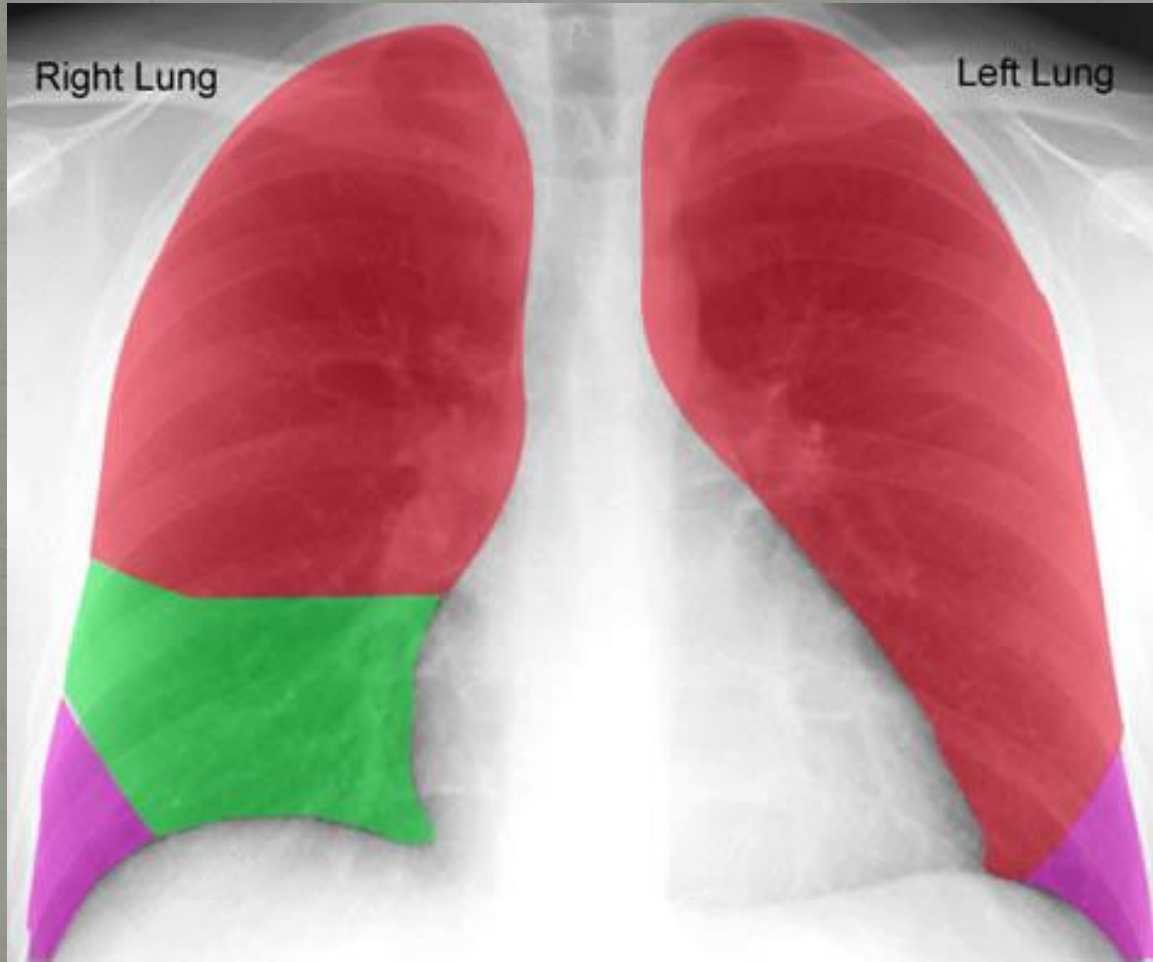
- Documentary evidence of name & age.
- Technical factors.
- Areas of interest:
 - Lungs
 - Pleura
 - Mediastinum & heart
 - Hila
 - Bones
 - Soft Tissues

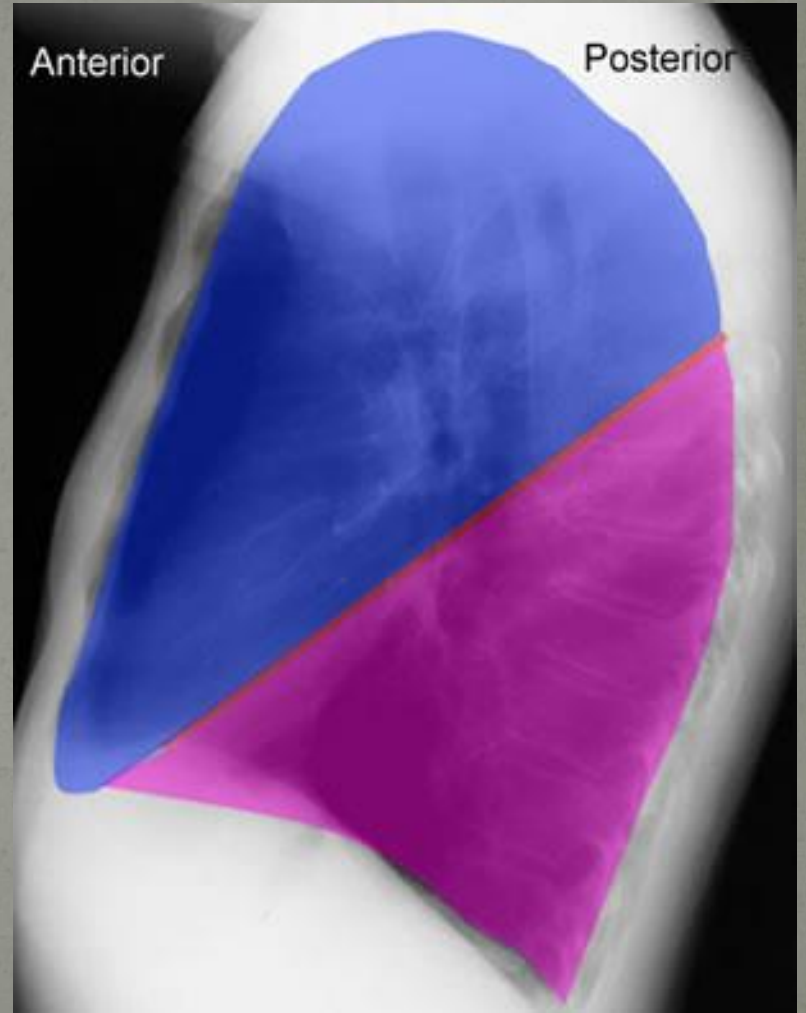
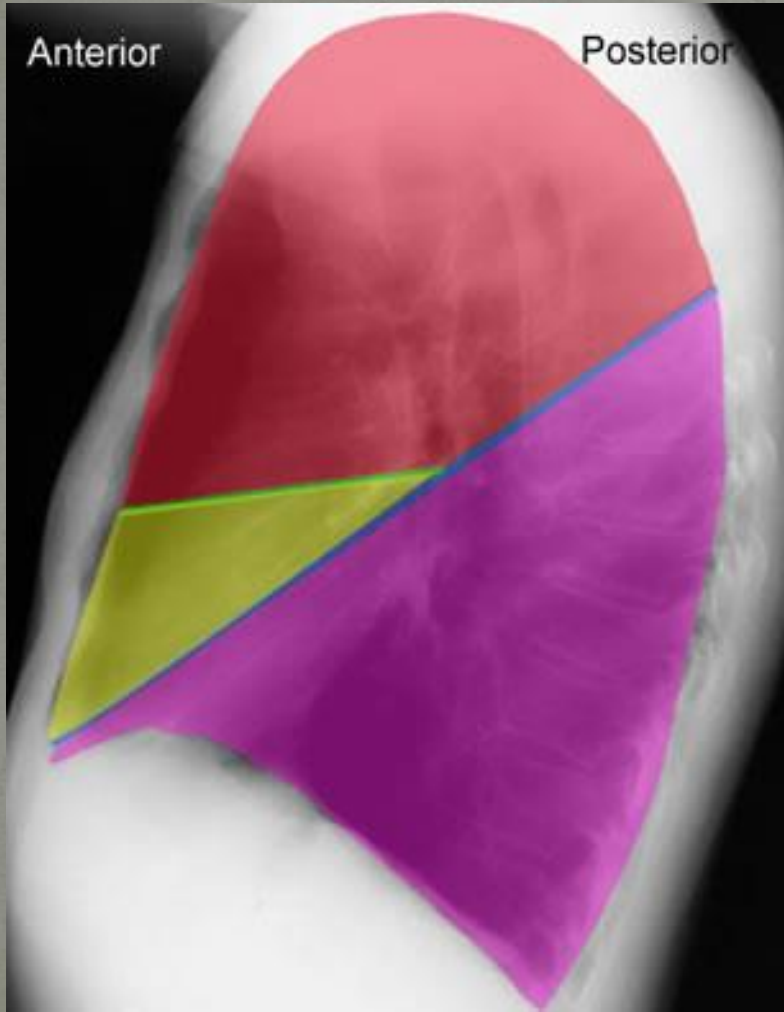


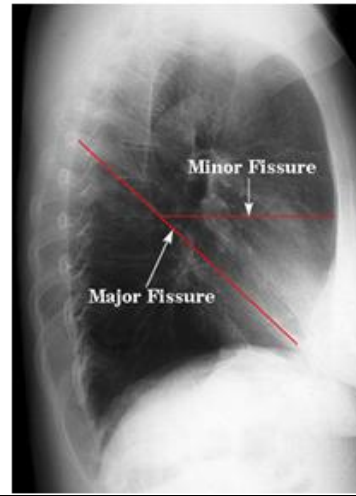
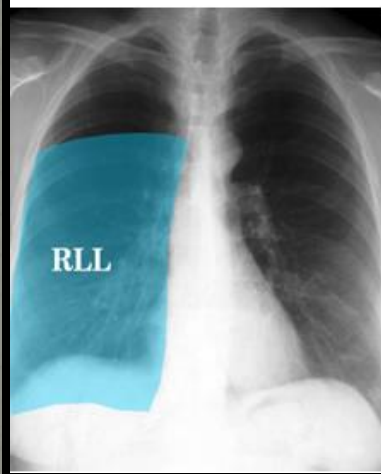
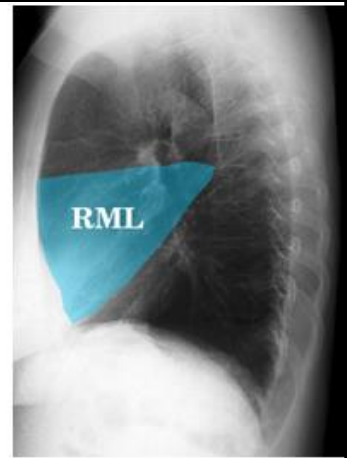
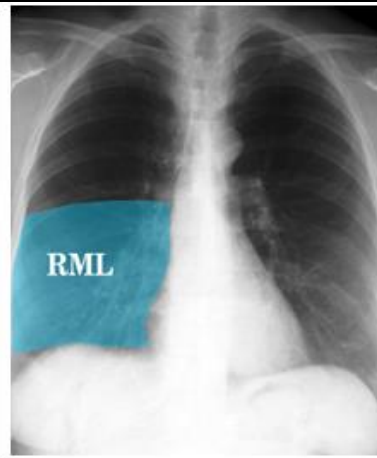
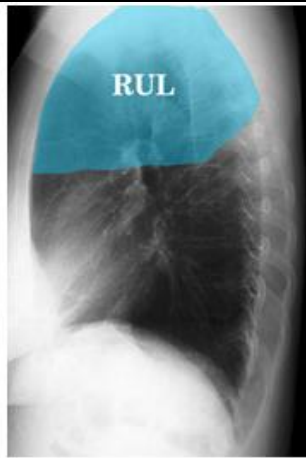
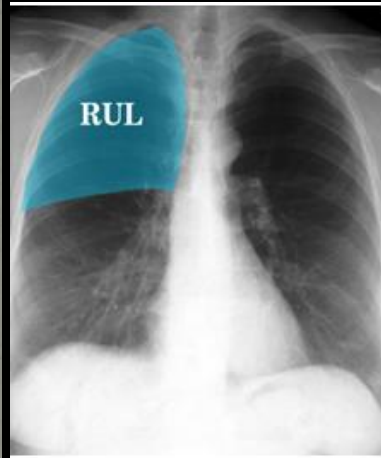


LUNG ZONES ARE NOT EQUIVALENT TO LUNG LOBES









Systematic Approach

⇒ Do not try to cover two areas such as bones and lungs at the same time

⇒ An Abnormality is one of three things:

- ◇ An opacity
- ◇ A radiolucency
- ◇ A distortion or displacement of a normal structure

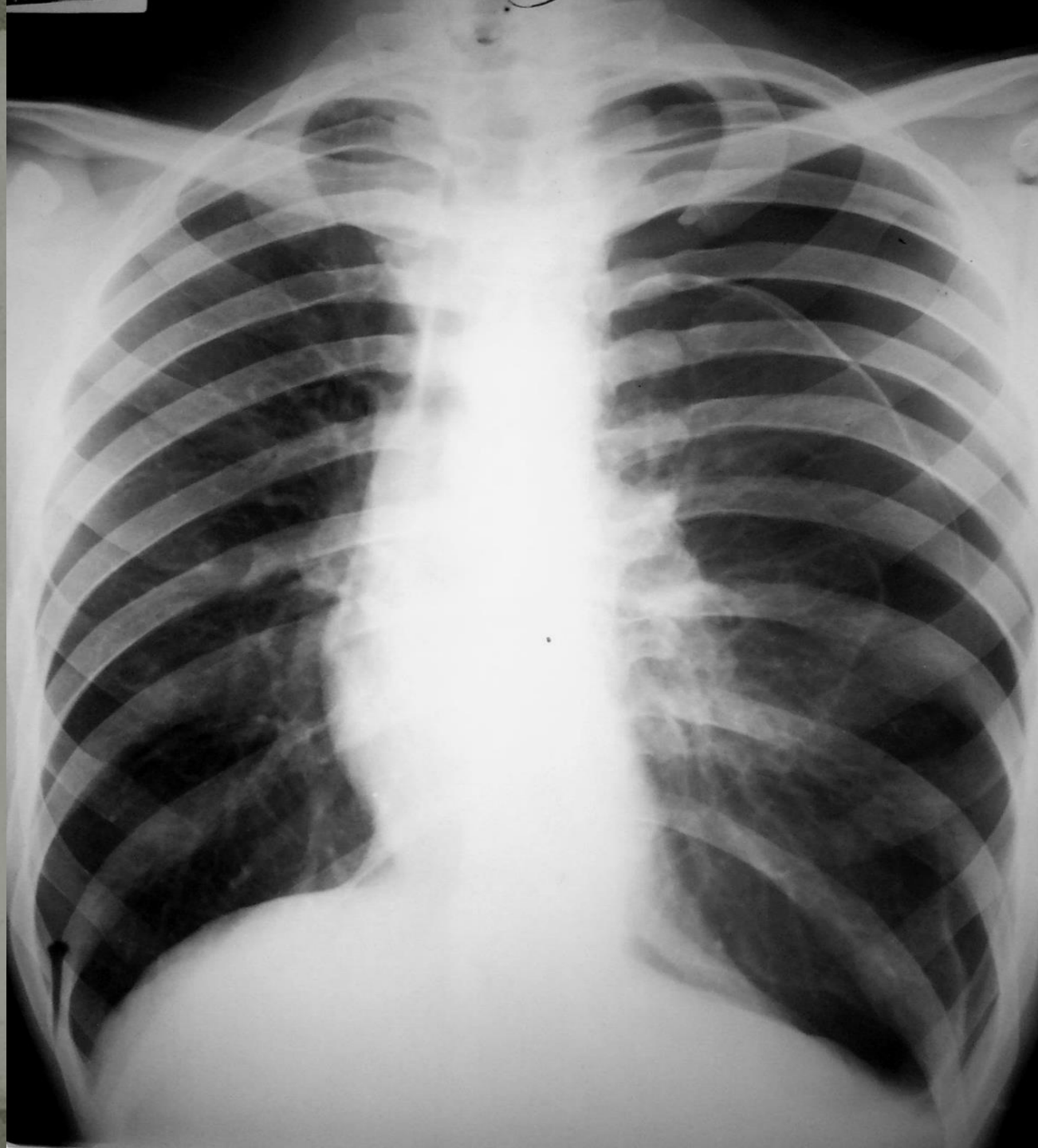
A radiolucency :

- An object that allows the x-ray beam to pass with little absorption \Rightarrow **Black** object
- Air / gas : most lucent \Rightarrow low density
- Soft tissue : relatively radiolucent \Rightarrow low to moderate density (Z for H = 1, C= 6, O=8)

An opacity

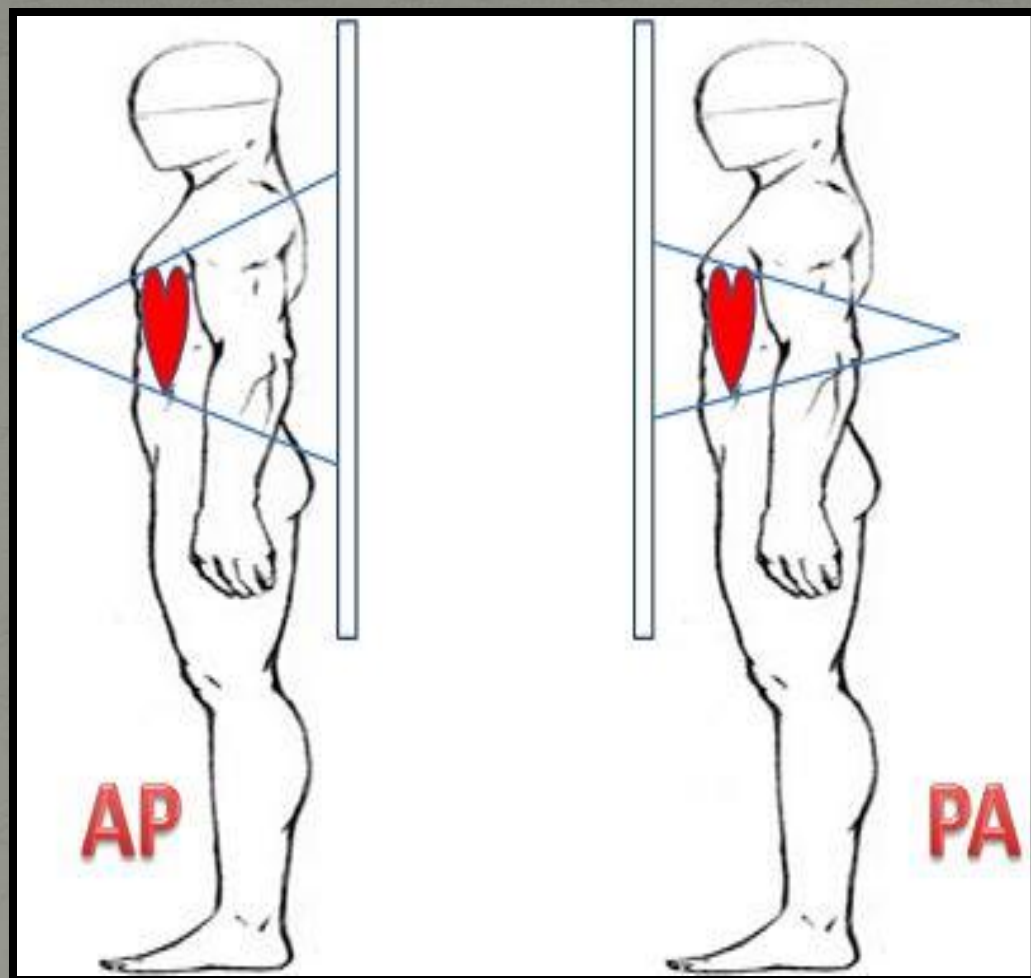
- An object that stops (absorbs) the x-rays \Rightarrow **White** object
 - Metal
 - Bone and calcifications
 - Contrast
- } *HIGH DENSITY*

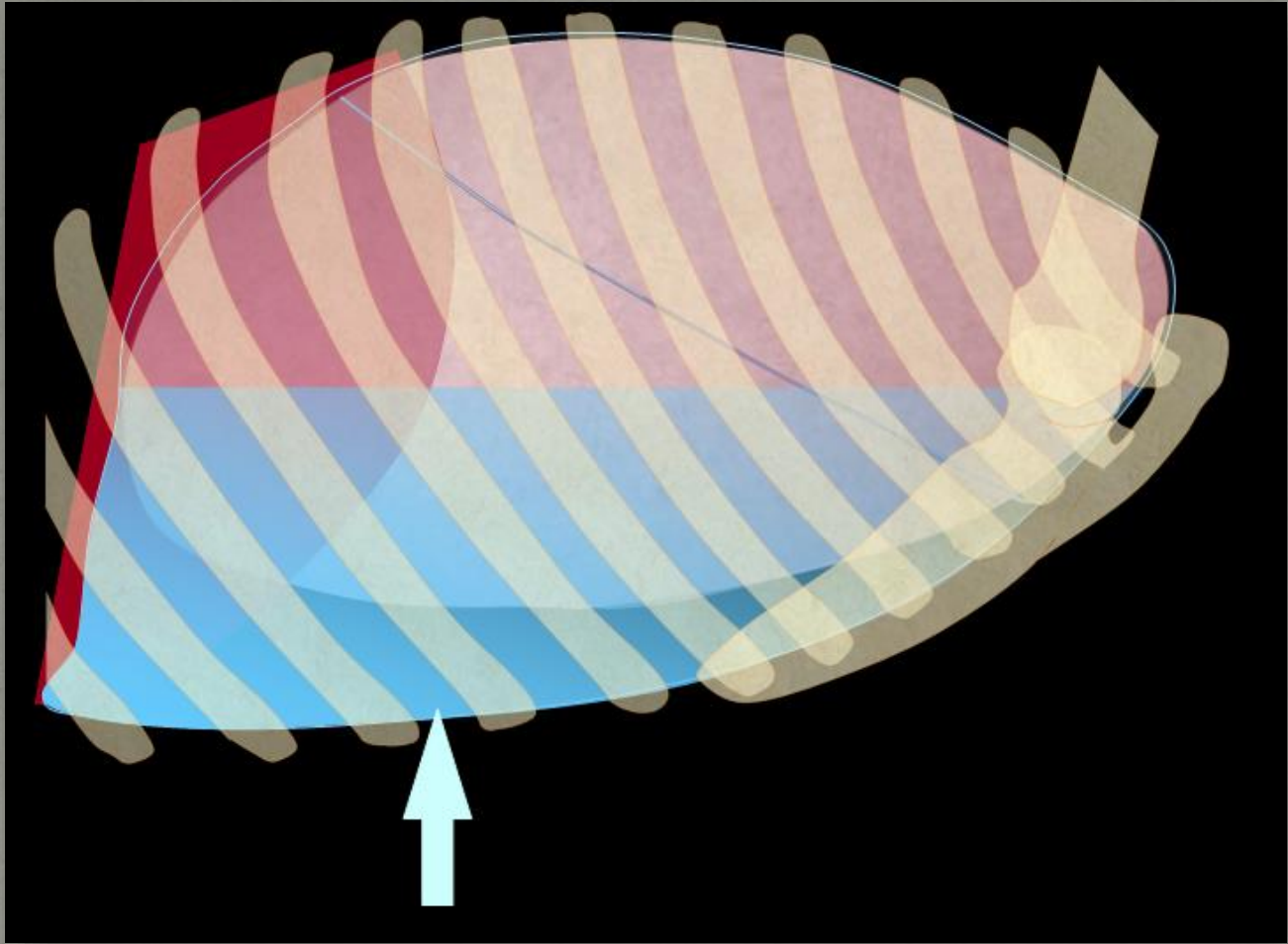




Documentary Evidence

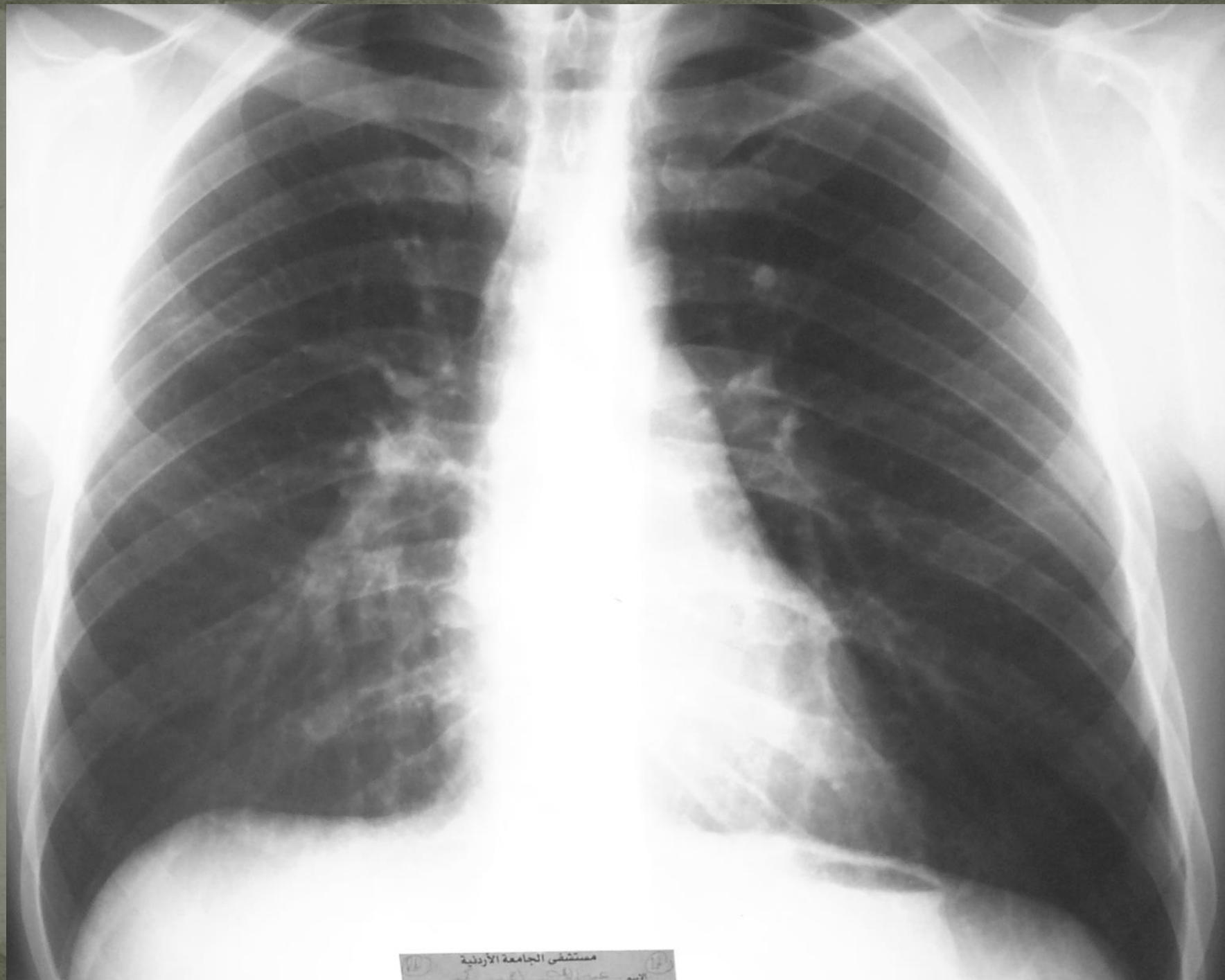
- Check name, age, AP / PA film, portable.
- Supine /AP film :
 - ◇ Heart size is exaggerated
 - ◇ Pleural fluid will accumulate posteriorly & give an increased density *to the hemithorax*.
 - ◇ A pneumothorax will lie anteriorly & be difficult to detect.
 - ◇ Diaphragm will be higher.
 - ◇ ↓ lung volumes.
 - ◇ Prominence of the upper zone vessels.







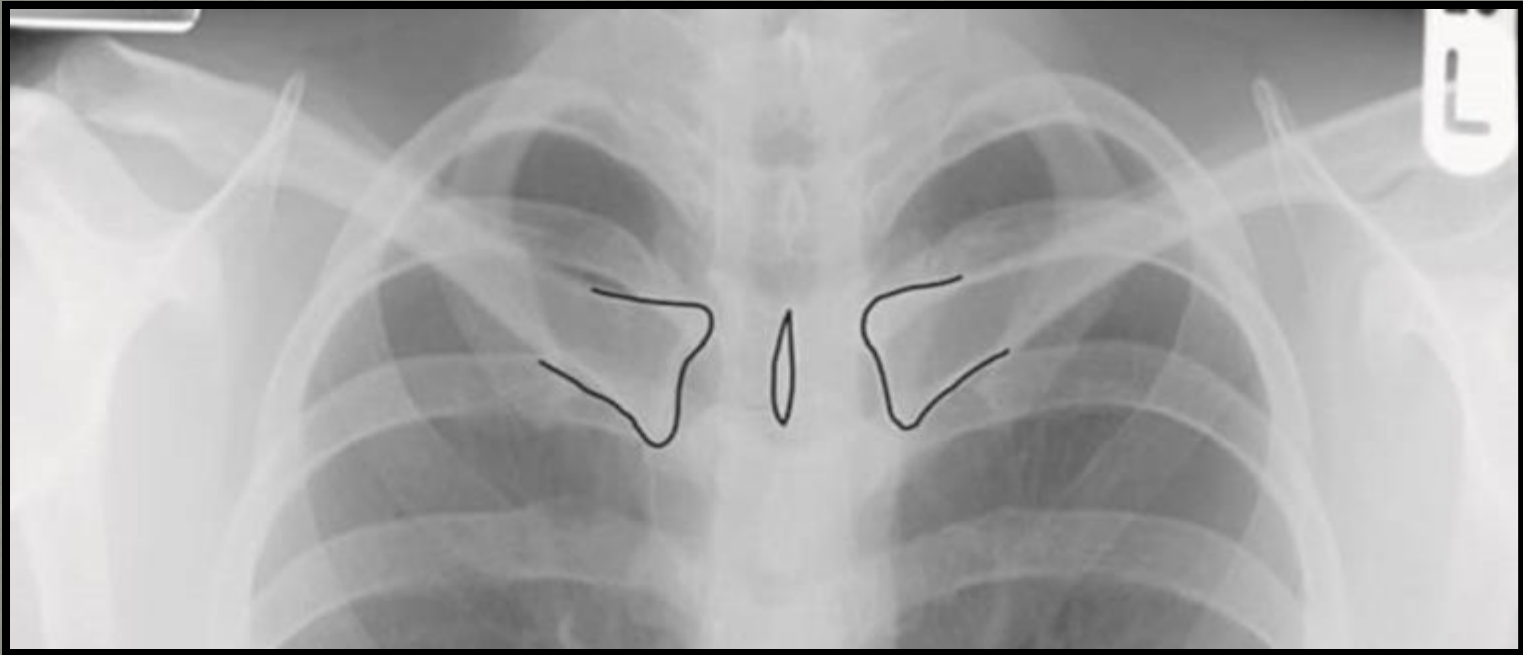
12-10-2011



مستشفى الجامعة الأردنية
الاسم:
رقم:
تاريخ:
15

Technical Factors

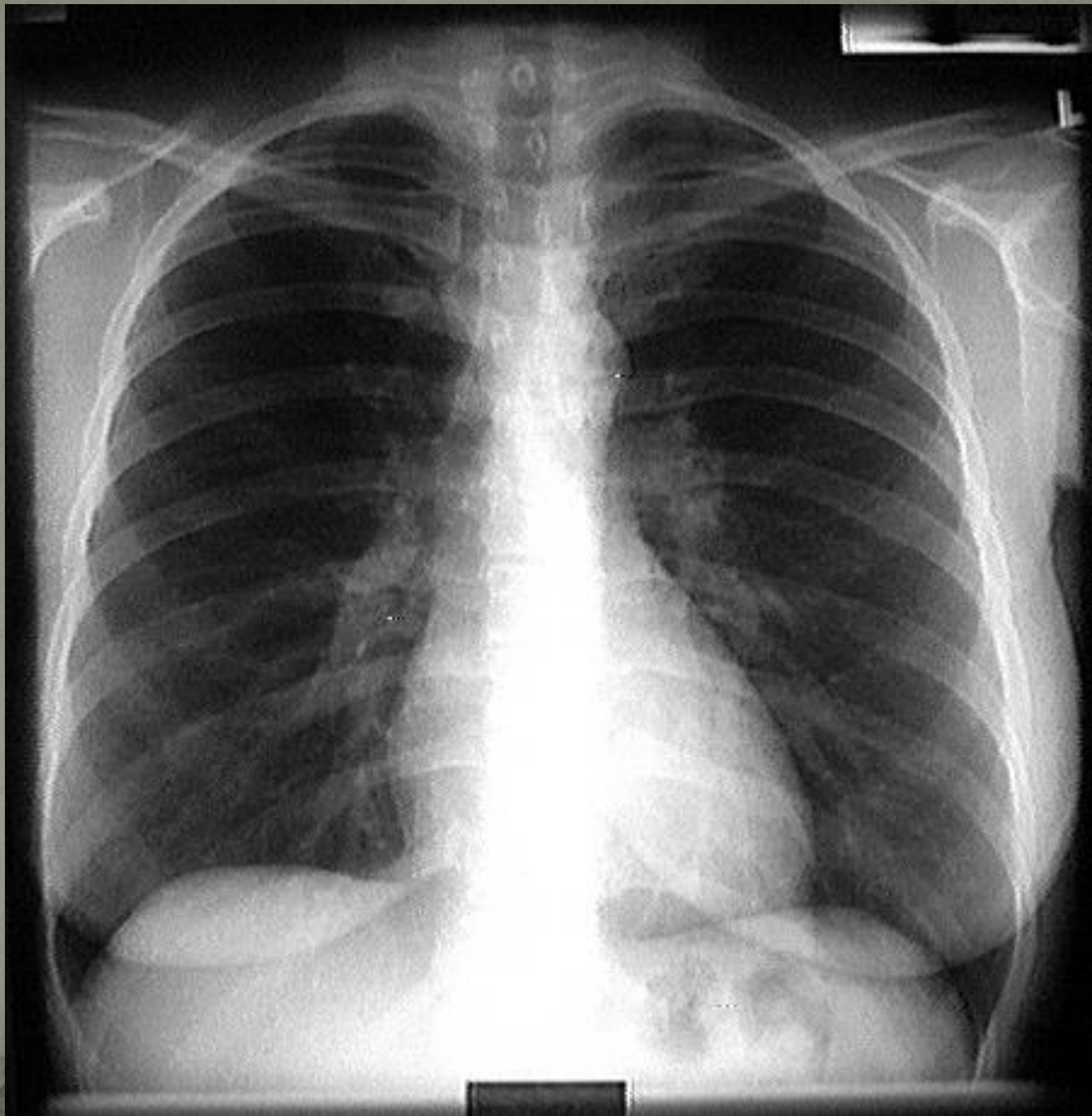
- Check side marker
- Rotation: Look at medial ends of clavicles ⇒ related to T4 on PA films.
- With a normal penetration/exposure of the film the vertebrae behind the heart should be just visible



Medial ends of clavicles are equidistant from the spinous process.

Six complete anterior ribs
(and ten posterior ribs) are
clearly visible



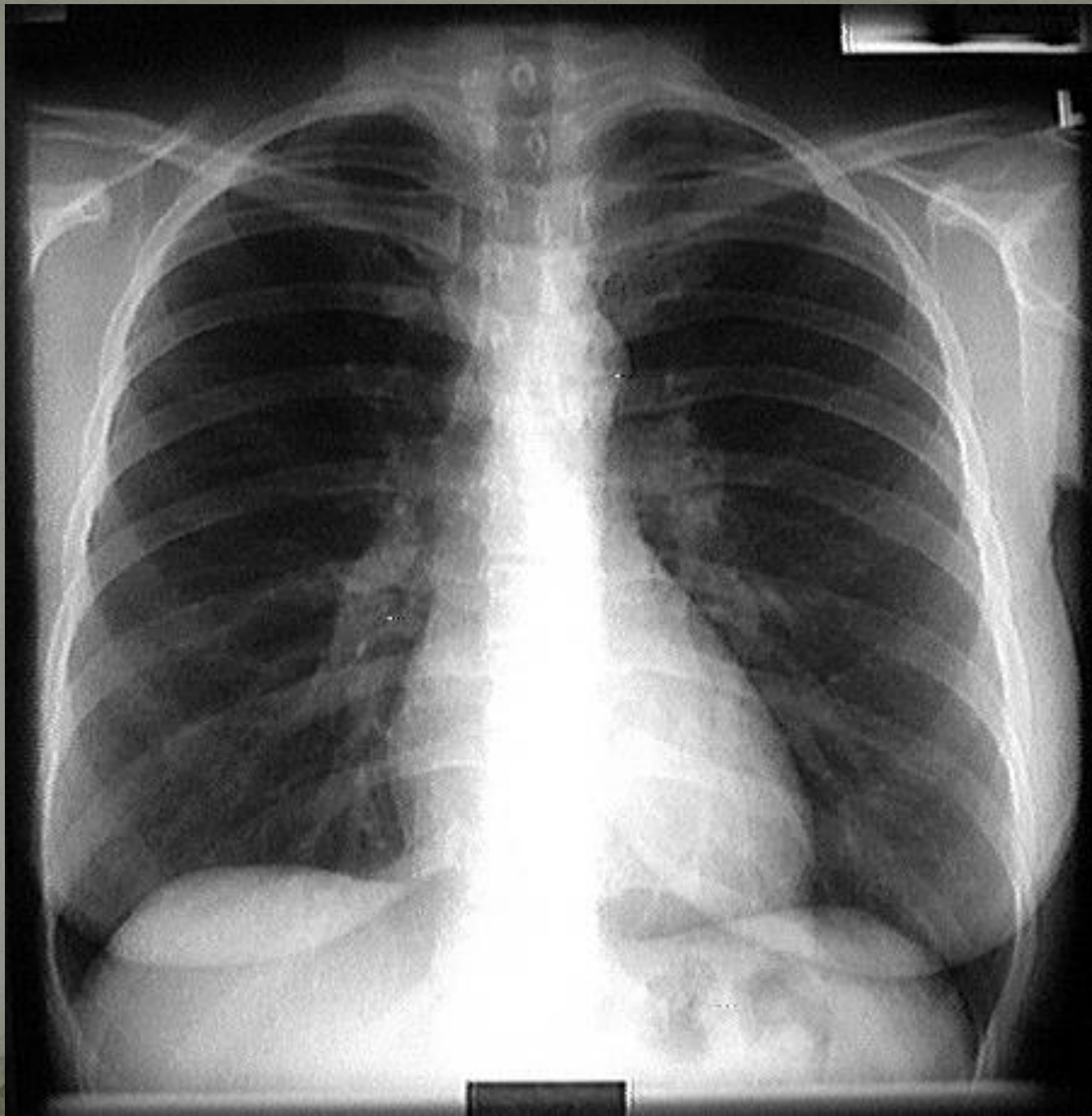


Areas of interest

- Lungs
- Mediastinum
- Hila
- Bones
- Soft tissues

Lungs

- Lung Volumes: the Hemidiaphragms should be at the level of the 6th rib anteriorly or the tenth rib posteriorly

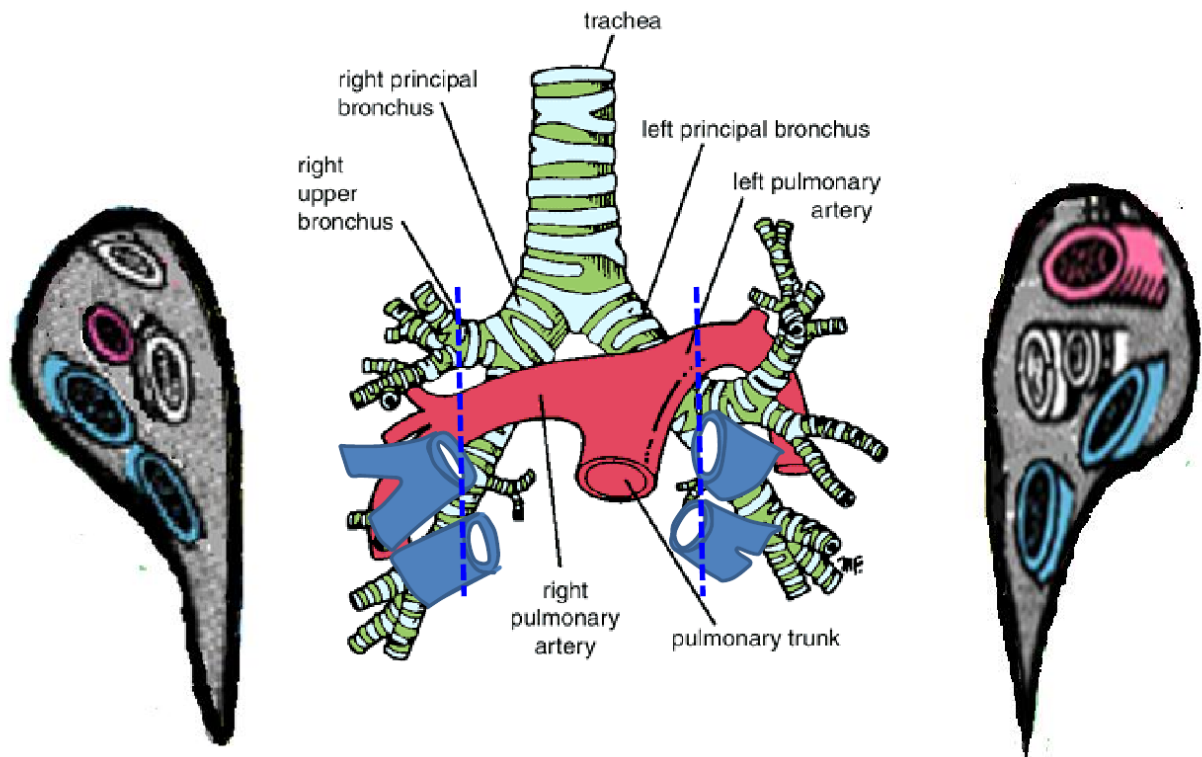


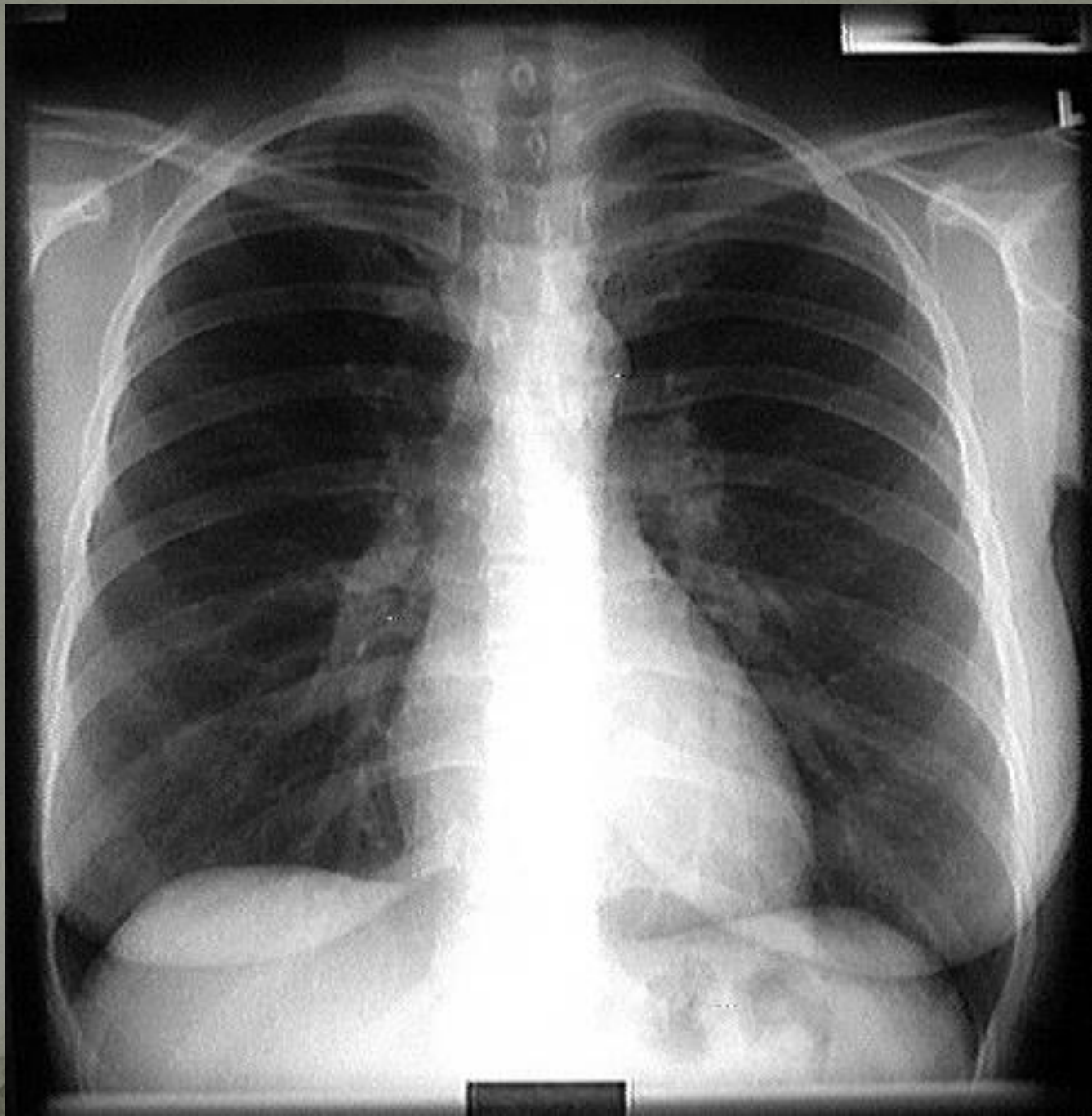


Air bronchograms

Hila

- Each hilum is the result of the density of the pulmonary artery & the superior pulmonary vein.
- The **LT hilum is 1cm higher than the RT** because the left pulmonary artery arches up & over the left main bronchus.
- **Distortion:** Hila may be pulled up or down by fibrosis or collapse of the lung.
- **One hilum Bigger or Denser than the other:**

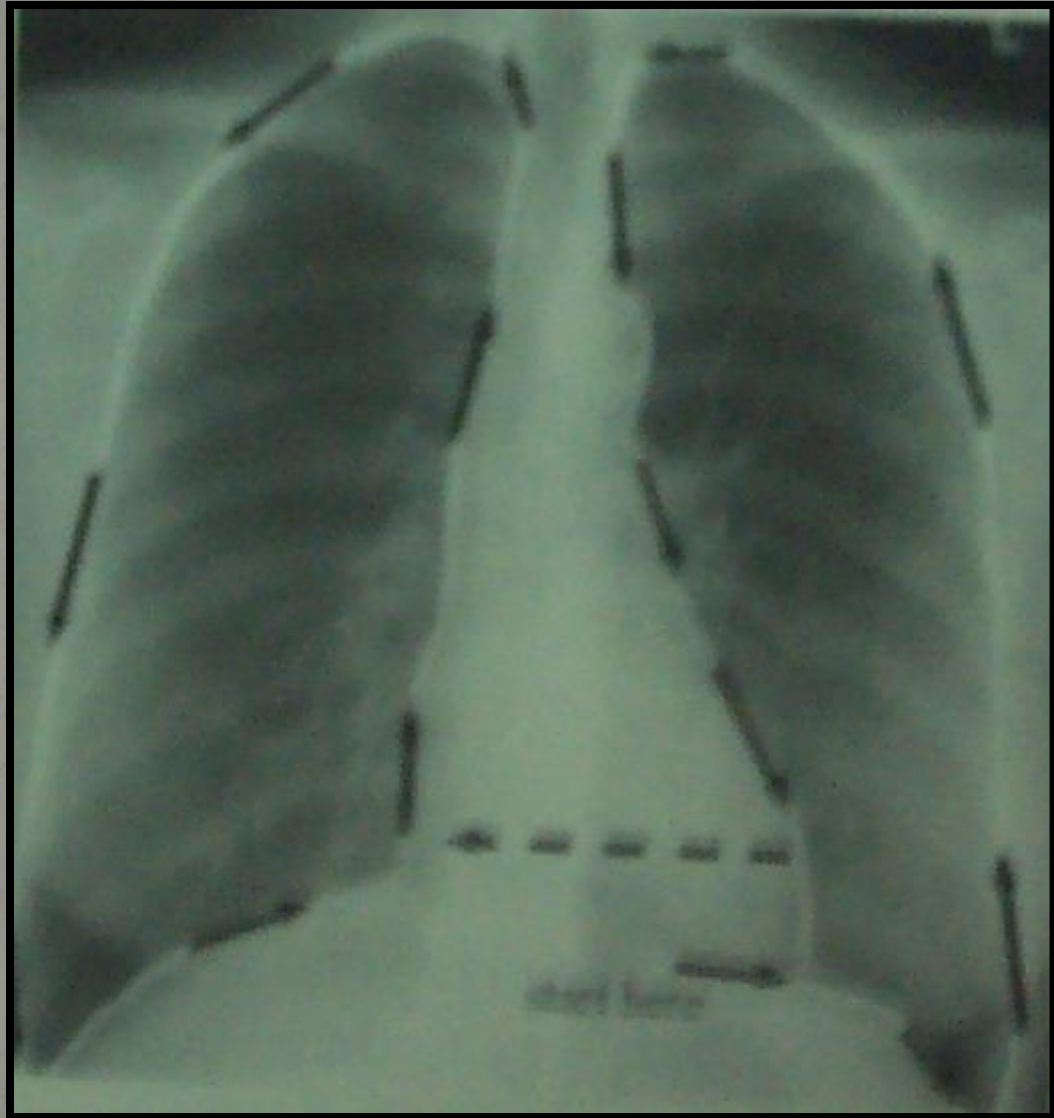




Pleura

The best place to look for pleura is in profile i.e around the lung margin.

Pleura



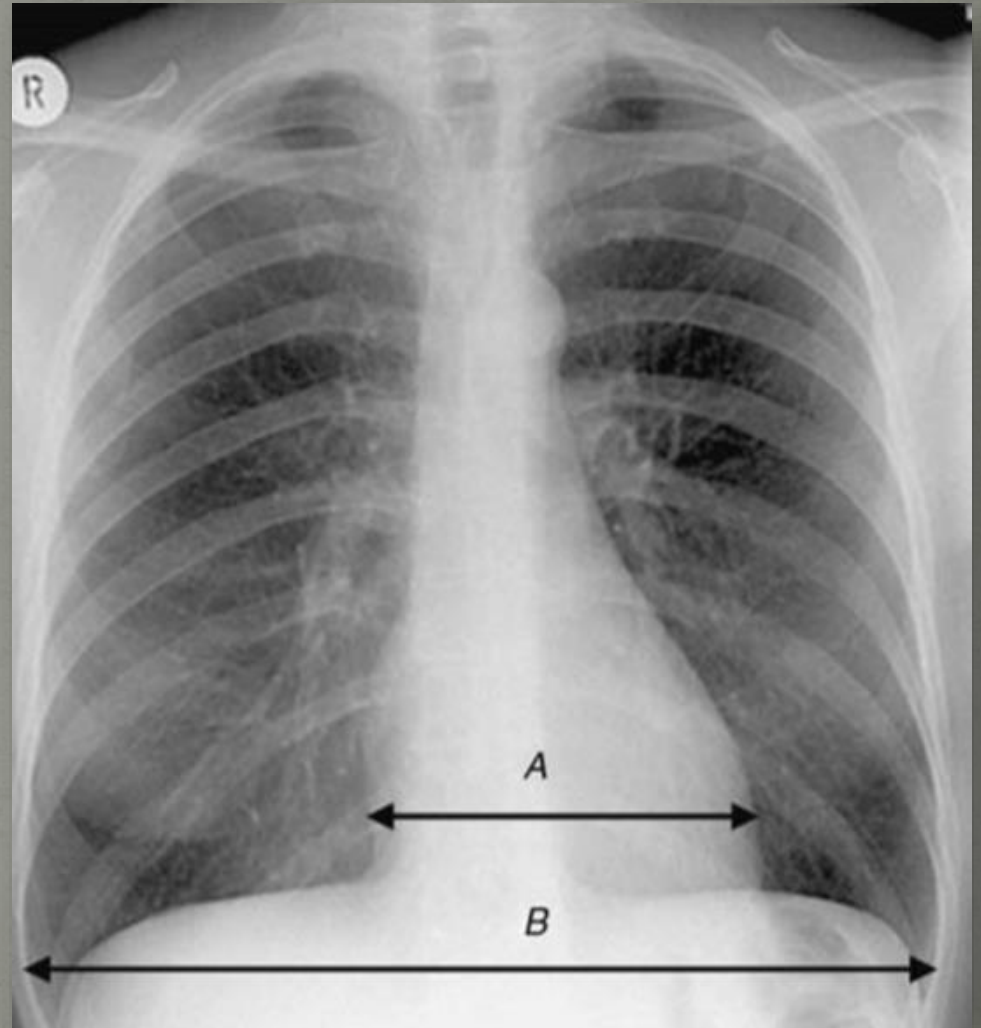
Mediastinum & Heart

- **Mediastinum:** is situated between the lungs in the center of the thorax.
- Boundaries:
- **Divisions:** *Radiologically into 3 parts:*
 - Ant :in front of the ant. Pericardium & trachea
 - Middle :within the pericardial cavity including trachea
 - Post :behind post pericardium & trachea.
 - Sup.Mediastinum

Mediastinum & Heart

Enlarged heart:

- ❖ PA film : Normal
CTR < 50 %







L

VB2

UPR

