Chest X-rays

for Undergraduates

Dr Abdullah Ansari

Senior Resident (Medicine)

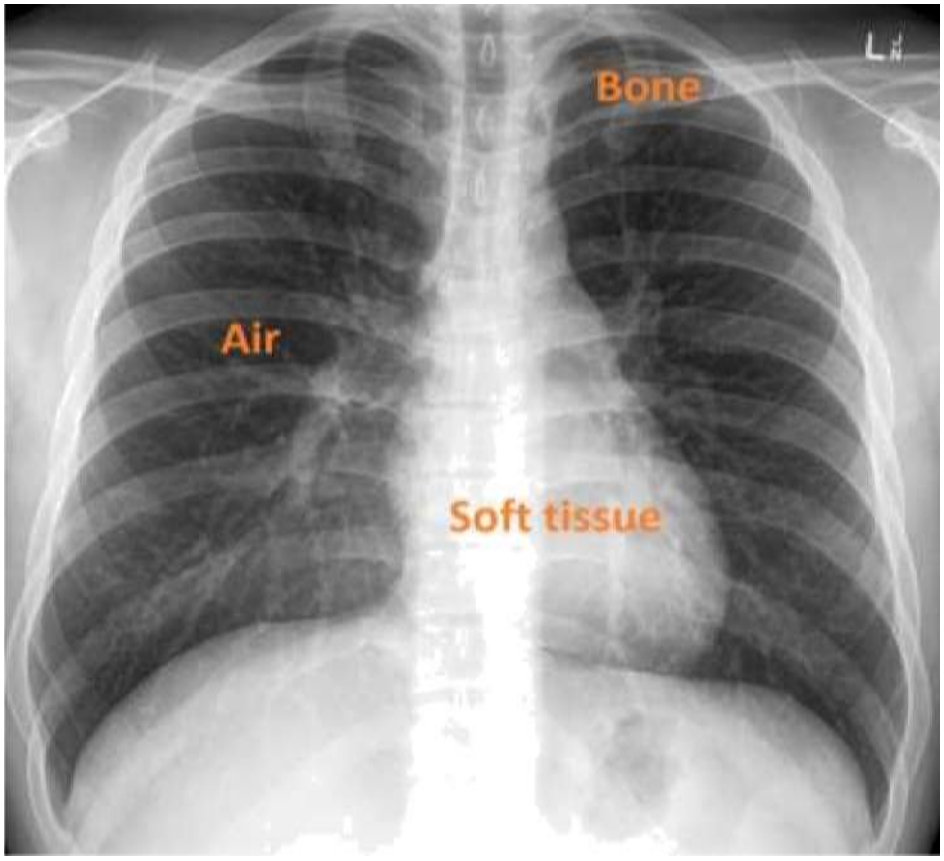
Aligarh Muslim University, Aligarh

Radiographic Densities

Air Fat SoR tissue/Fluid Bone Metal

least opaque t0 most opaque

Different tissues in our body absorb X-rays at different extent



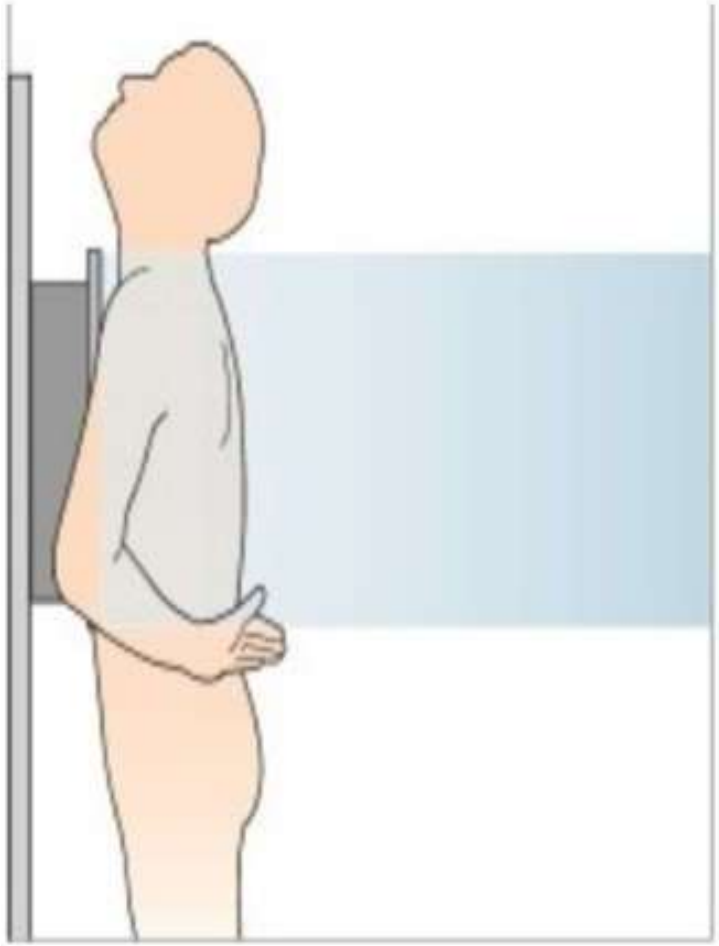
Technical aspects…**PVERB**

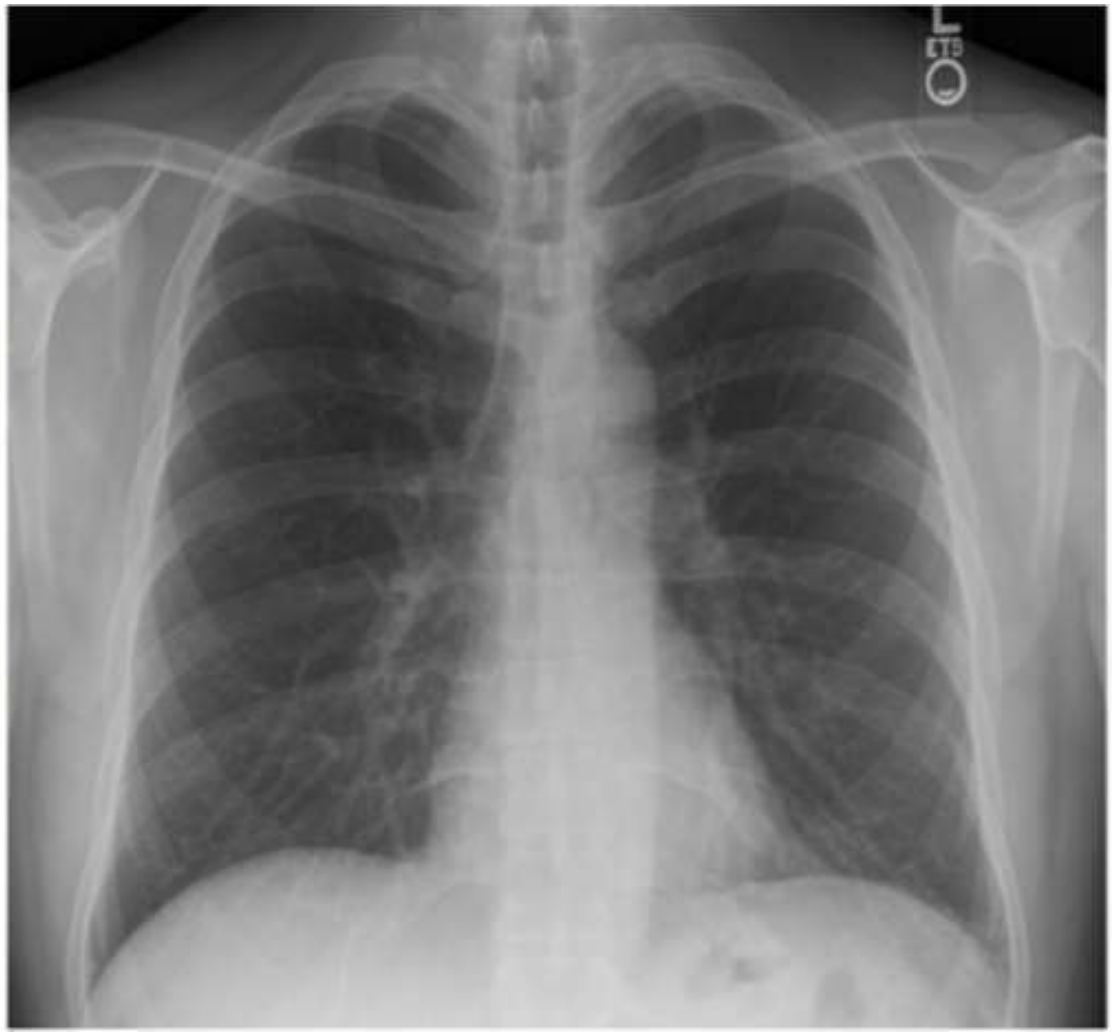
1. **P**atient’s details
2. **V**iew : PA vs AP or lateral
3. **E**xposure
4. **R**otation
5. **B**reath: Inspiration or Expiration

4 major views

1. Posterioranterior (PA)
2. AnteriorPosterior (AP)
3. Lateral
4. Lateral decubitus

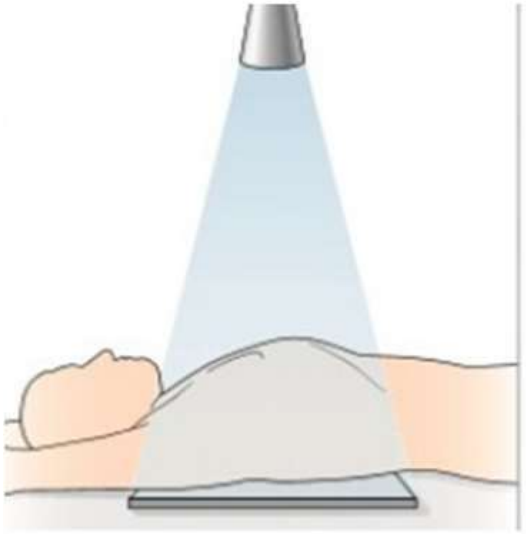
PA view

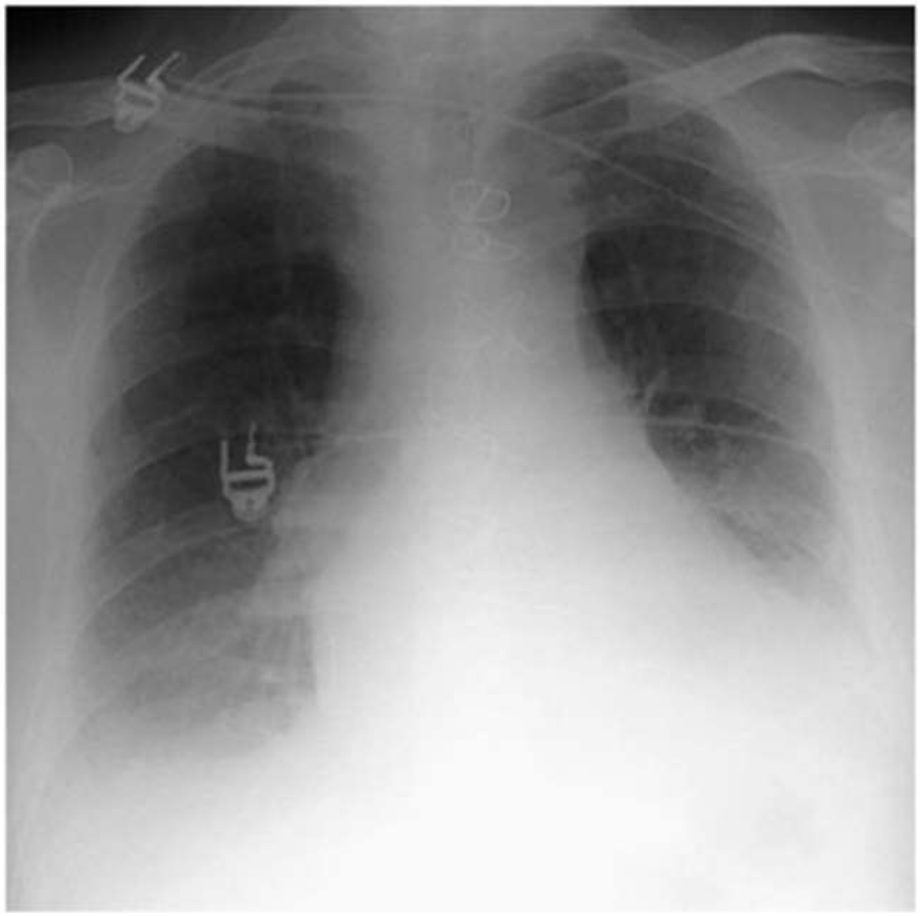




- Standard view for routine Chest xrays
- Taken in full inspiration

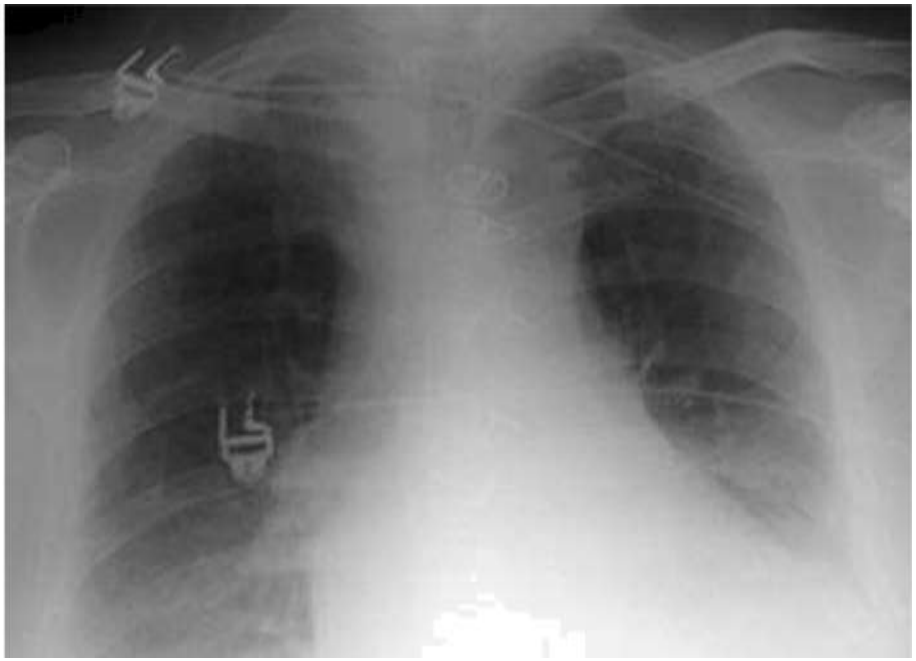
AP view





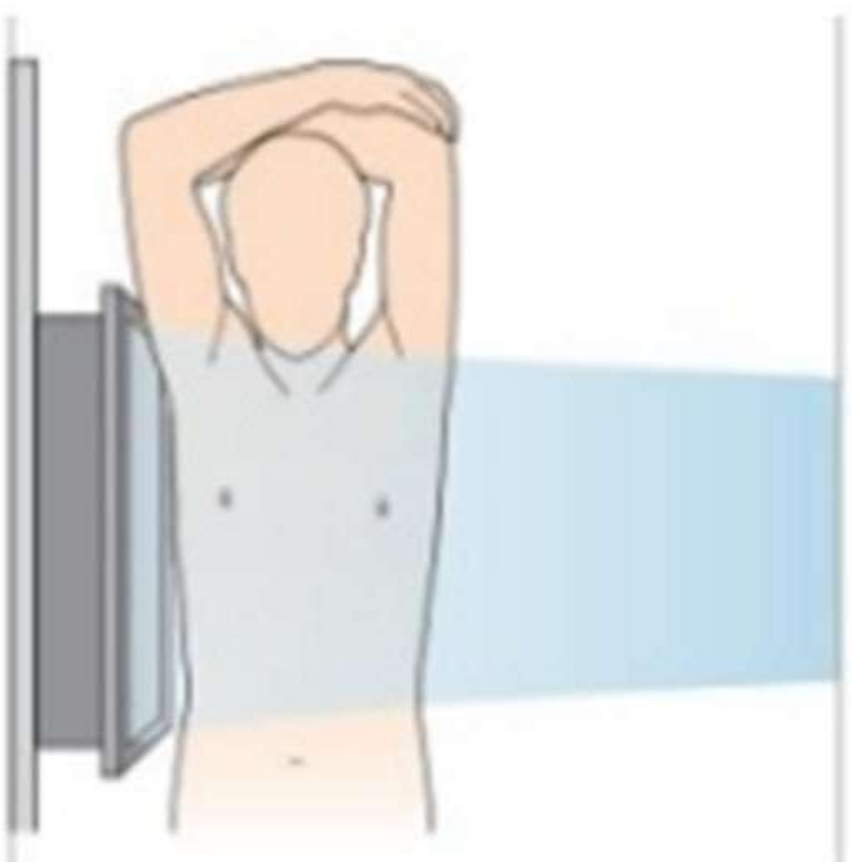
- Patient is too ill to stand or noncooperative
- Heart at a greater distance from film, appears enlarged

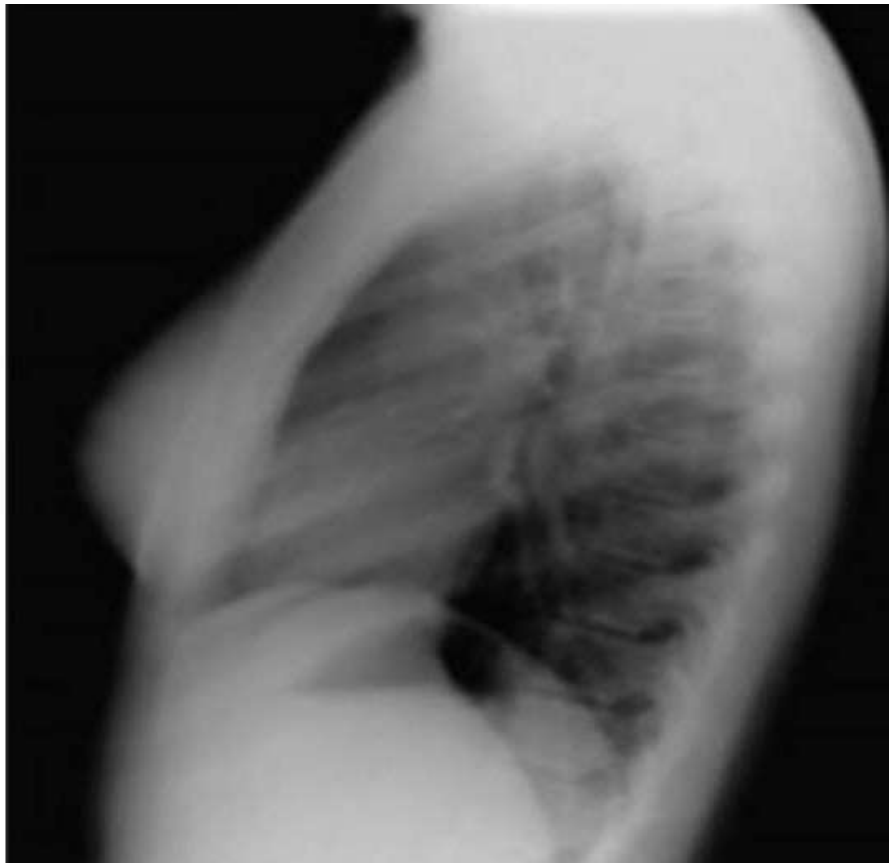
PA vs AP view



	PA view	AP view
Clavicle	Over lung fields	Above lungs apex
Scapulae	Away from lung fields	Over lung fields
Ribs	Posterior ribs distinct	Anterior ribs distinct
Heart		Relatively enlarged

Lateral view

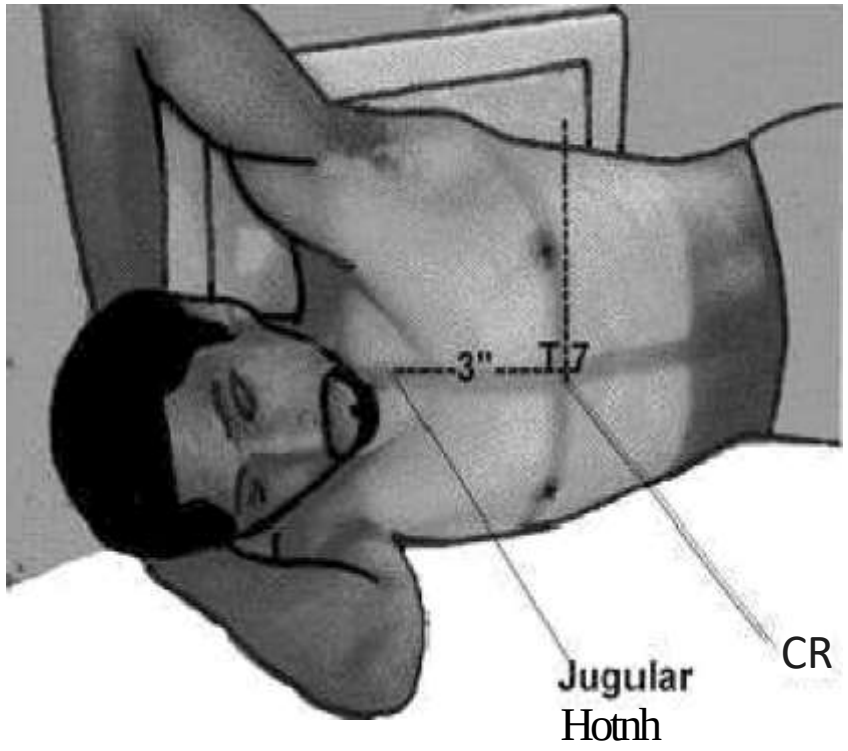




•Lung lobes, mediastinum & bony thoracic cavity better visualized

•Useful for lobar pathology, mediastinal masses, encysted pleural fluid & basal consolidation

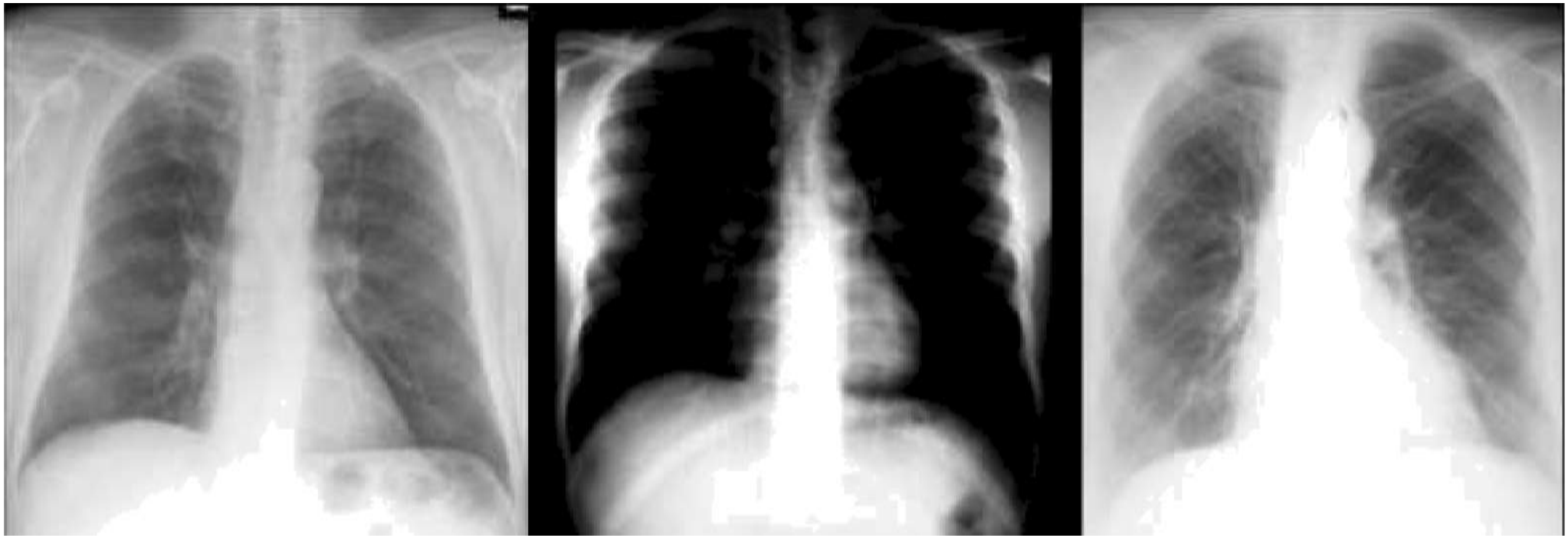
Lateral decubitus view



- Specialized projection to demonstrate small pleural effusions or pneumothorax

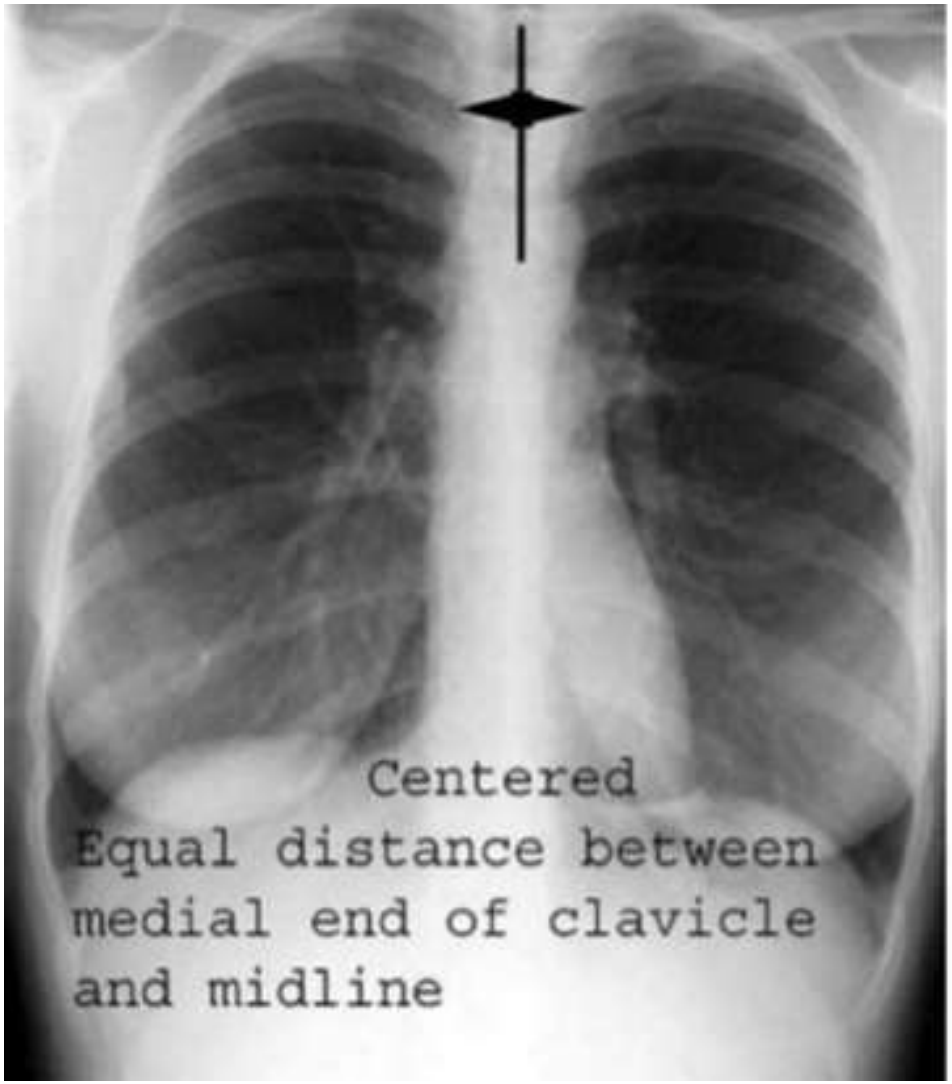
Exposure

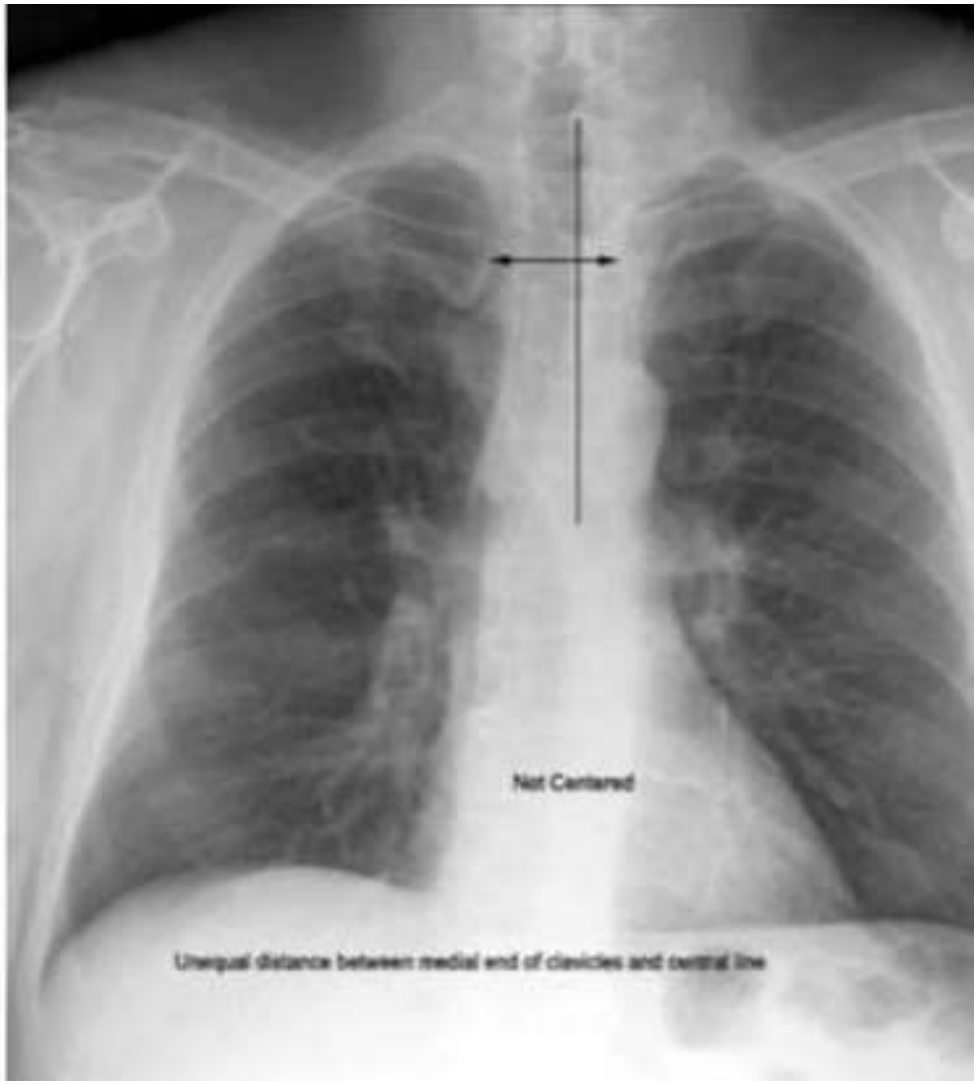
- Adequate exposure: Inter-vertebral spaces barely visible through the heart shadow



Over-exposed film	Under-exposed film
Inter-vertebral spaces clearly visibile through heart shadow	Inter-vertebral spaces clearly visibile through heart shadow

Rotation

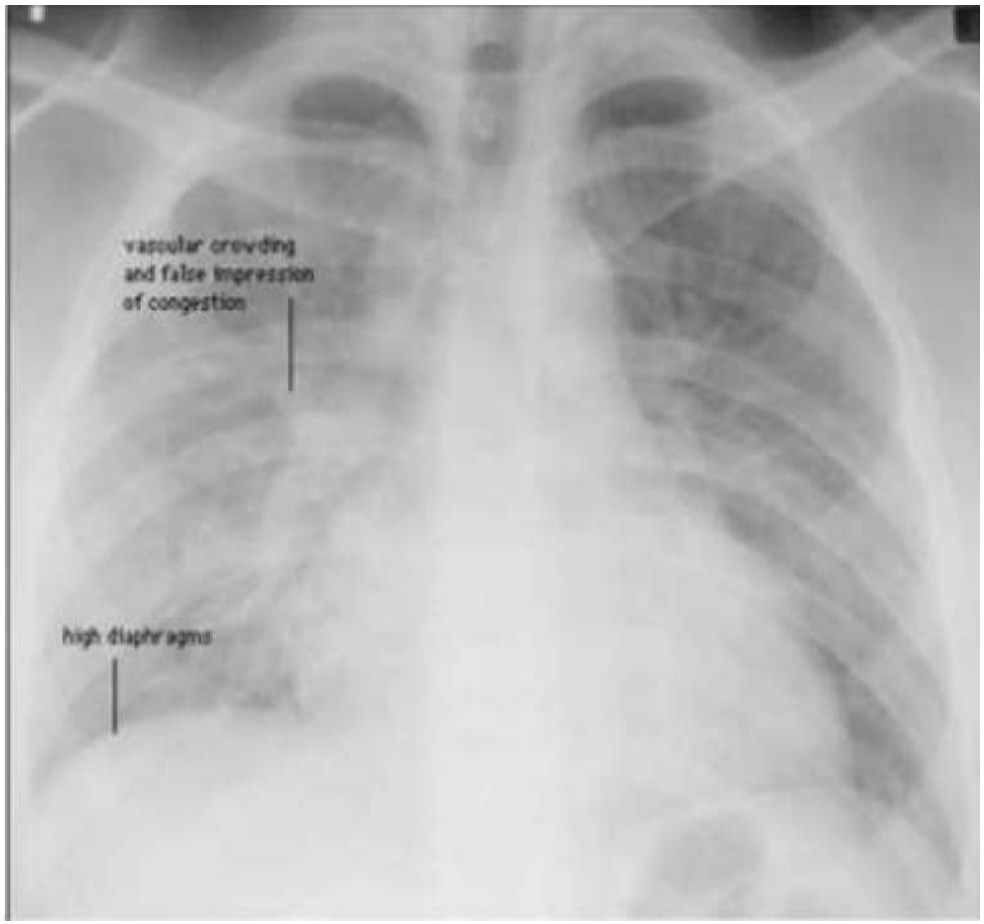

Centered
Equal distance between
medial end of clavicle
and midline


Not Centered

Good Inspiration

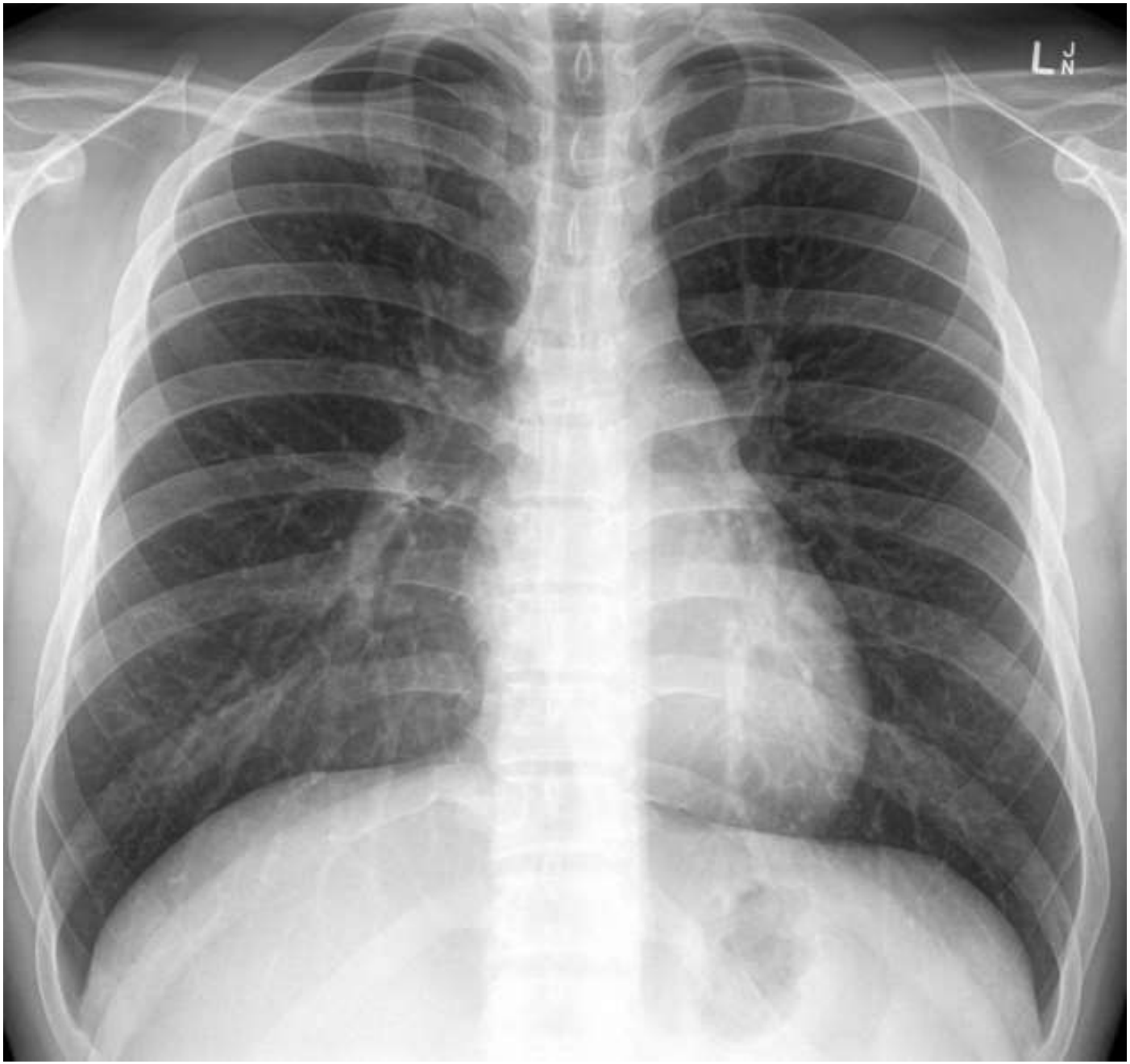
- 6 anterior ribs visible
- 10 posterior ribs visible

Inspiration



Expiration

Normal Chest Xray

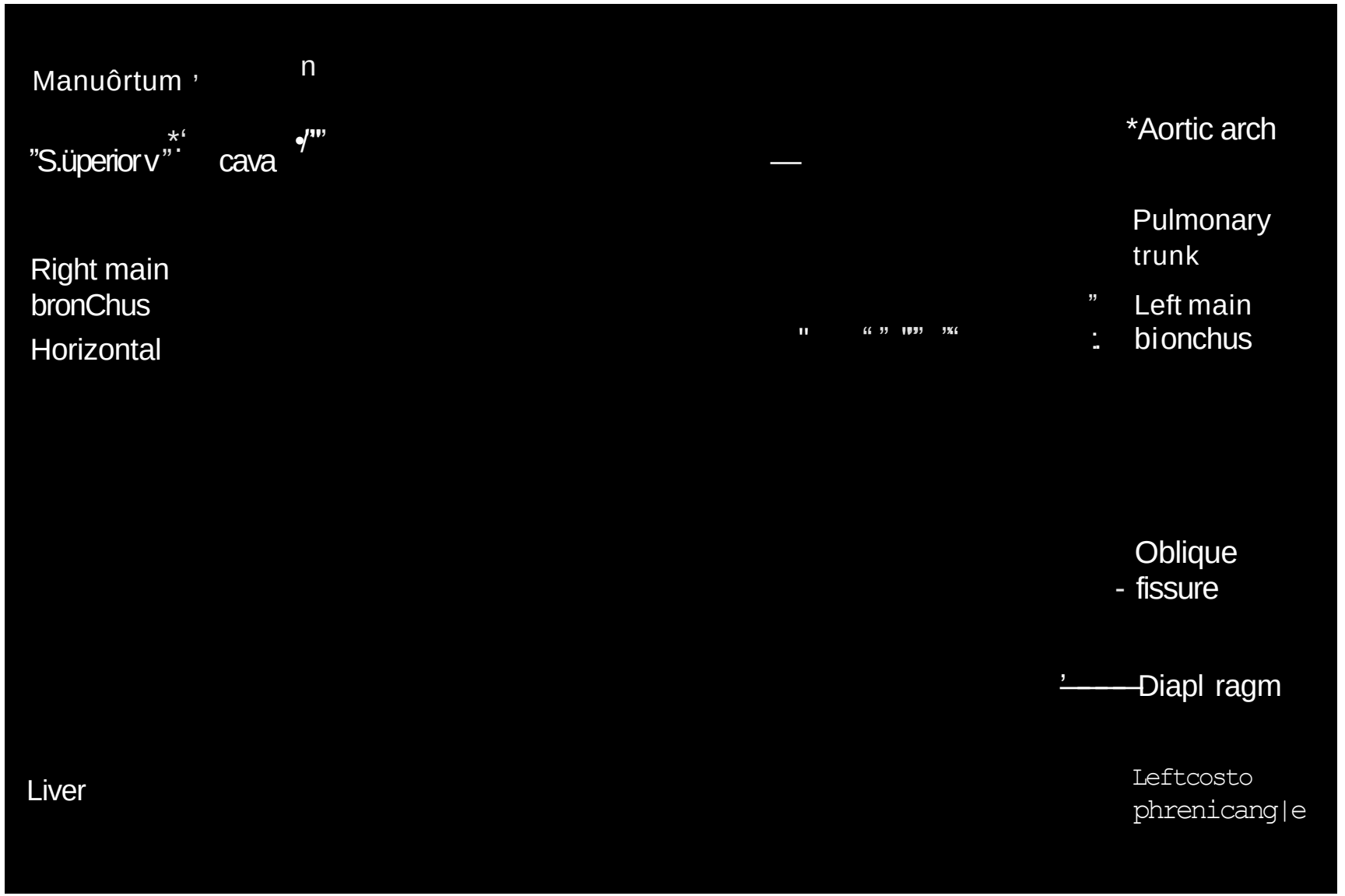


Interpreting Chest X-rays

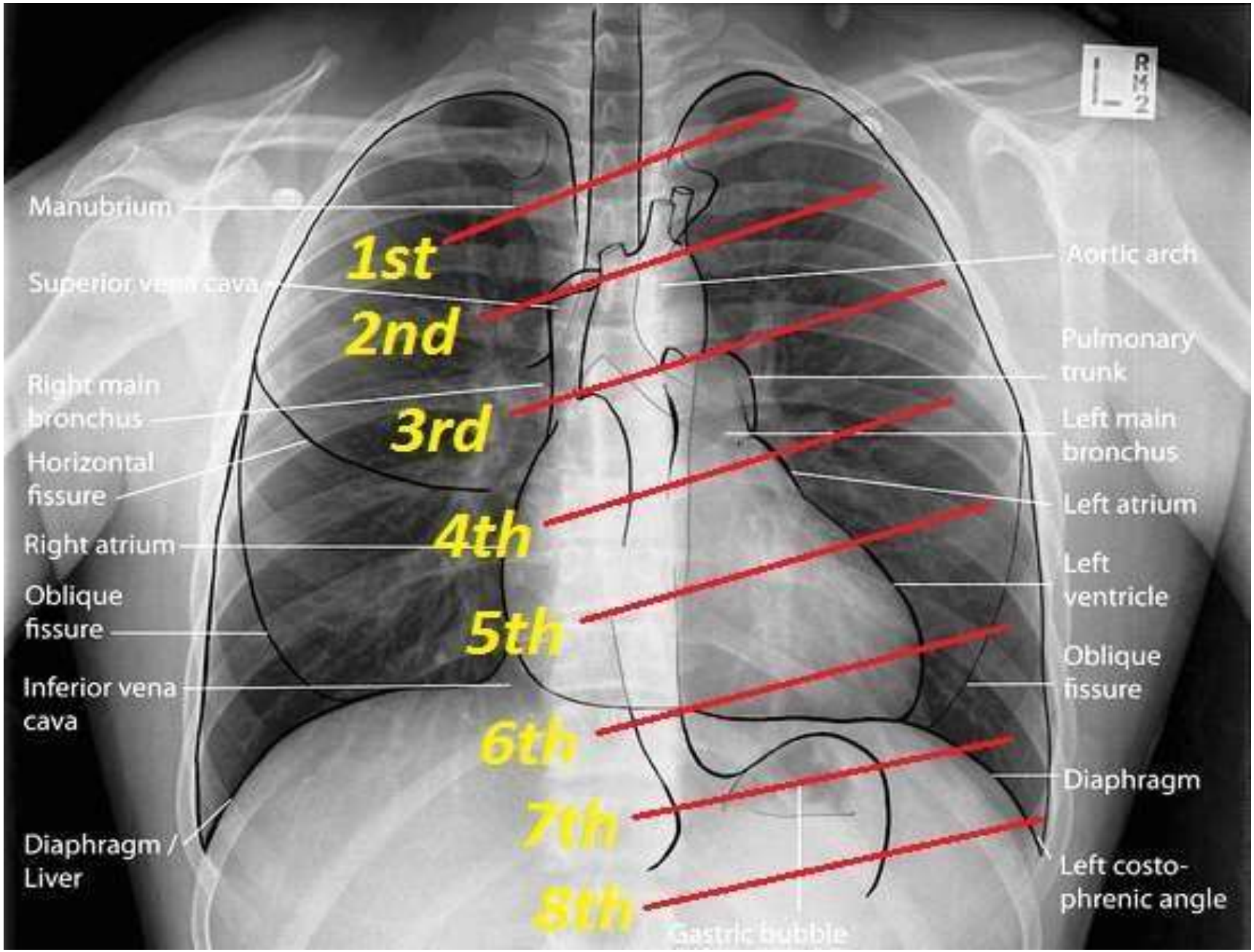
ABCDEFGH approach

- Airway
- Bones & soft tissue
- Cardiac shadow
- Diaphragm
- Effusion (pleura)
- Fields (lungs)
- Gastric bubble
- Hila & mediastinum

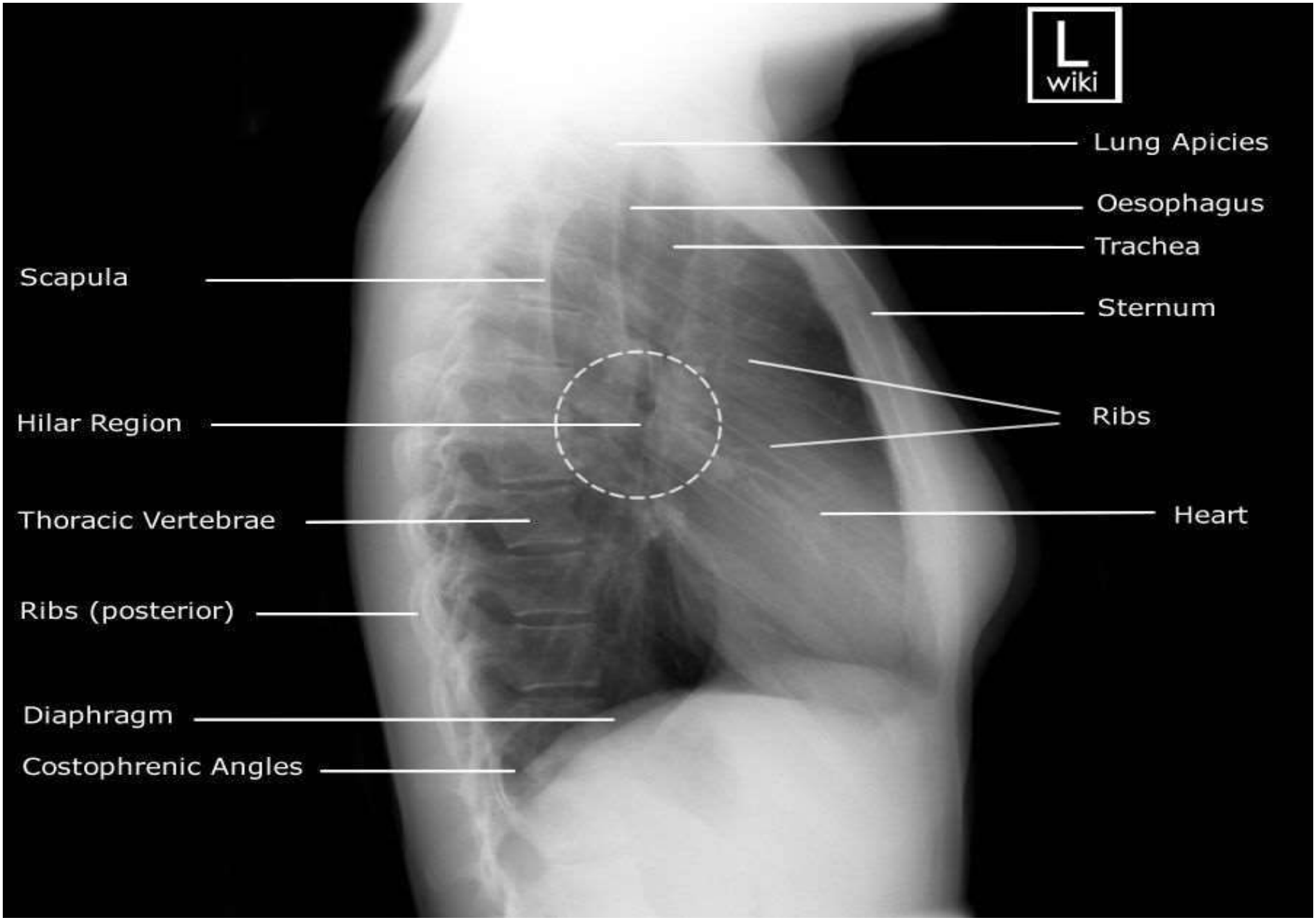
Norma, Chest X-ray



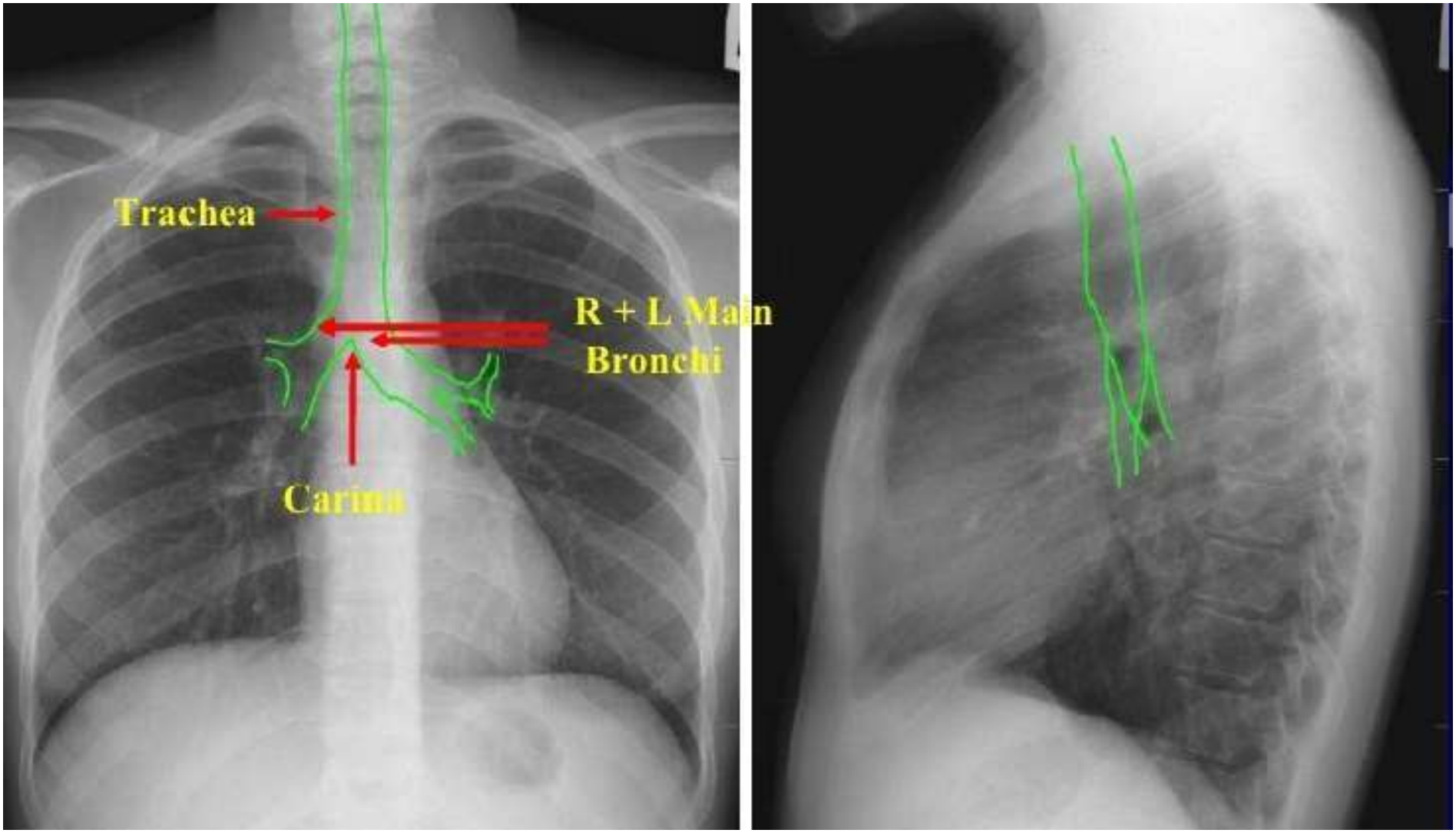
Counting Ribs



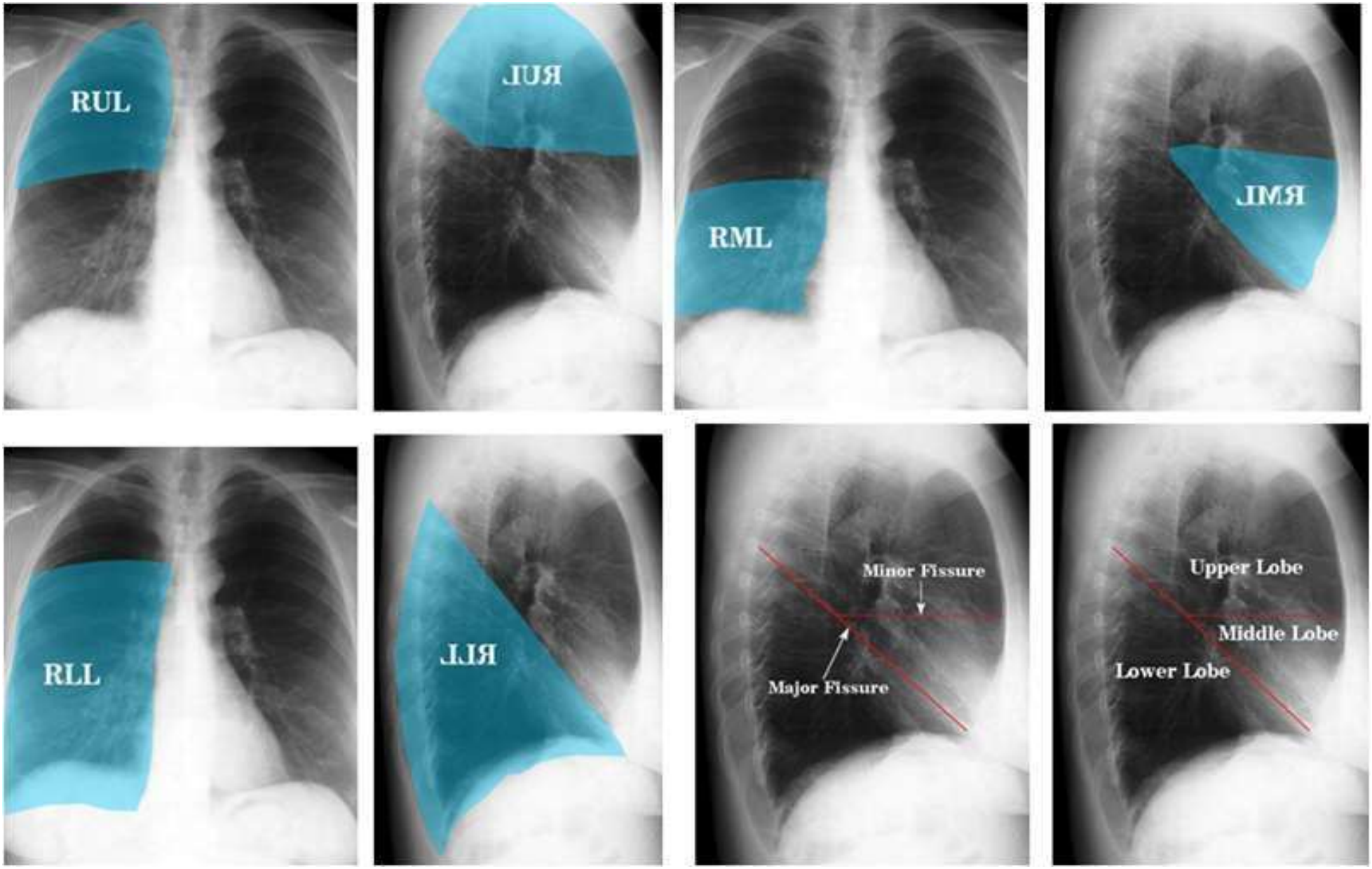
Lateral view



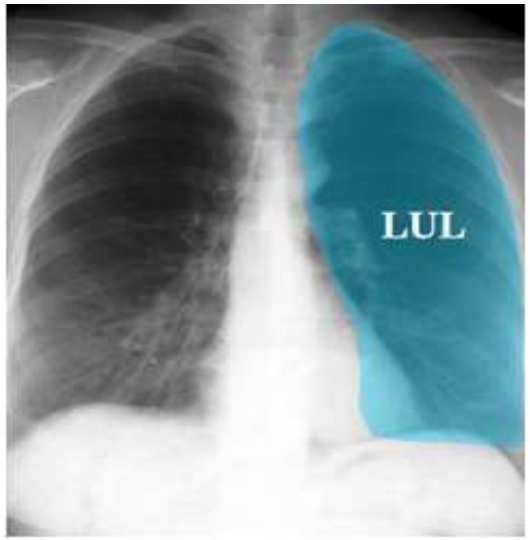
Airway

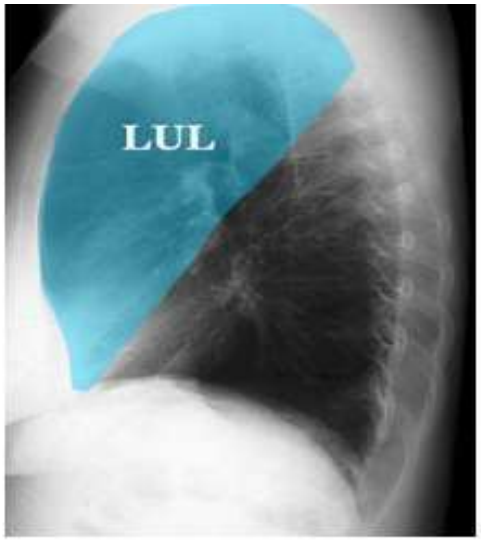


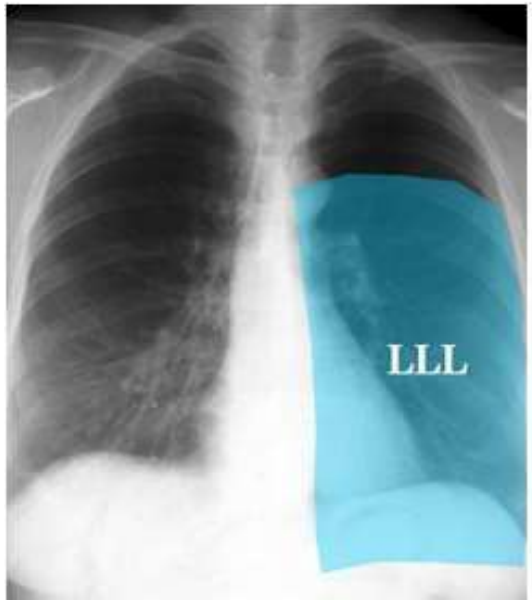
Right Lung Anatomy

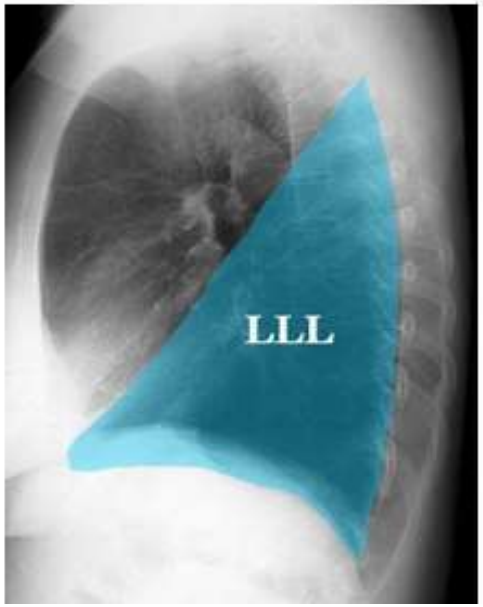


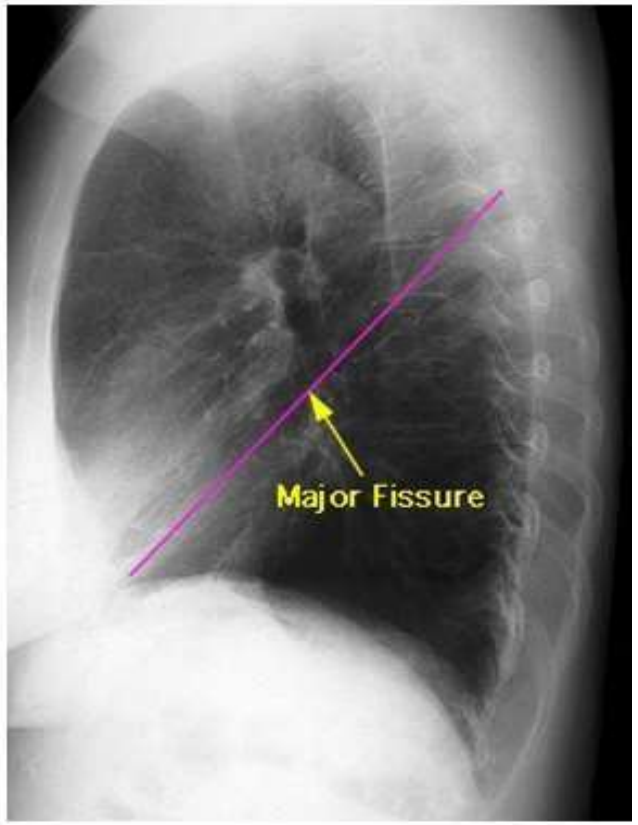
Left Lung Anatomy











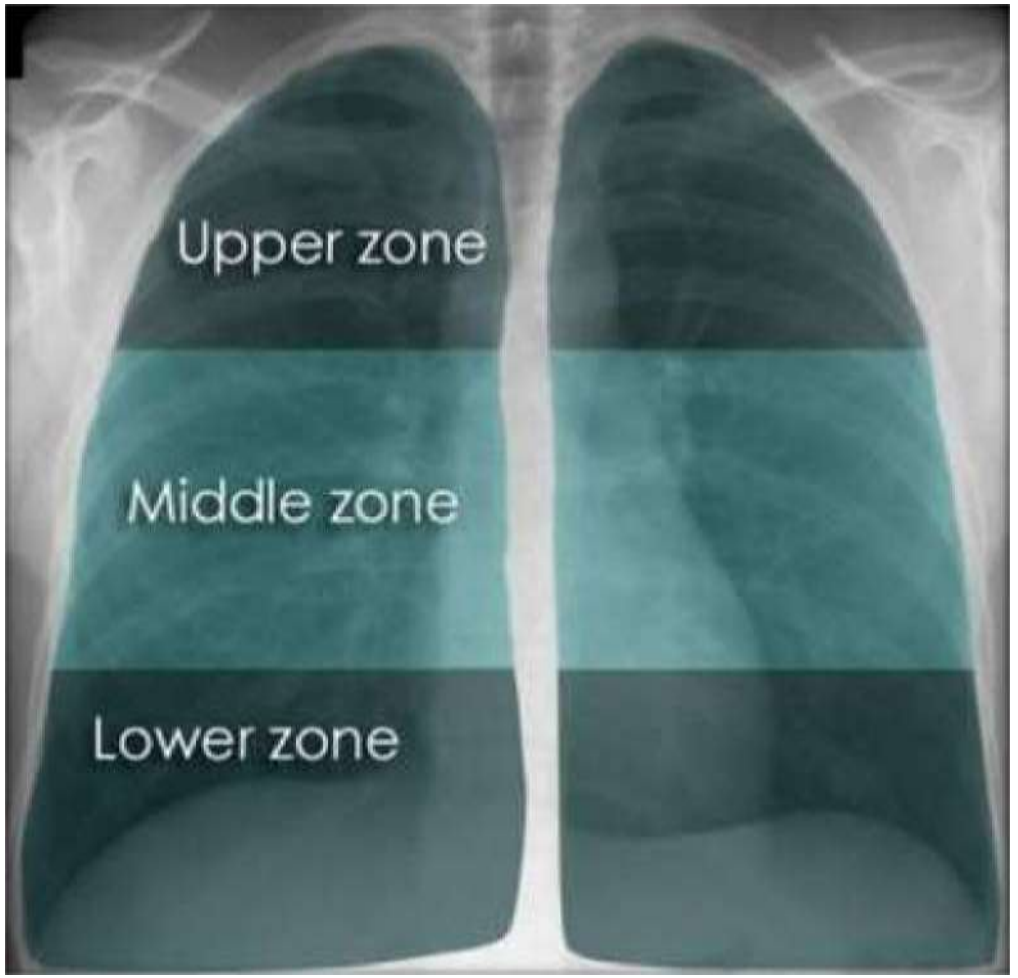
Lung Zones

Upper zone: above line through anterior end of 2nd rib

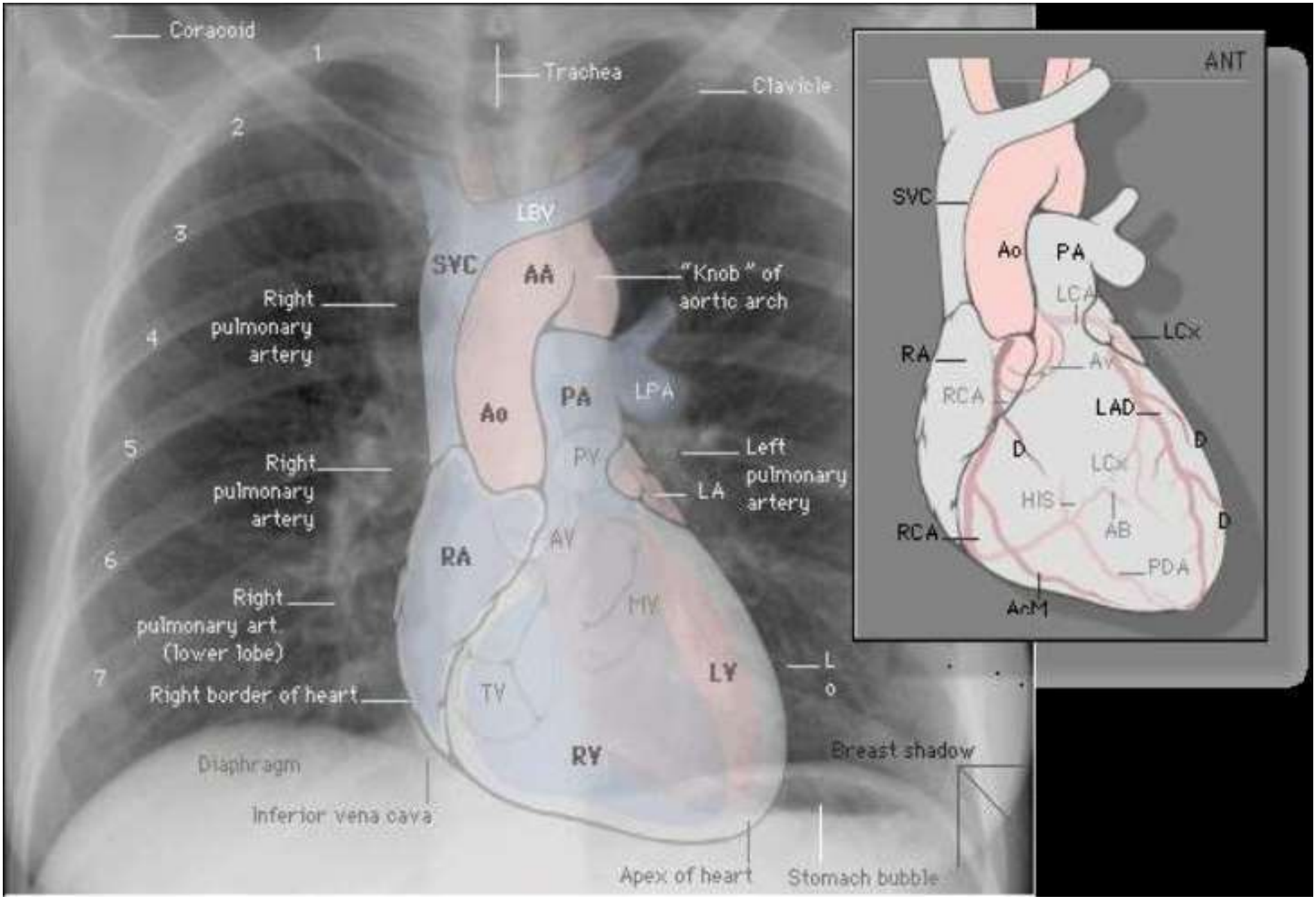
Middle zone: between upper zone and line through anterior end of 4nd rib

Lower zone: below mid zone

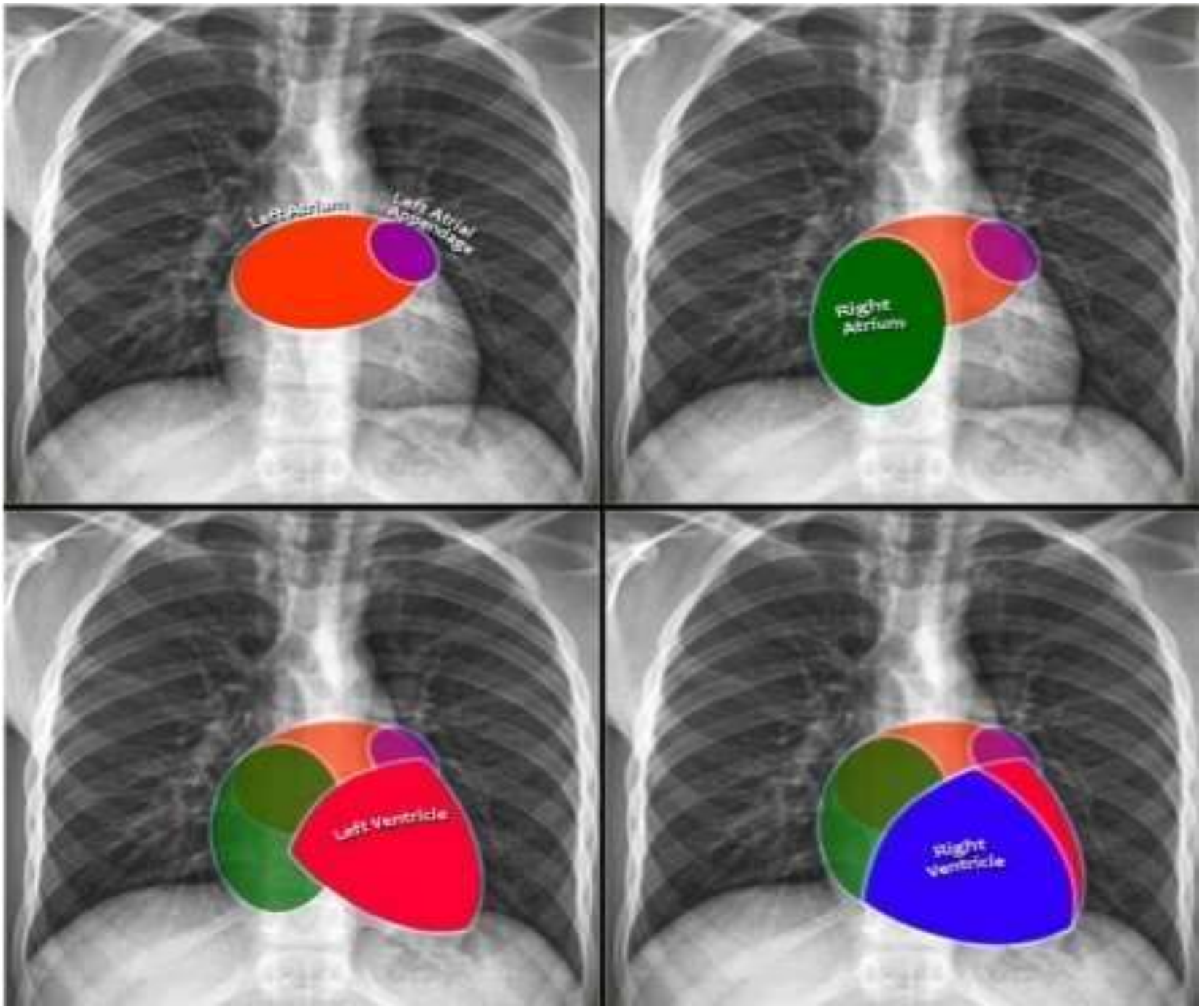
- Radiological zone doesn't usually correspond to lung lobe
- To see a lobe, always take a lateral film



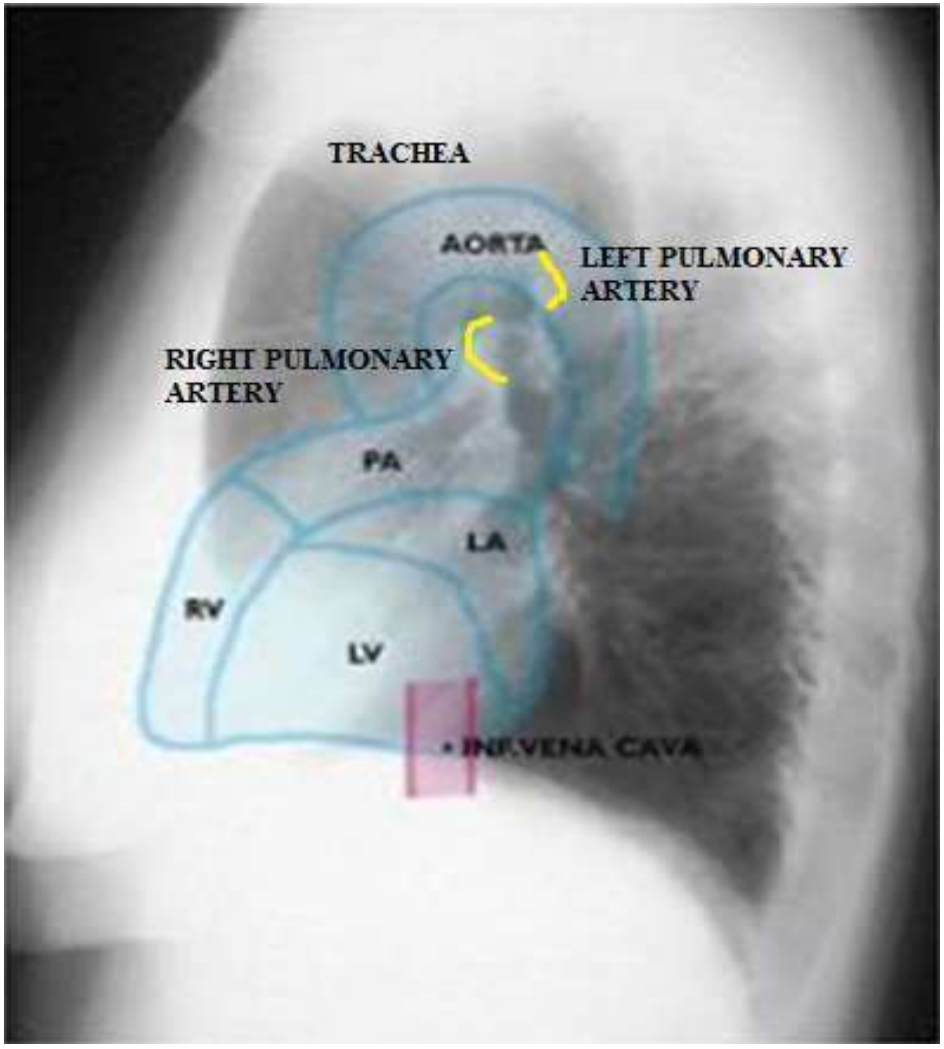
Cardiac Anatomy

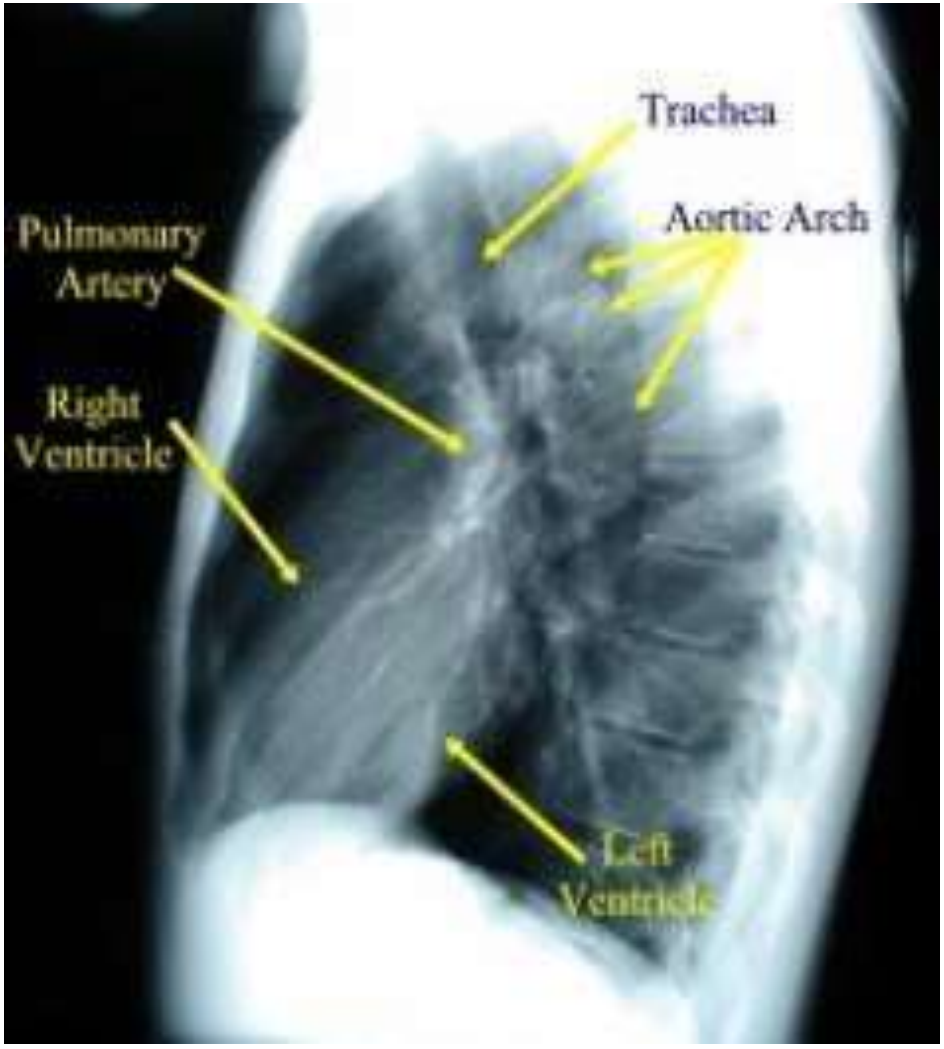


Cardiac Anatomy



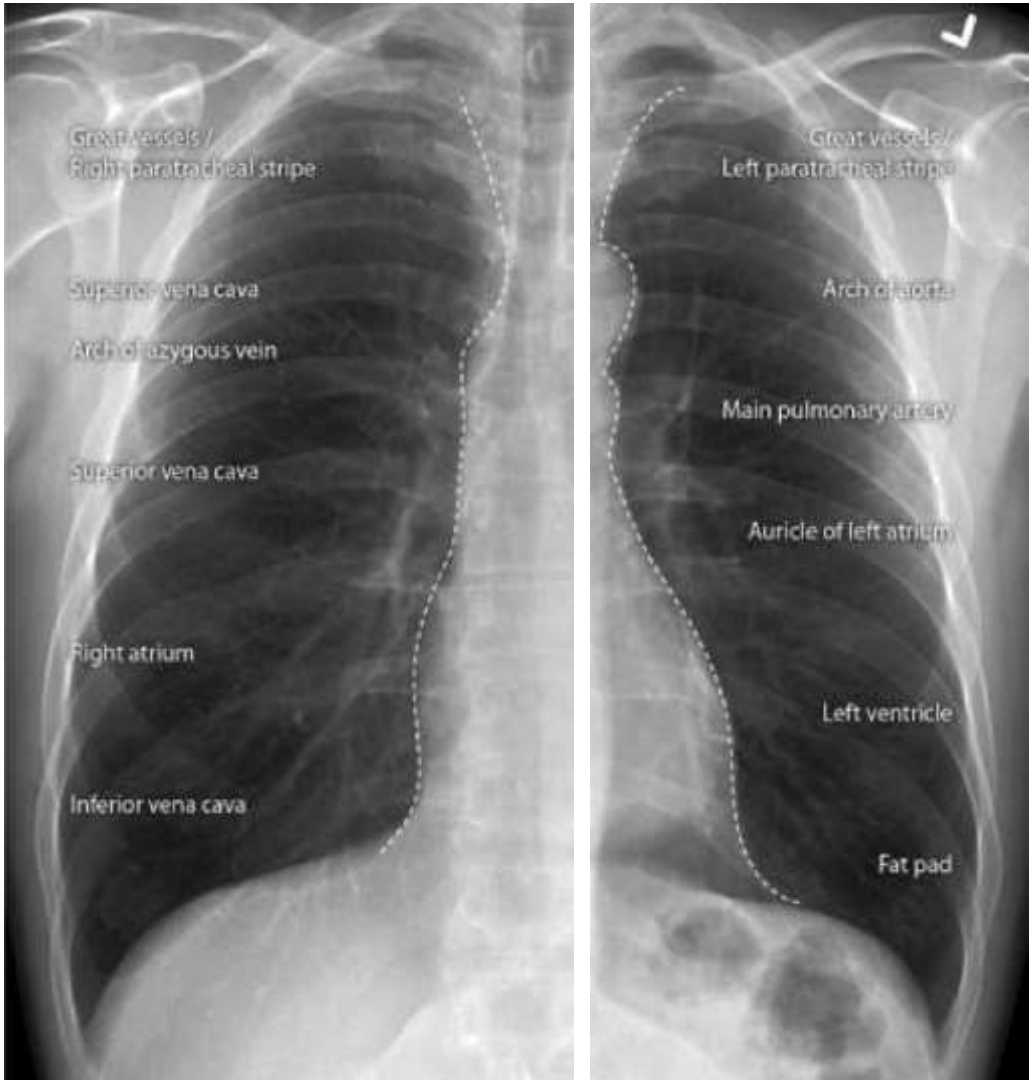
Cardiac Anatomy





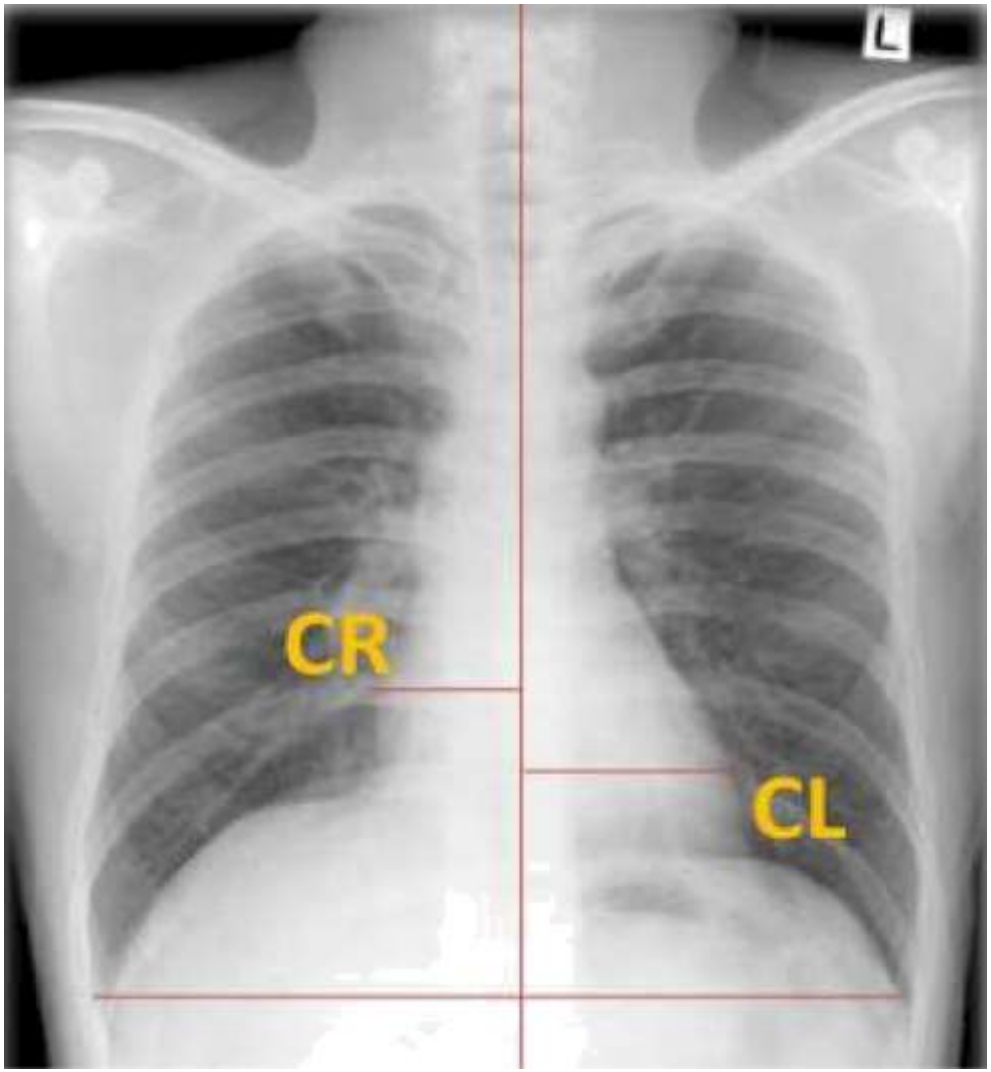
Silhouette sign

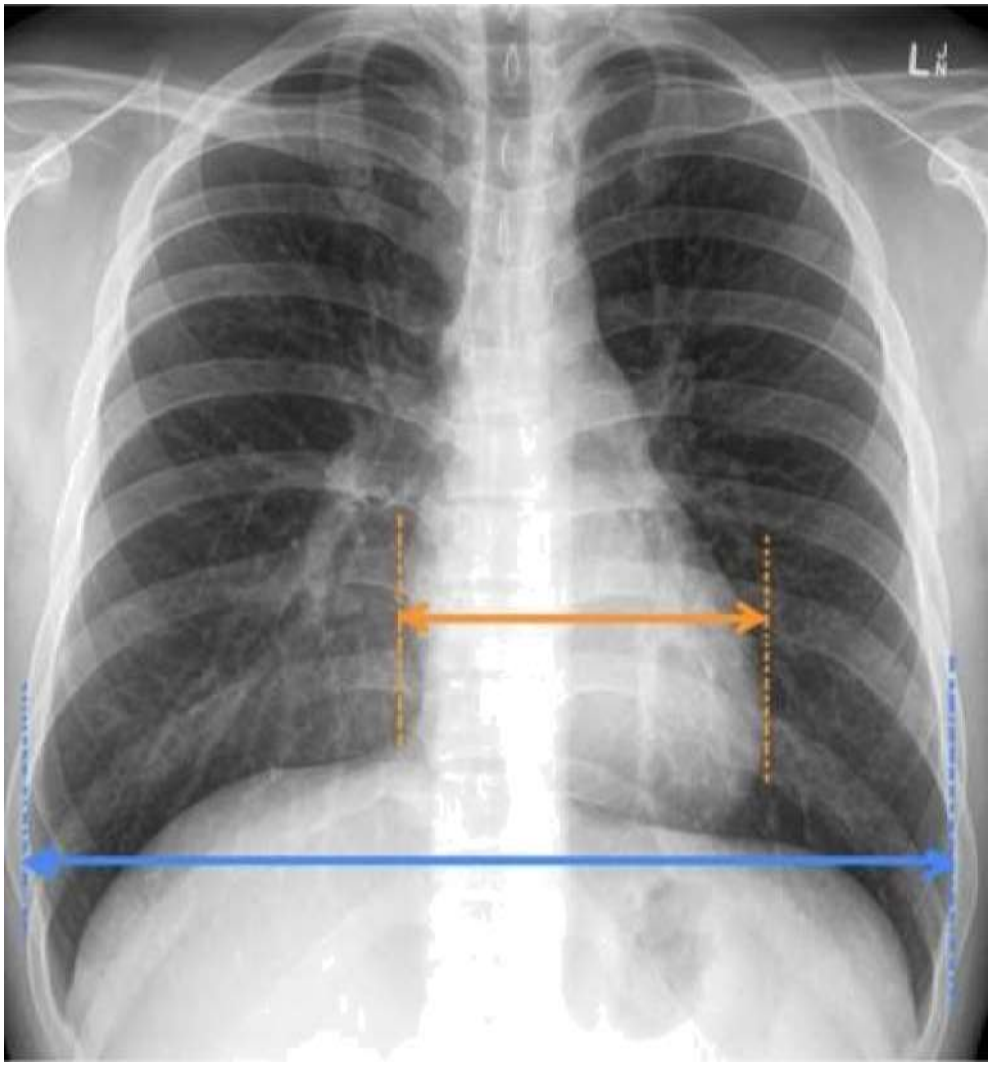
Lobe	Adjacent structure
RUL	Ascending aorta
RML	Right heart border
RLL	Right hemidiaphragm
LUL	Aortic knuckle
	Left heart border (lingula)
LLL	Left hemidiaphragm
	Descending aorta



Cardio-thoracic Ratio

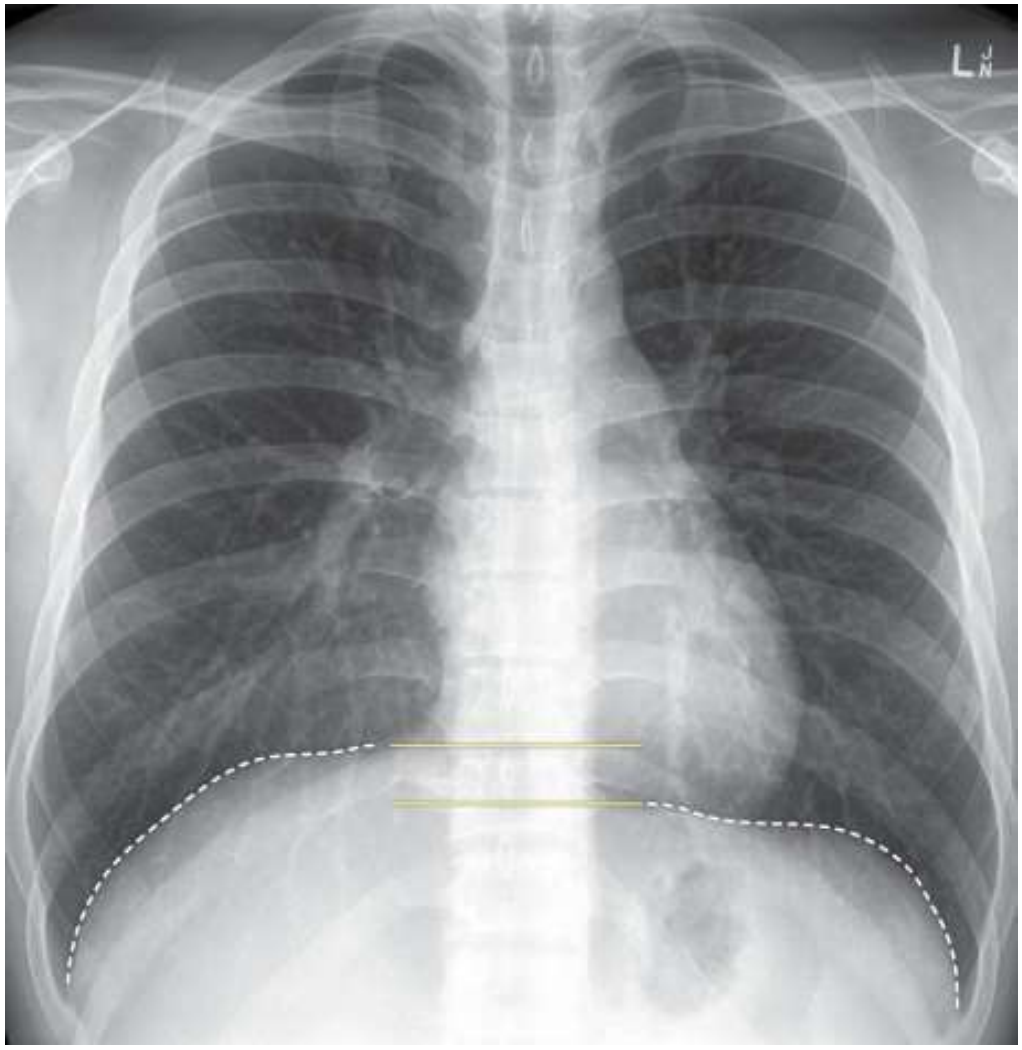
(PA view)

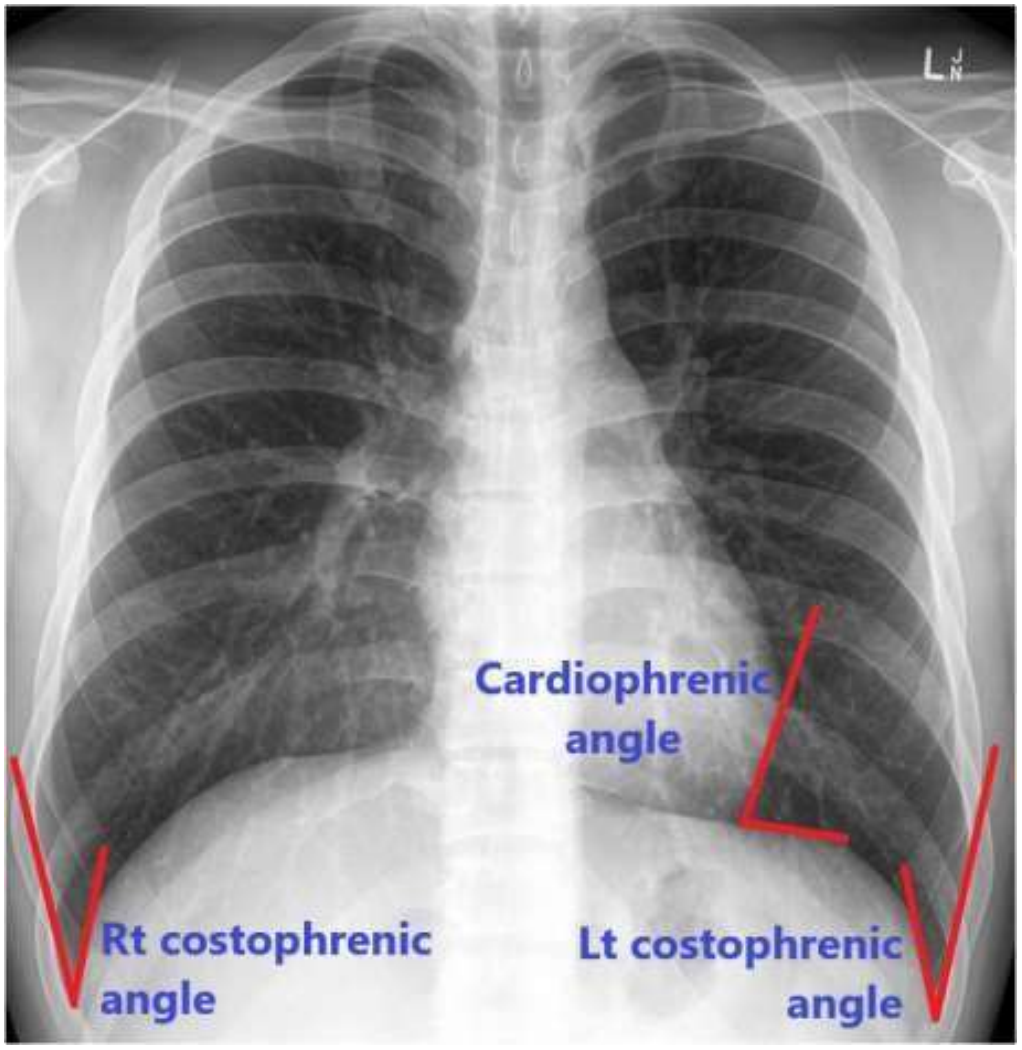




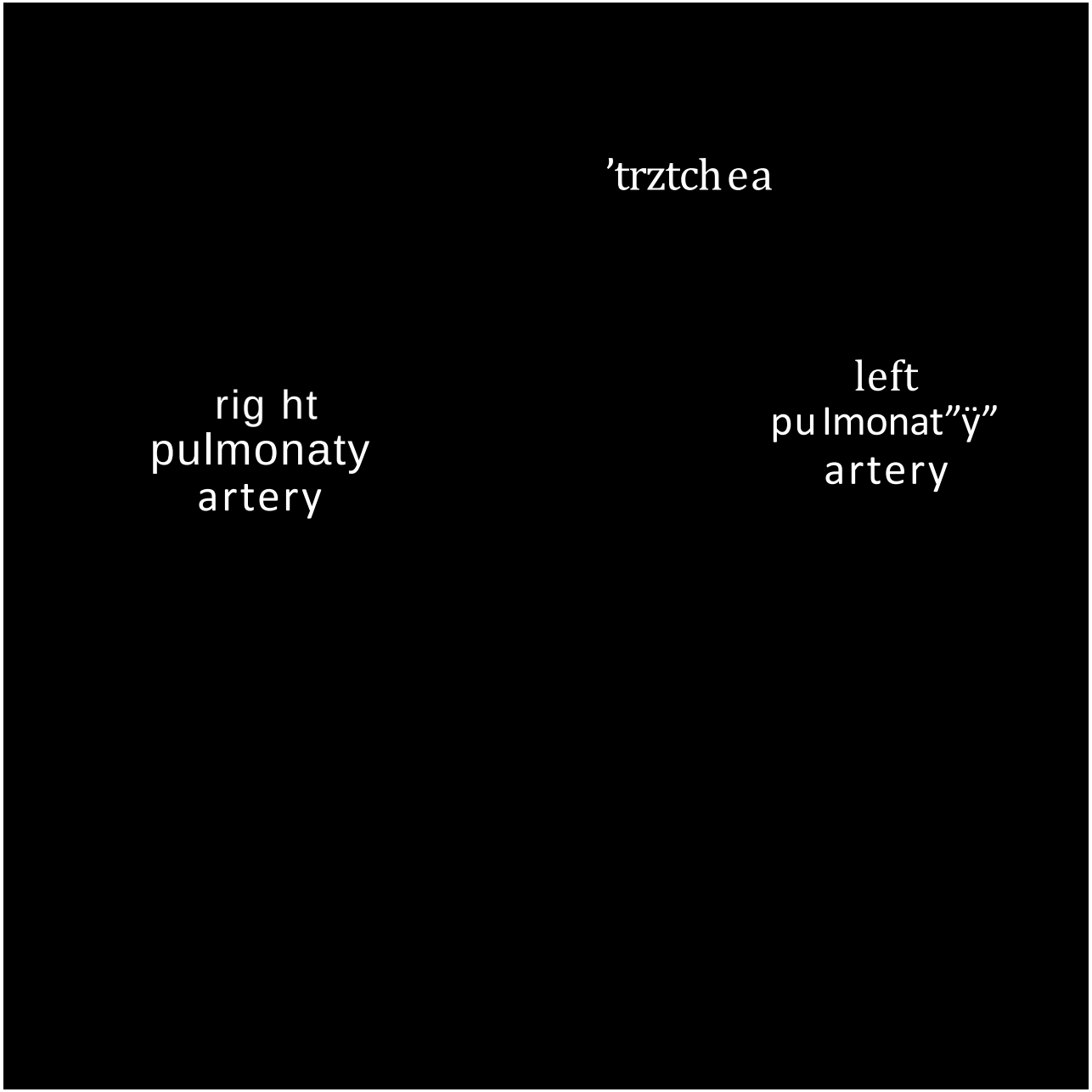
Normal CT ratio <O.5

Diaphragm



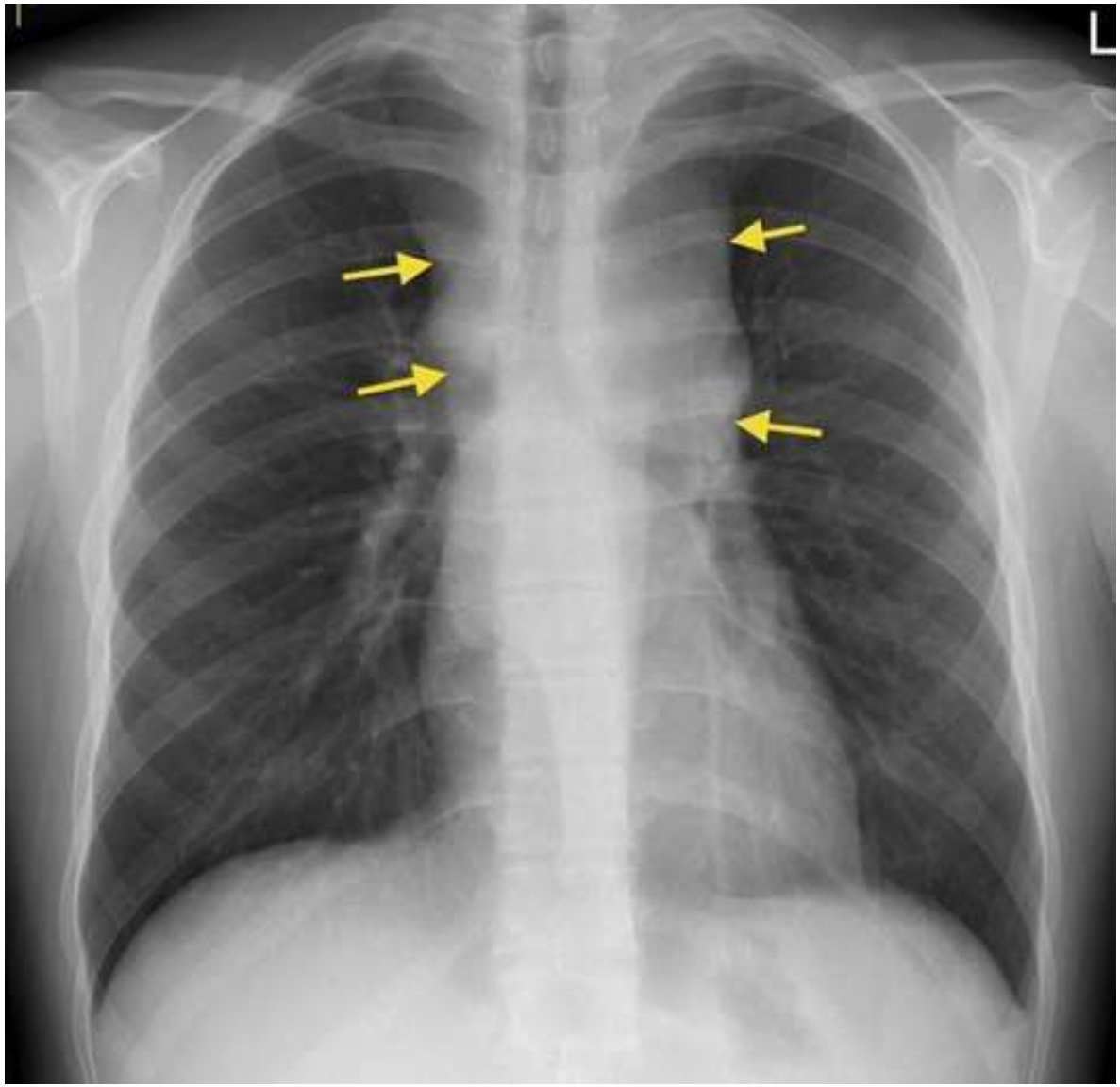

Cardiophrenic angle
Rt costophrenic angle
Lt costophrenic angle

Hila

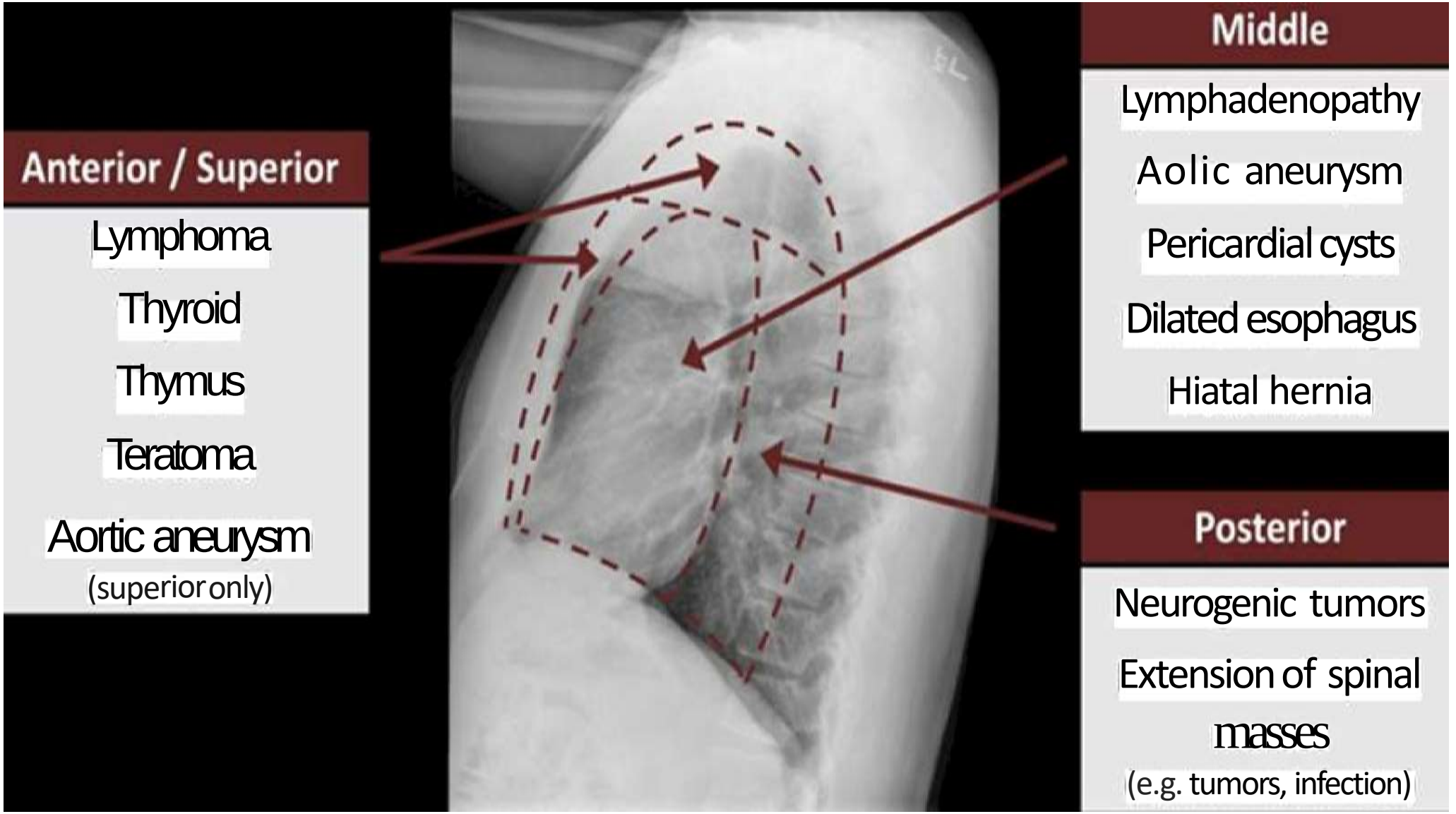


Mediastinal widening

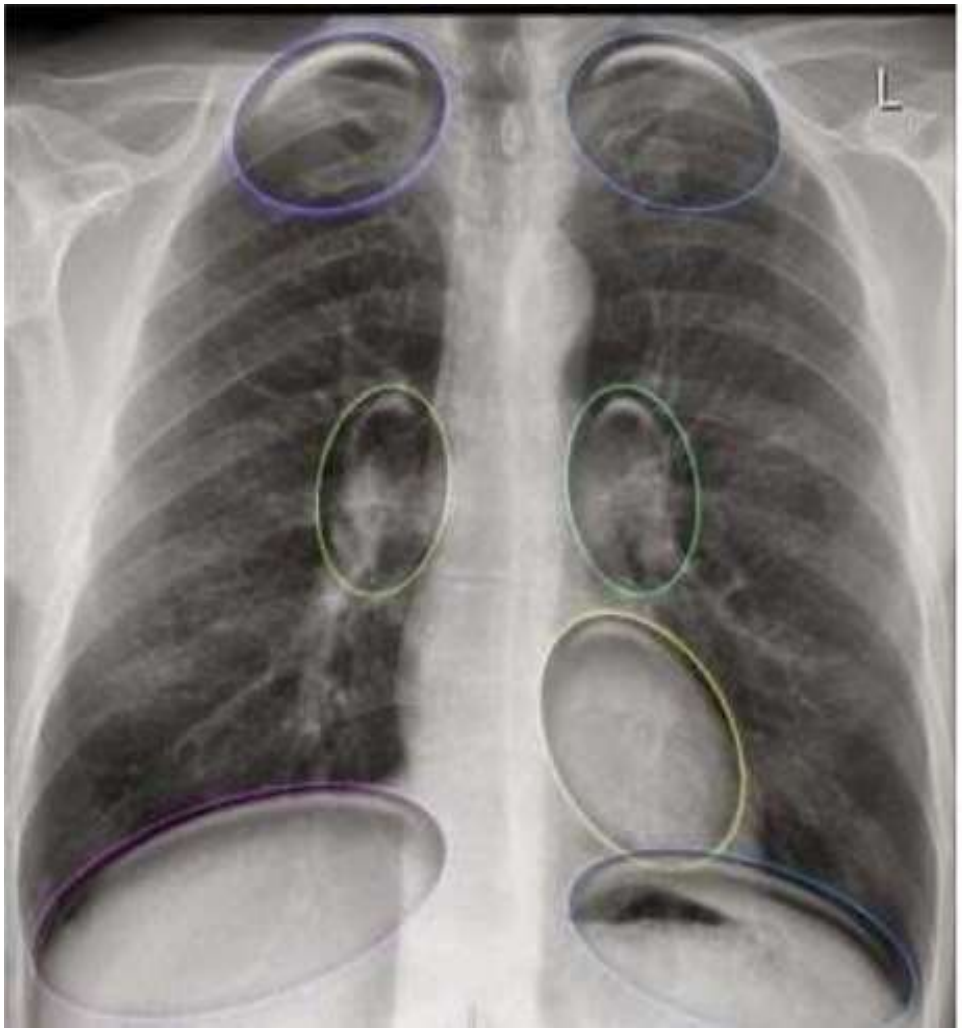
Definition:
Mediastinum width greater than 6 cm on erect PA view or 8 cm on supine AP view

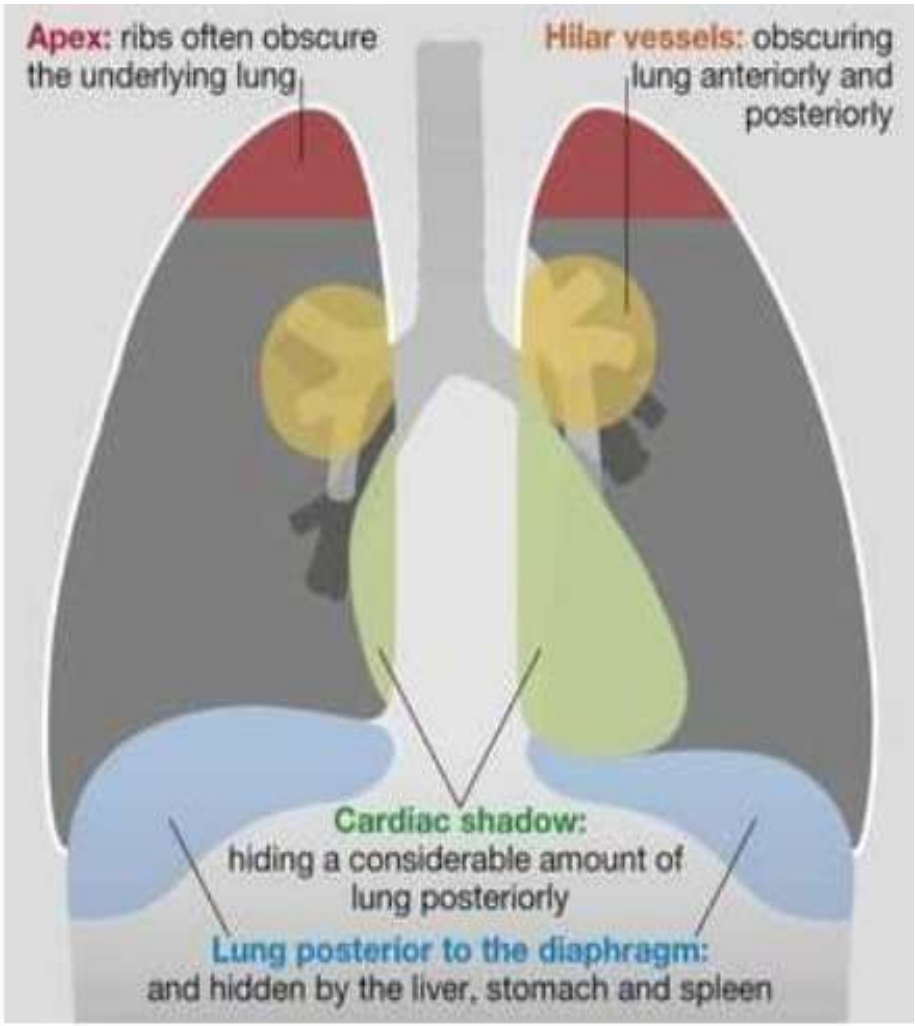


Mediastinal Masses



Hidden Areas





To sum up…the inside out approach