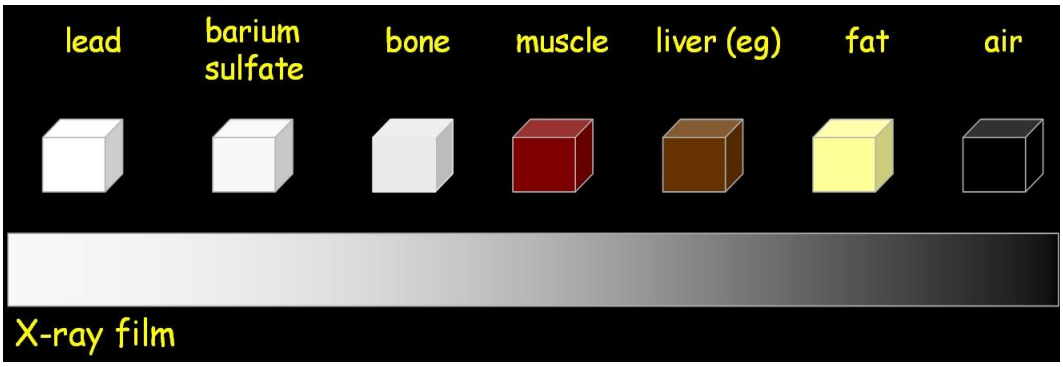
The Chest X-Ray

For: Nottingham SCRUBS 26th August 2006
By: Mathew

Contents:
- Densities
- Techniques
- Anatomy
- CXR Interpretation
- Common Pathologies
- Questions

Aims of this teaching:
- Basics
- Best exam results
- Appreciate the role radiology plays
- ? Instil an interest in radiology

1. Densities



The big two densities are:

(1) **WHITE** - Bone
(2) **BLACK** - Air

The others are:

(3) **DARK GREY**- Fat
(4) **GREY**- Soft tissue/water

And if anything MAN-MADE is on the film, it is:

(5) **BRIGHT WHITE** - Man-made

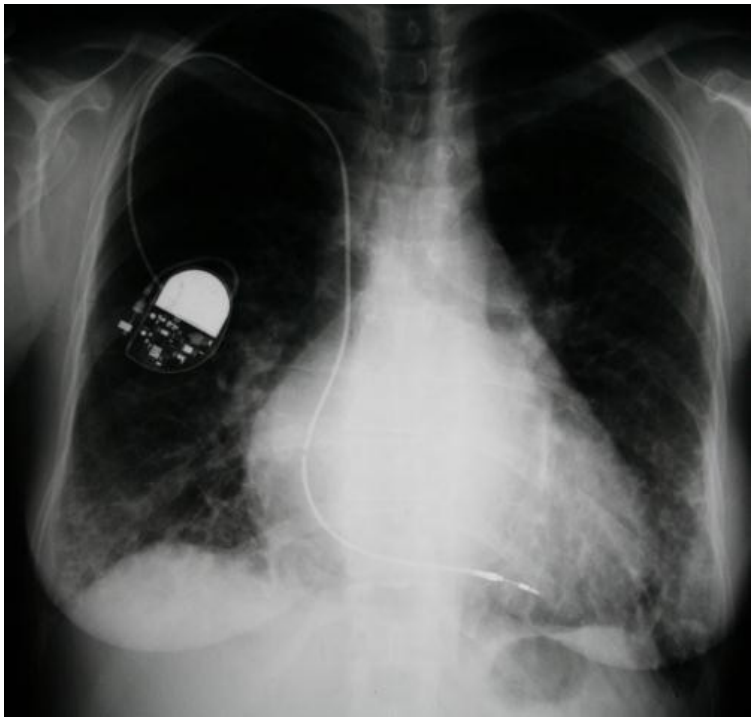
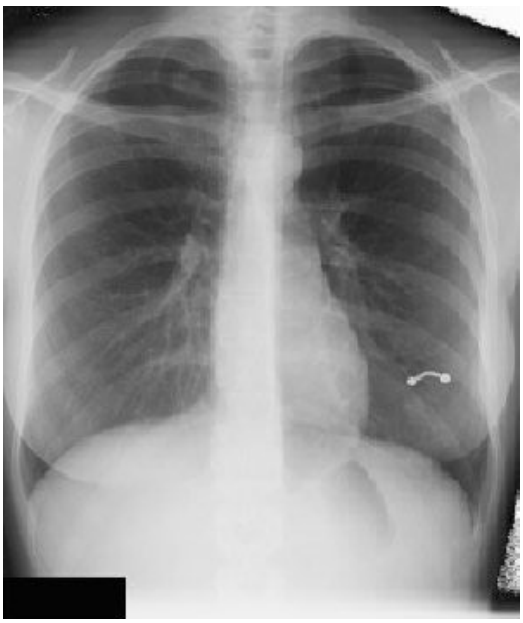


Figure 2 - Different densities on Chest X-Ray

2. Techniques – Projection

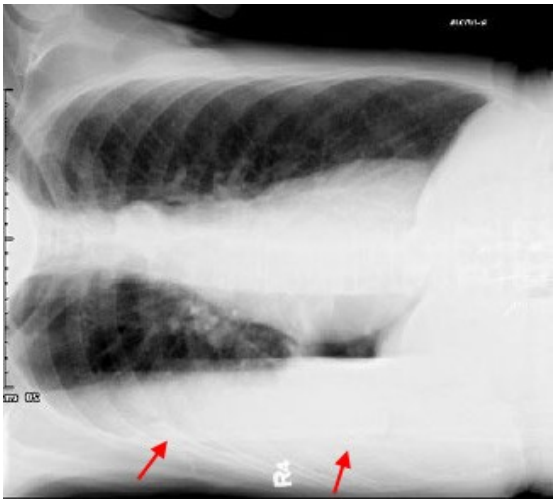
2.1 P-A (relation of x-ray beam to patient)



2.2 A-P - Supine / Erect

2.3 Lateral

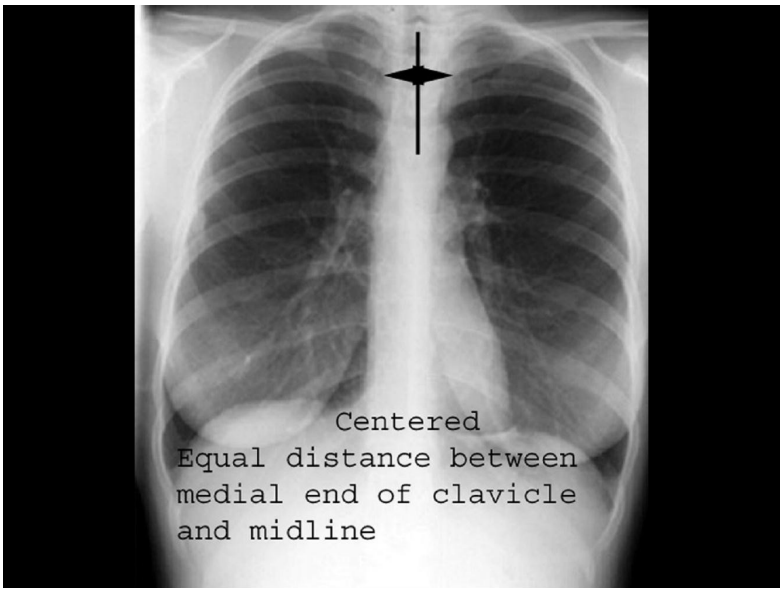
2.4 Lateral Decubitus

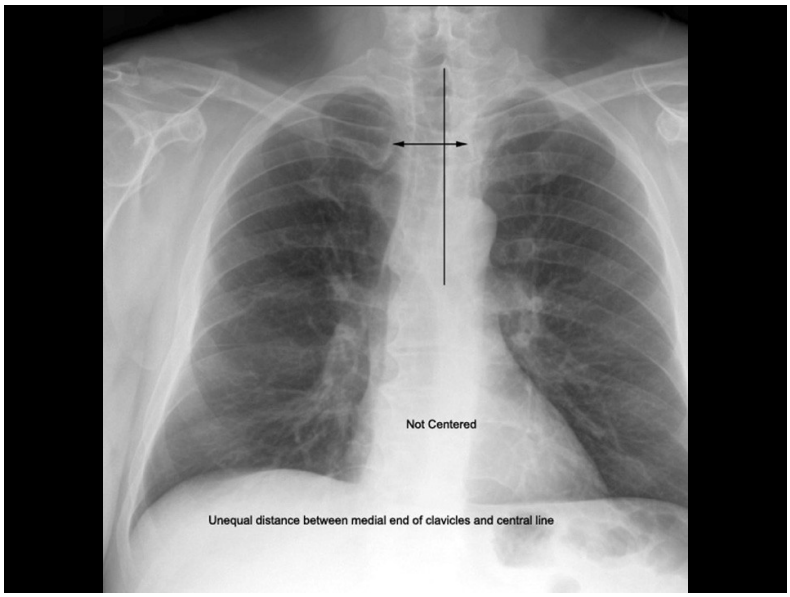


2.5 Oblique

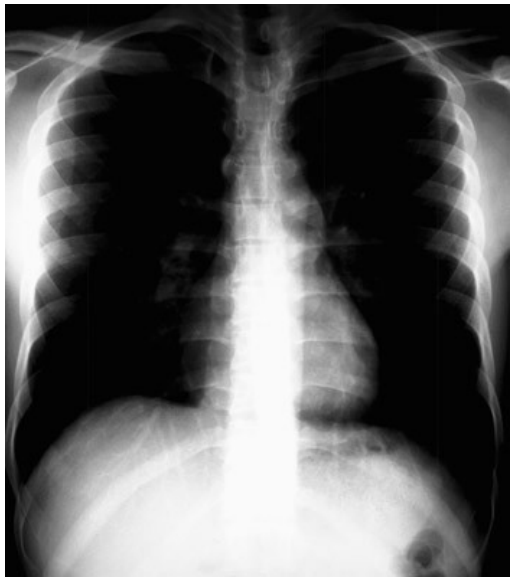
2.6 Orientation

2.7 Rotation

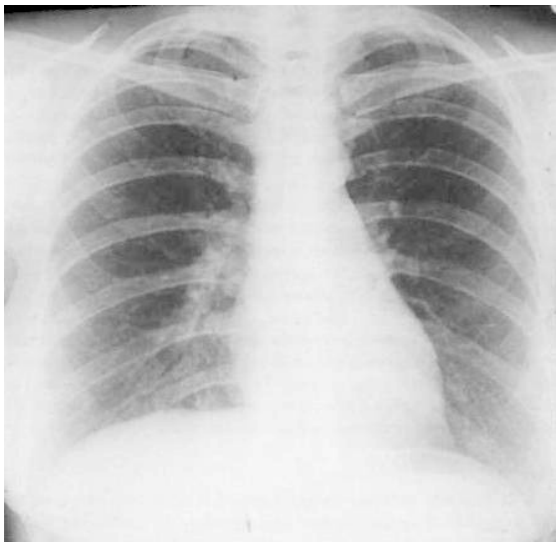


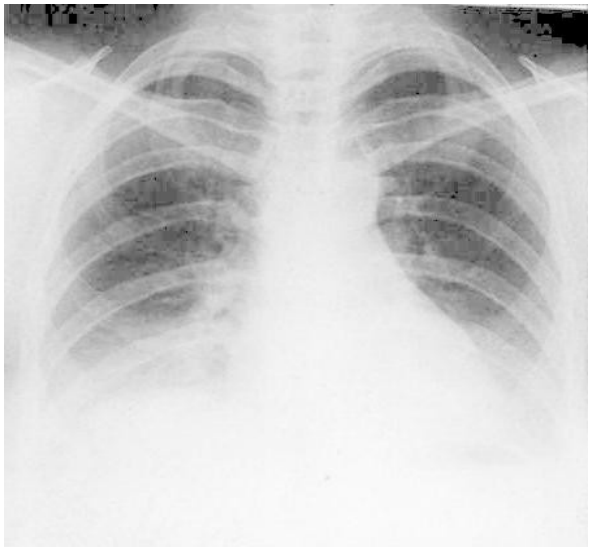


2.8 Penetration

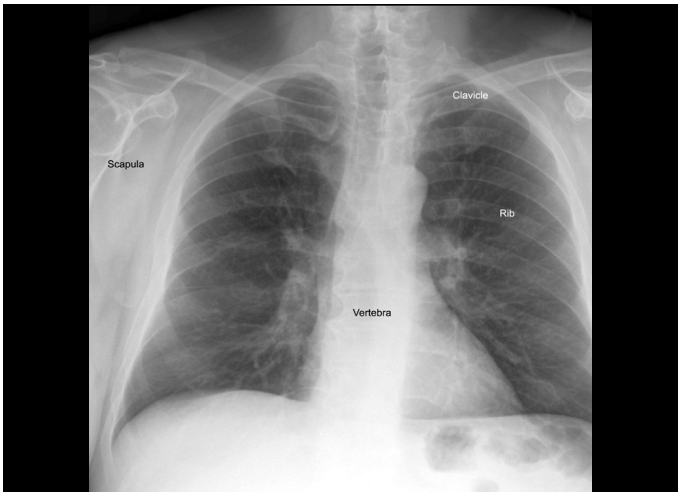


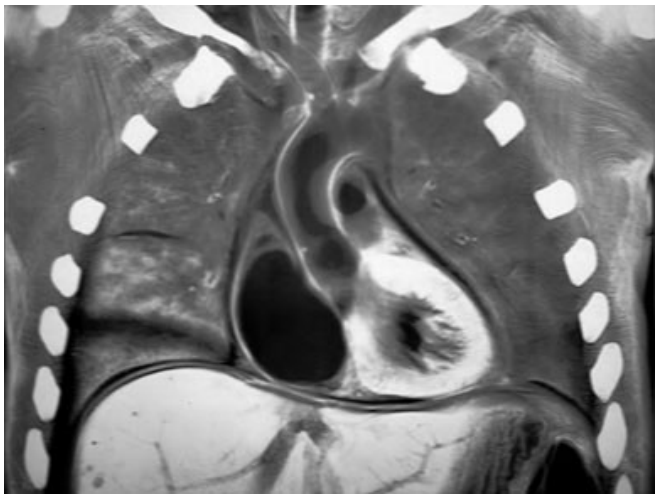
2.9 Inspiration/Expiration



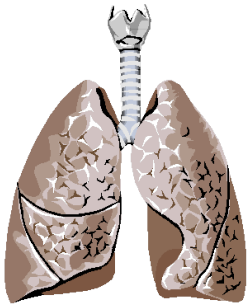


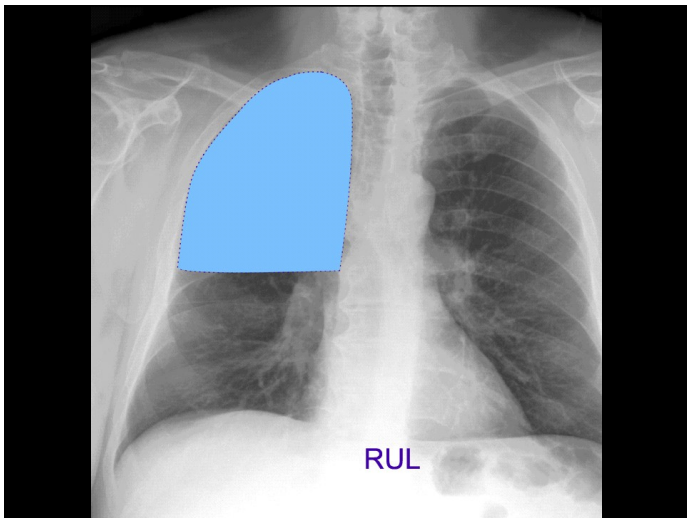
3. Anatomy

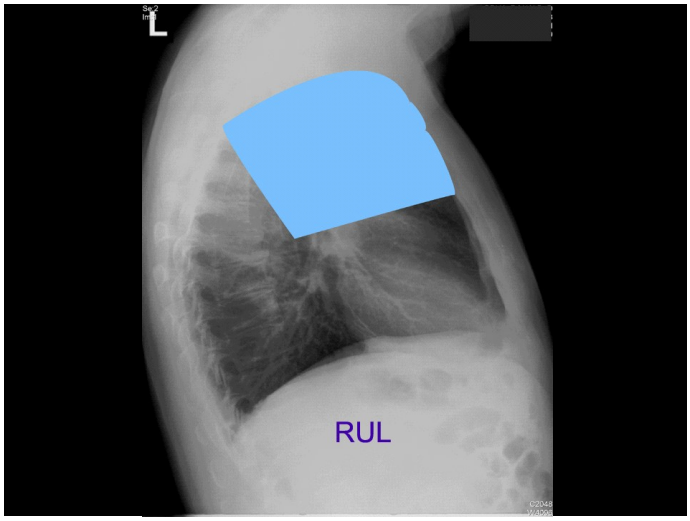


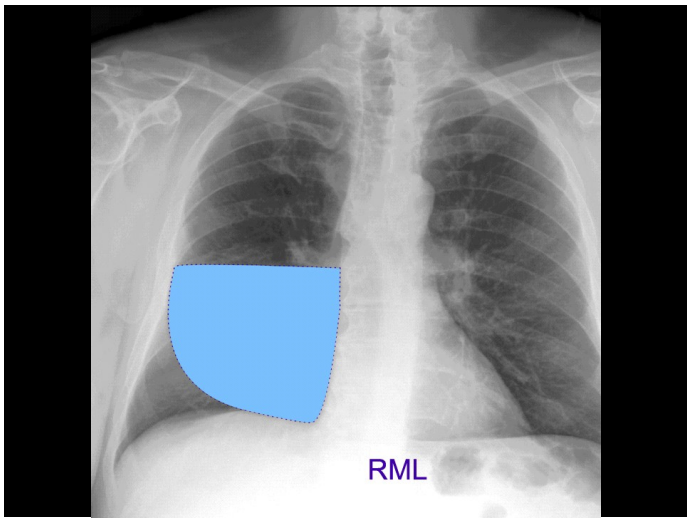


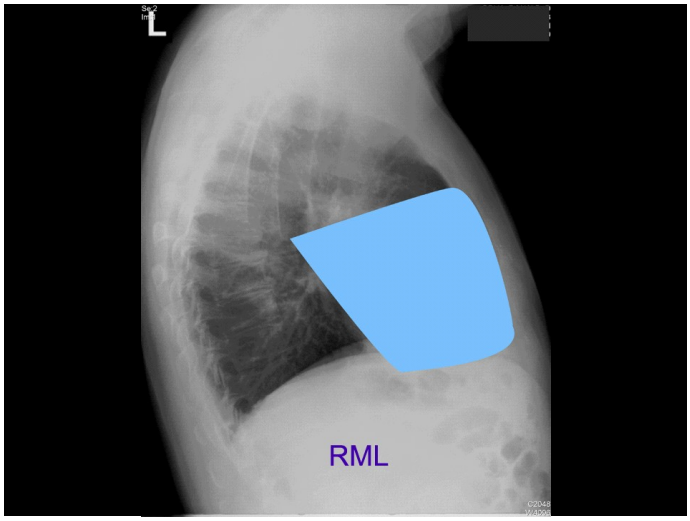
3.1 Lobes

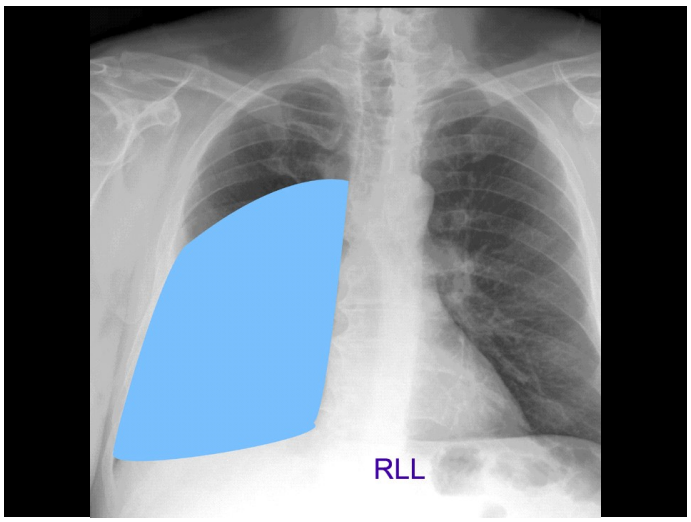


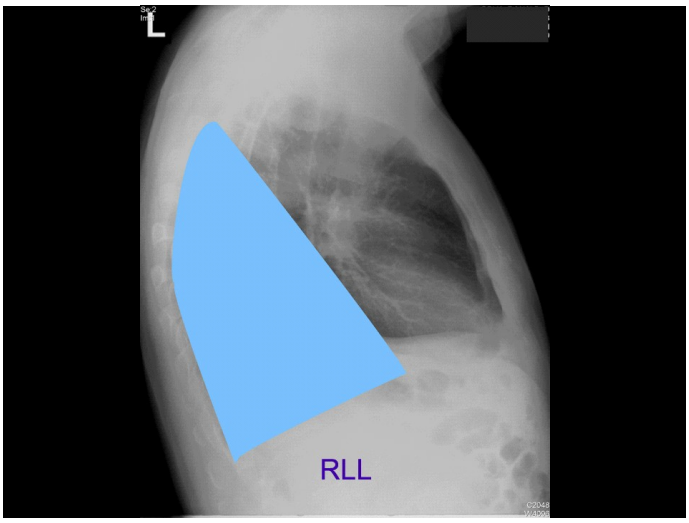


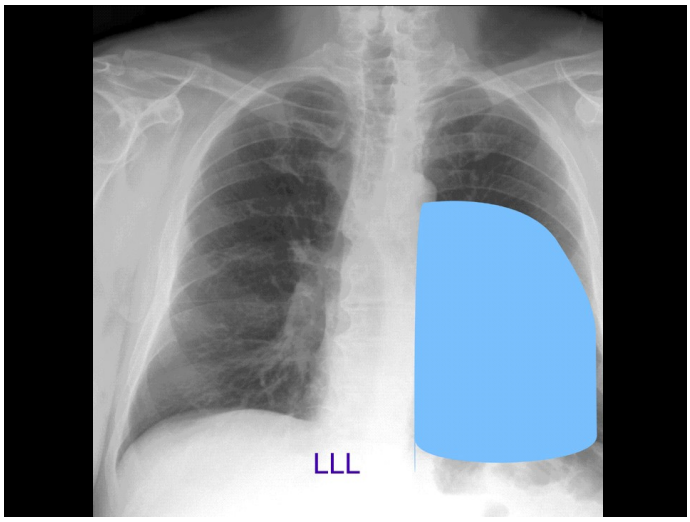


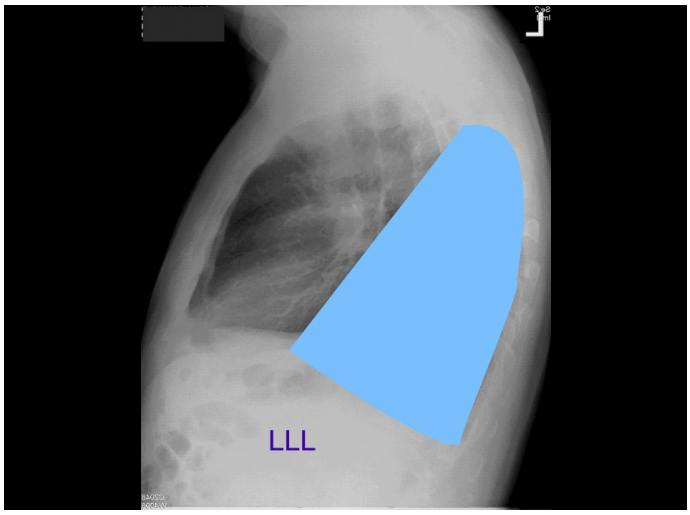









LLL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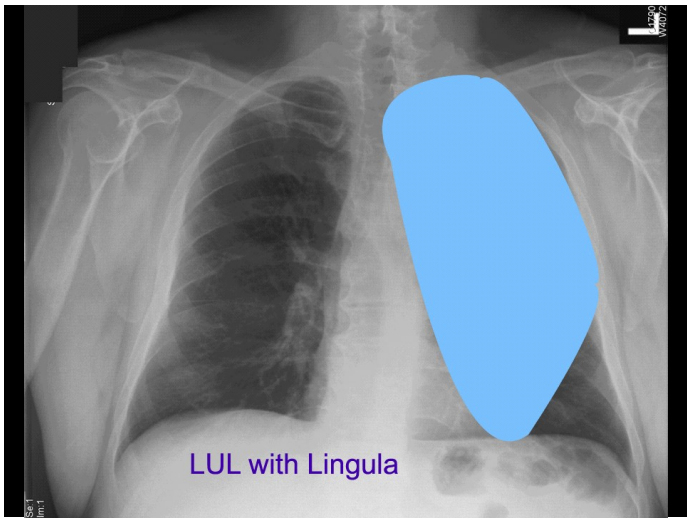
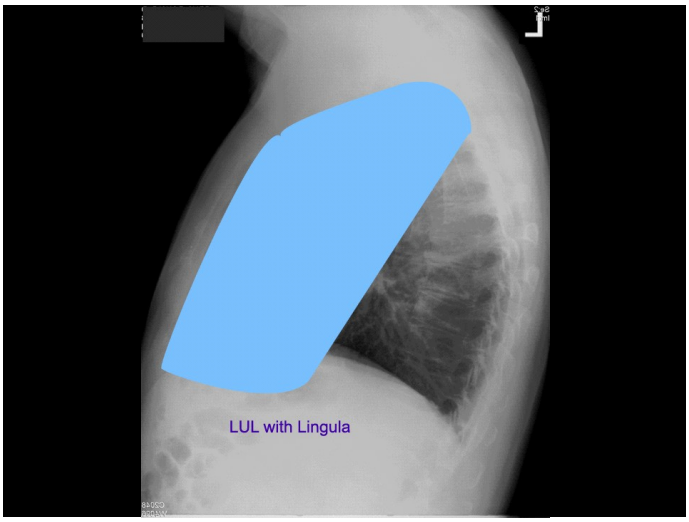
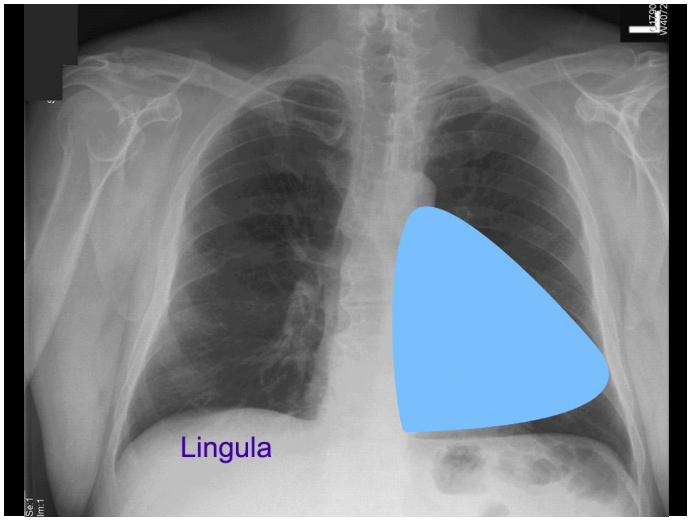
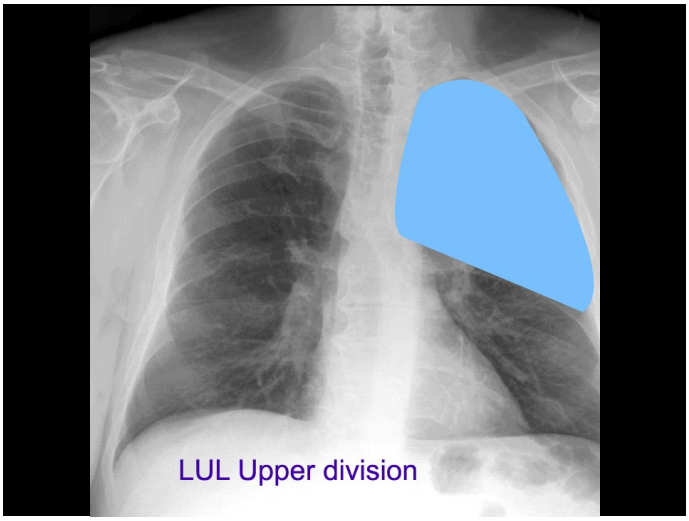

LUL with Lingula


LUL with Lingula


Lingula


LUL Upper division

3.2 Pleura

Layers

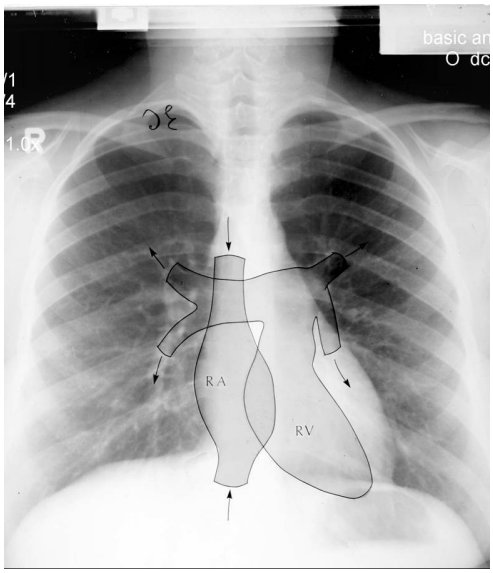
3.3 Heart

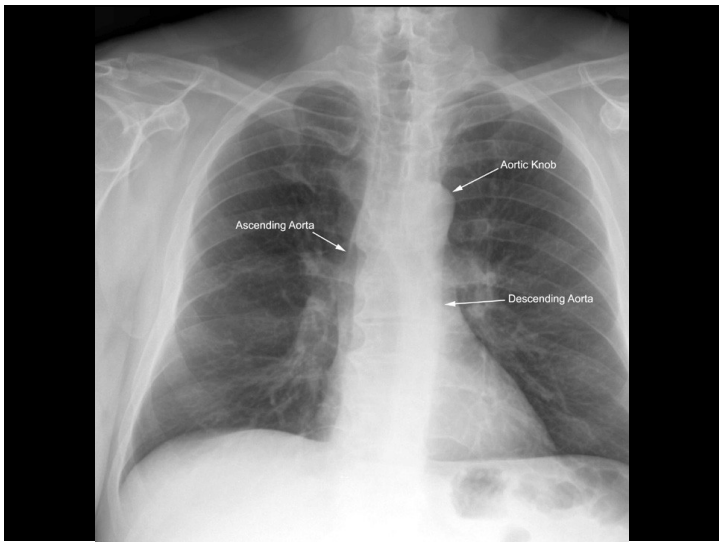
Right border = Edge of (r) Atrium

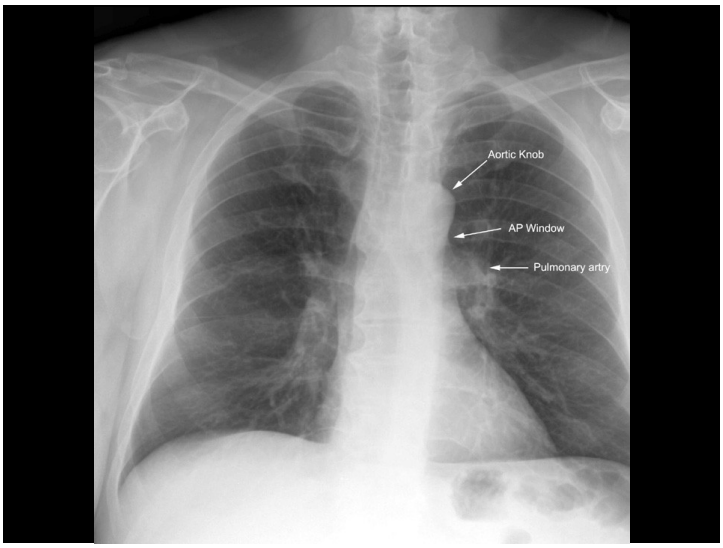
Left border = (l) Ventricle + Atrium

Posterior border = left Ventricle

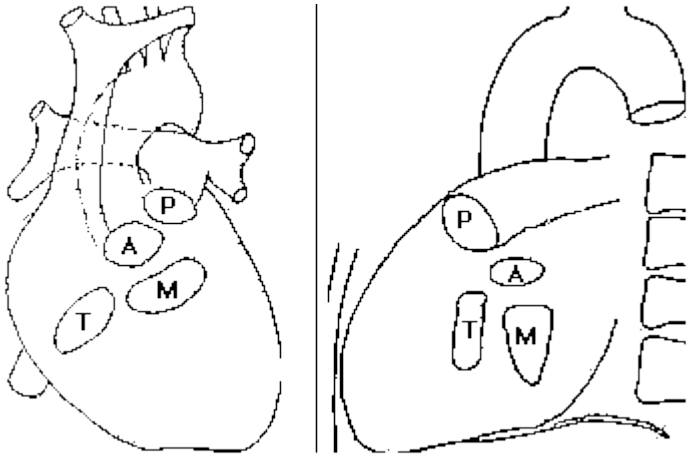
Anterior border = right Ventricle



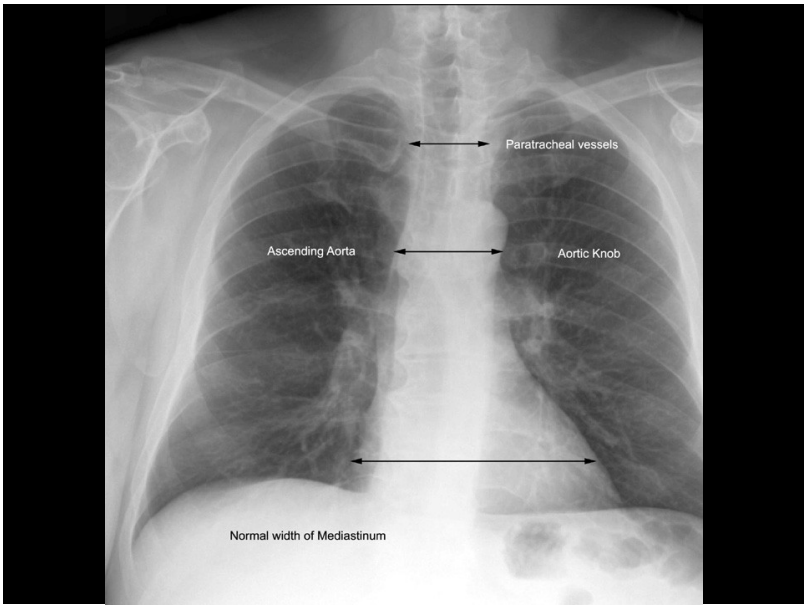




3.4 Valves



3.5 Mediastinum

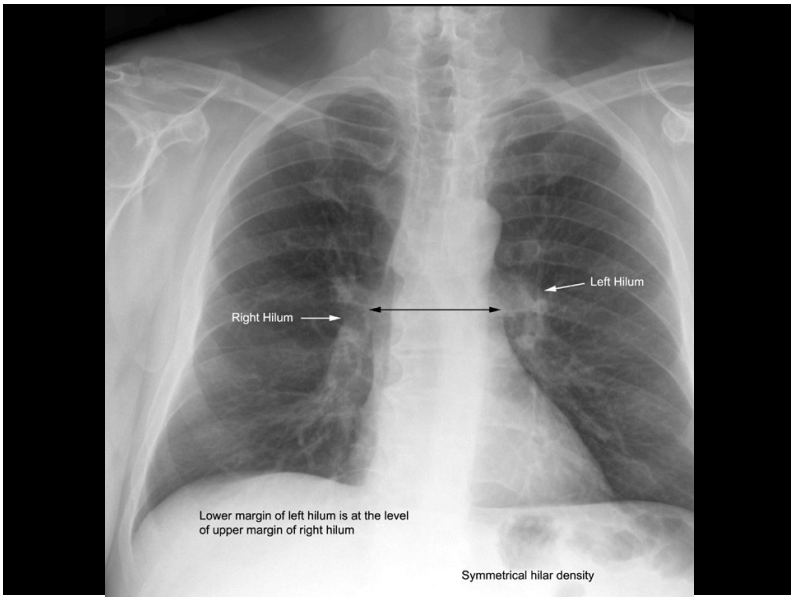


3.6 Hilum

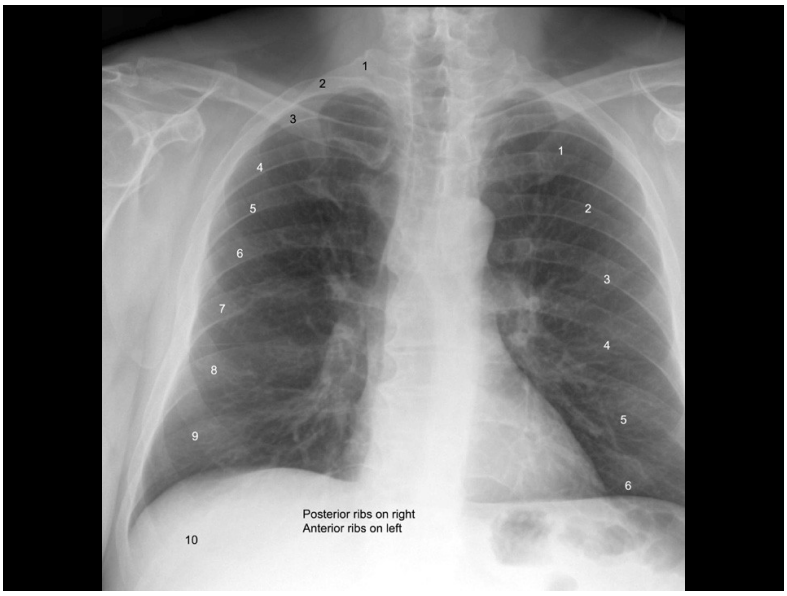
Made of:
(1) Pulmonary Art. + Veins
(2) The Bronchi

Left Hilus higher (max 1-2,5 cm)

Identical: size, shape, density

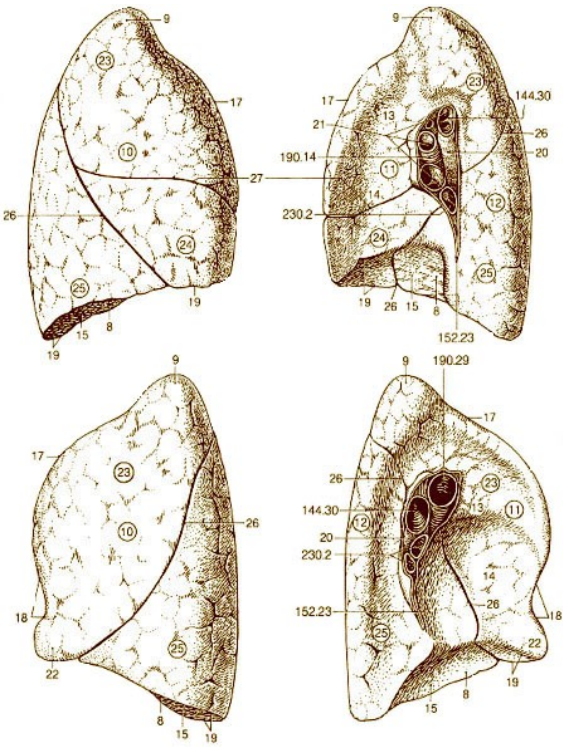


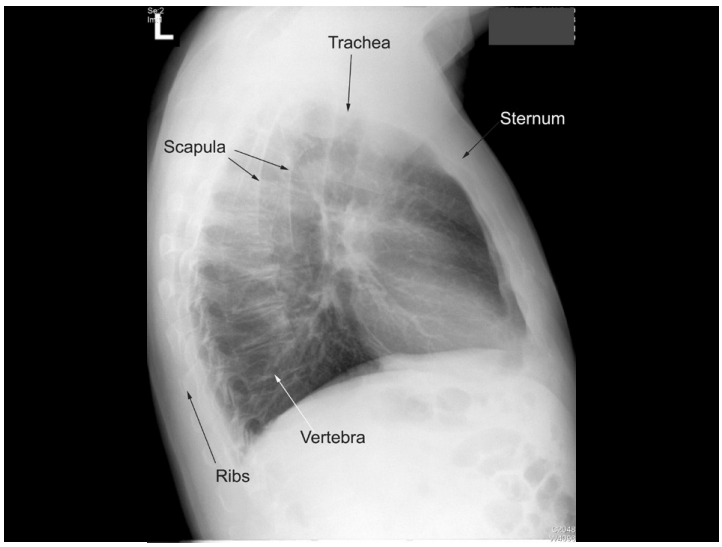
3.7 Ribs

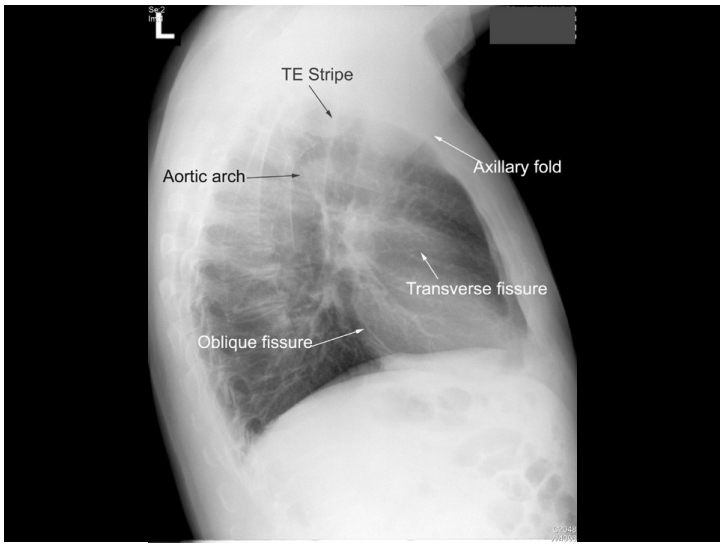


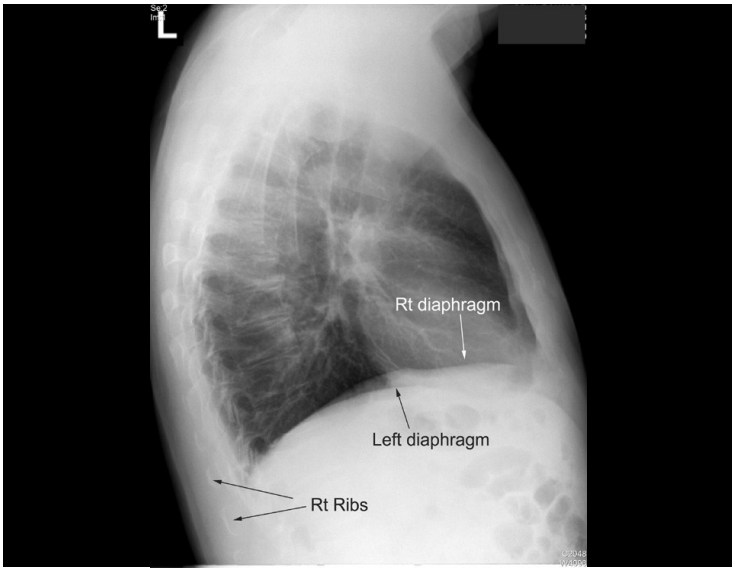
3.8 Soft tissues & Bones

3.9 Lateral CXR









4. CXR Interpretation

4.1 Technical Details

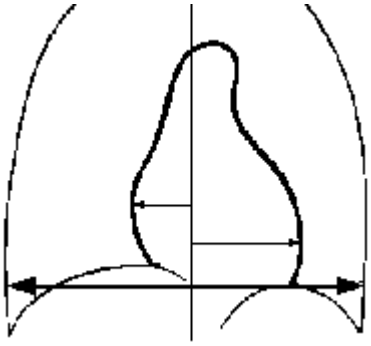
- Type
- Orientation
- Rotation
- Inspiration/expiration
- Penetration

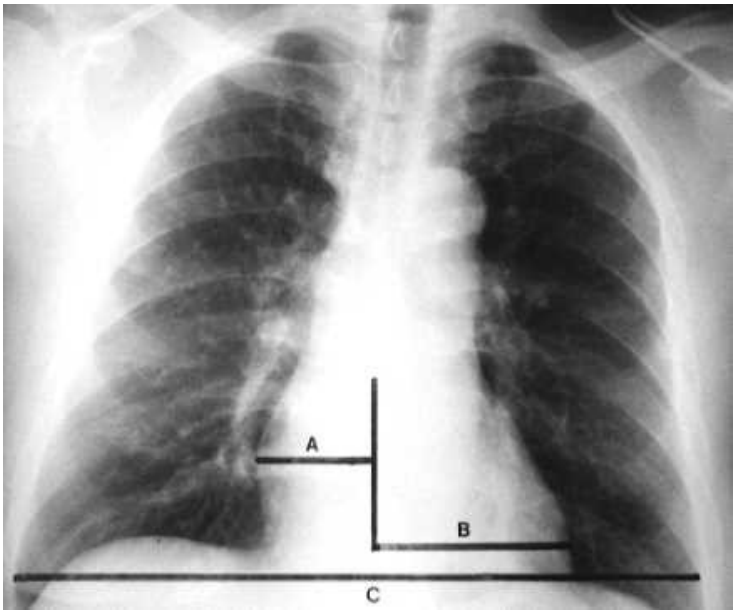
4.2 Lungs

- Density
- Symmetry
- Lesions

4.3 Heart

- Size of heart
- Size of individual chambers of heart
- Size of pulmonary vessels
- Evidence of stents, clips, wires and valves
- Outline of aorta and IVC and SVC





4.4 Mediastinum

- Width
- Contour
- AP window

4.5 Hila

- Size
- Location

4.6 Review areas

- Apices
- Behind the heart
- CP angles
- Below the diaphragm
- Soft tissues (breast, surgical emphysema)
- Ribs & clavicle
- Vertebrae

Identify the lesion → localise the lesion → describe the lesion → give DD

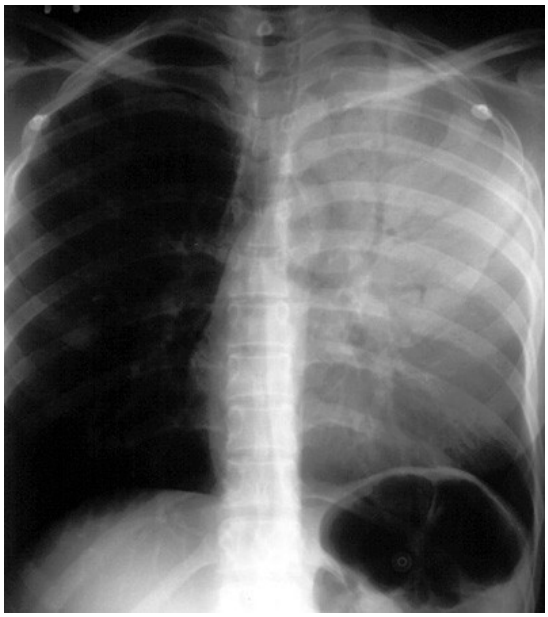
Never stop looking, carry on with your systematic approach!!

5. Pathology

RUL Pneumonia

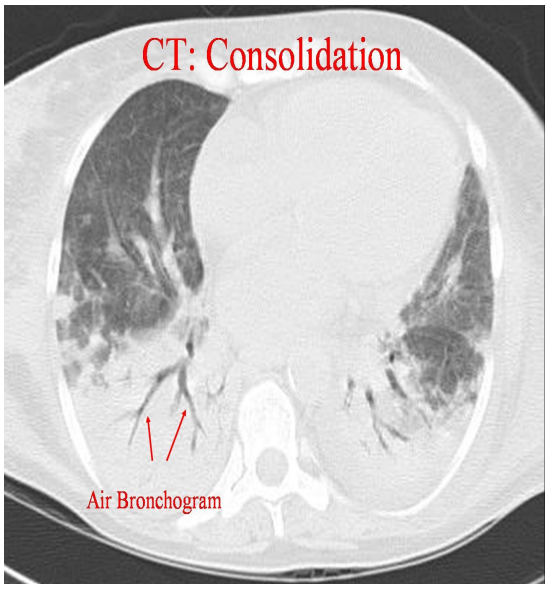
RML pneumonia

RLL Pneumonia



LUL pneumonia

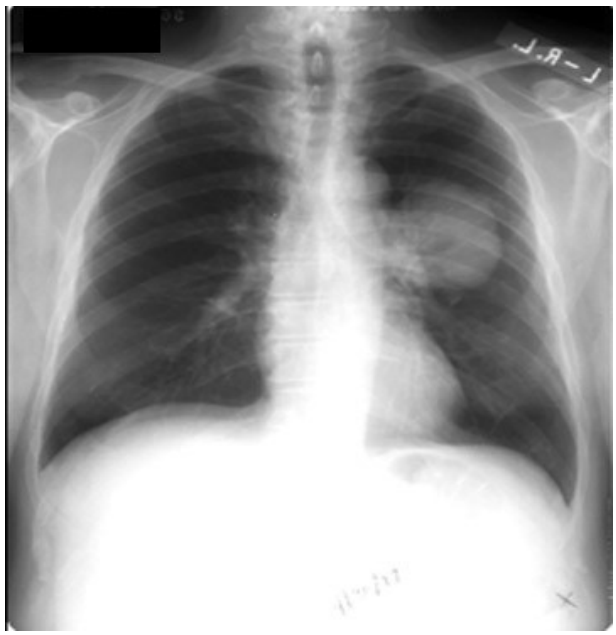
LLL pneumonia



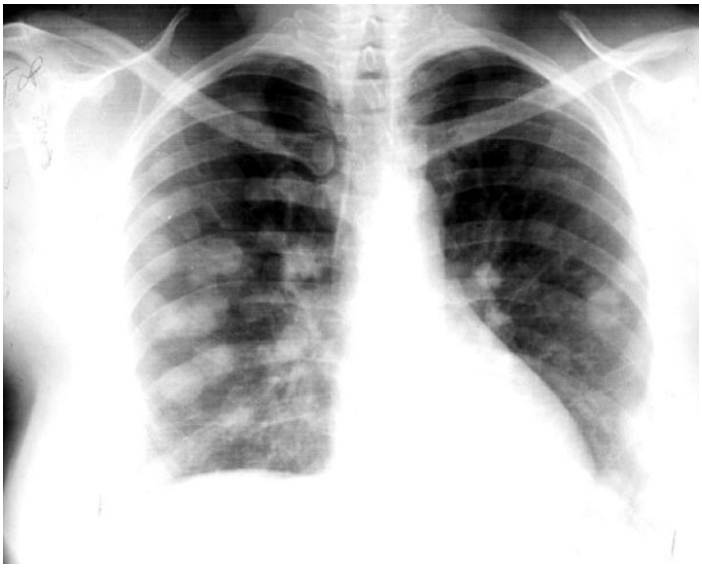
Consolidation on CT

Causes of Enlarged Hila:

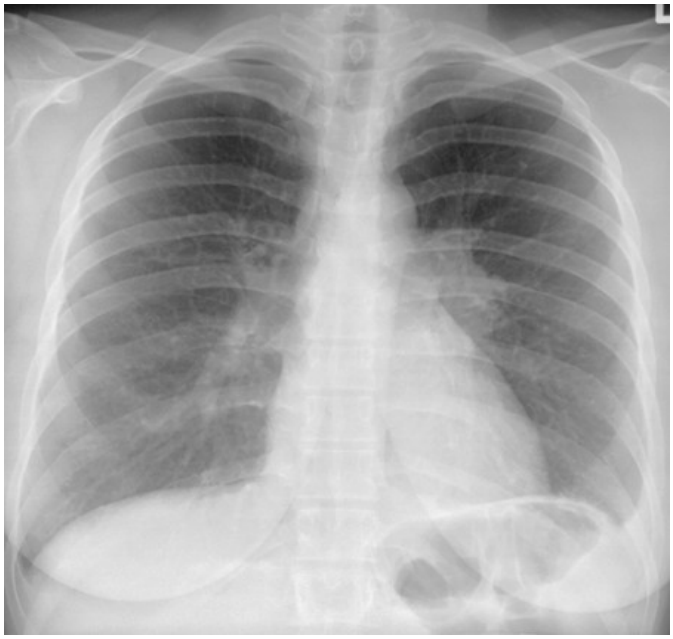
1. Adenopathies (neoplasia, infection)
2. Primary Tumor
3. Vascular
4. Sarcoidosis



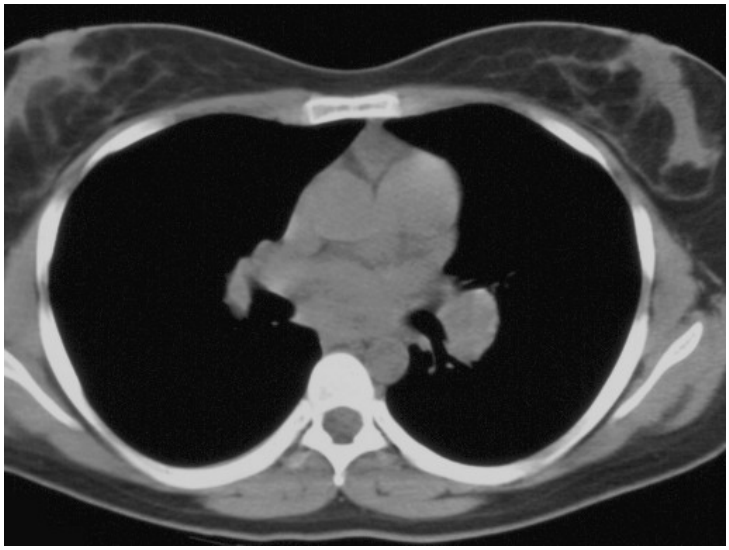
Hilar mass lesion

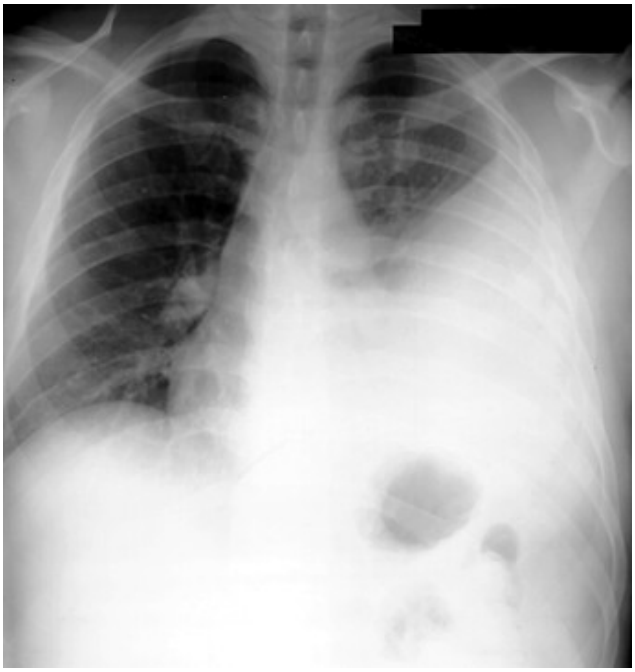


Multiple Masses

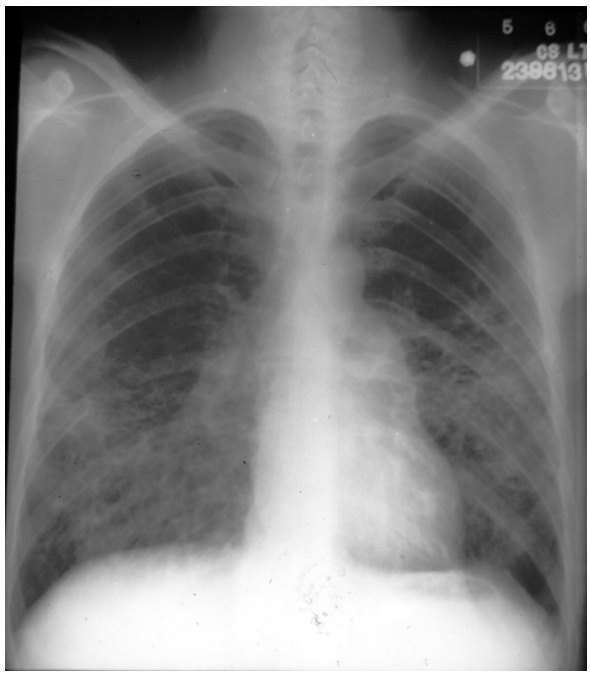


Hilar Lymphadenopathy - BL

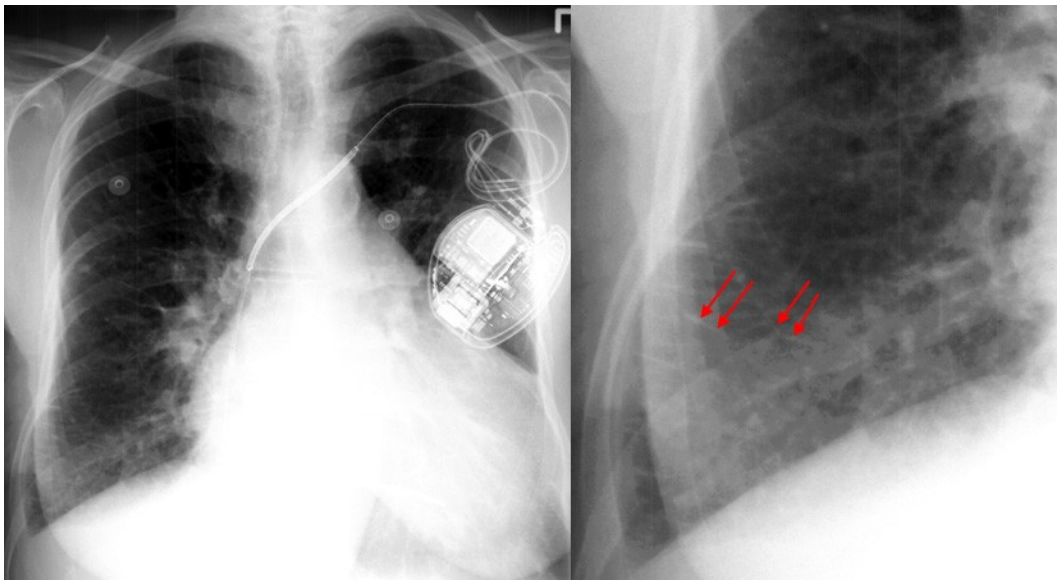


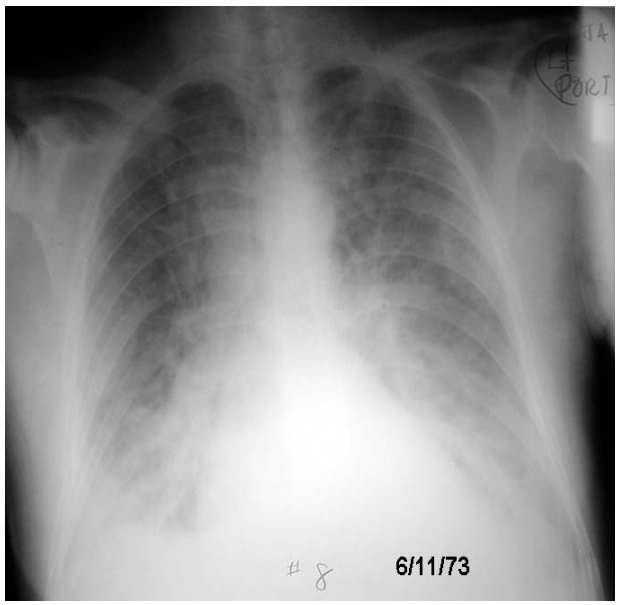


Pleural Effusion

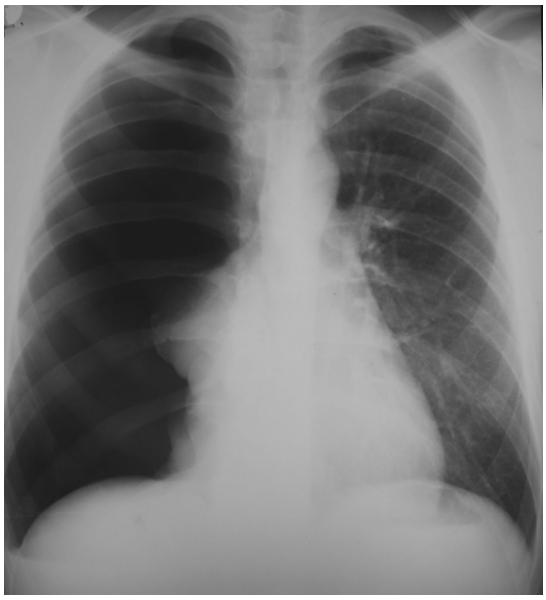


Pulmonary Fibrosis

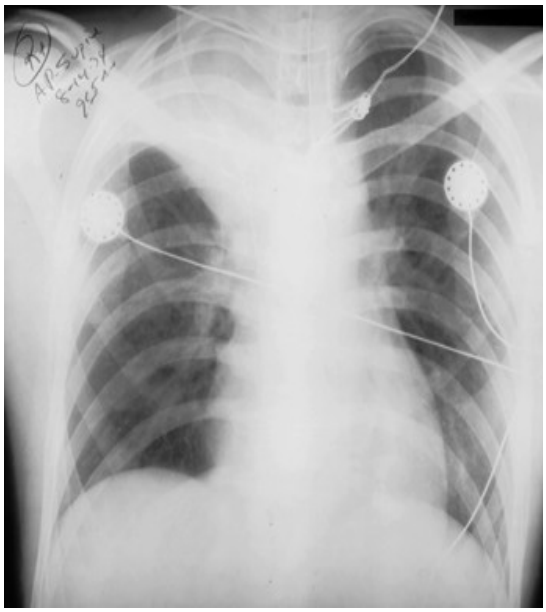




Heart failure

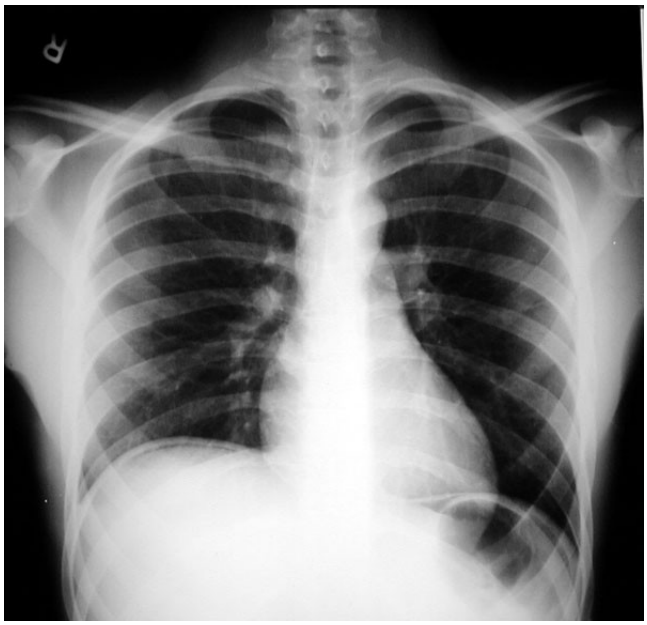


Pneumothorax

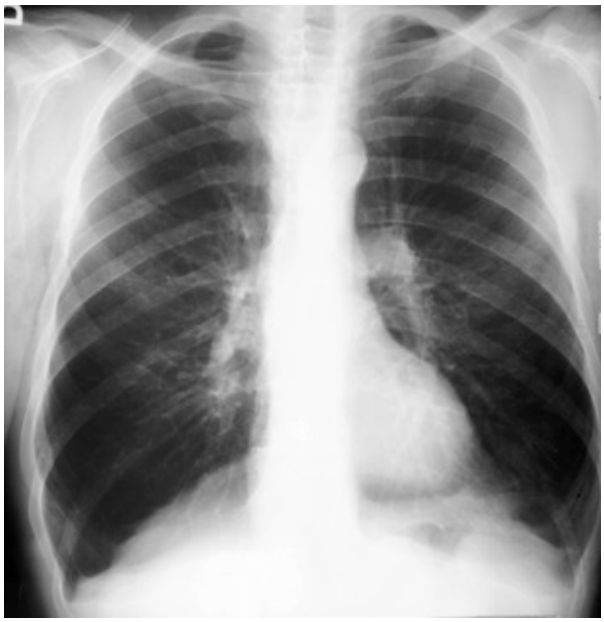


RUL Collapse

LLL Collapse

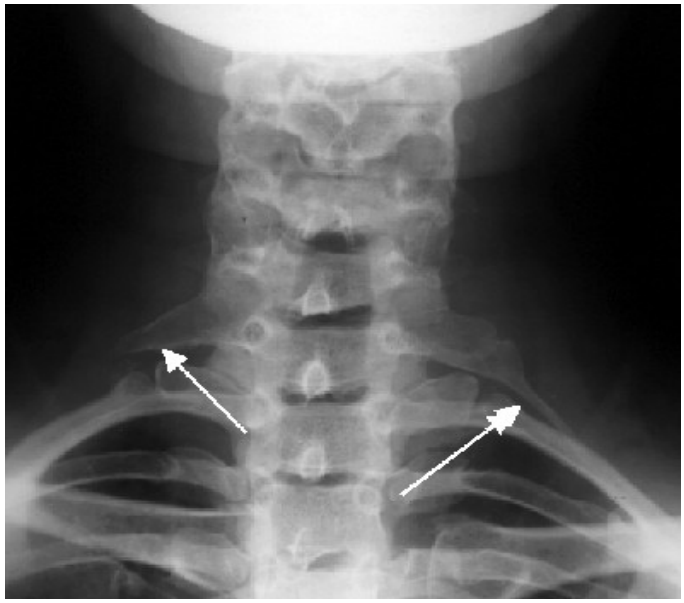


Air under the diaphragm



Emphysema

Cervical Rib

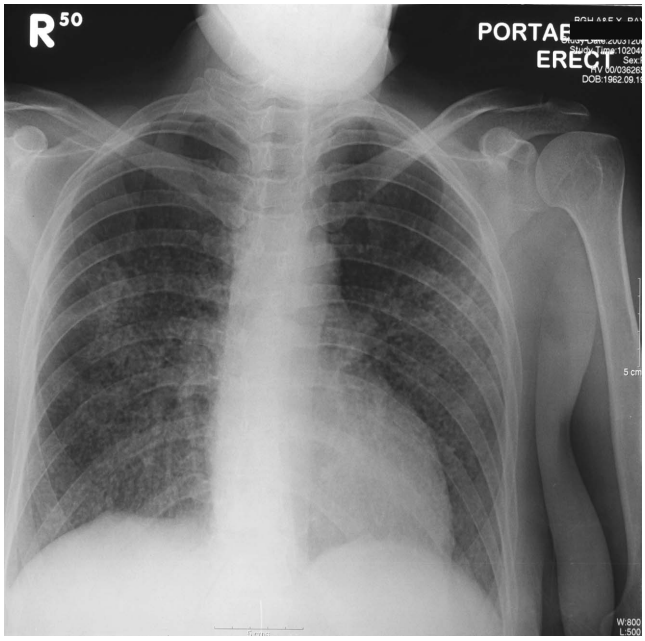


Cervical Rib

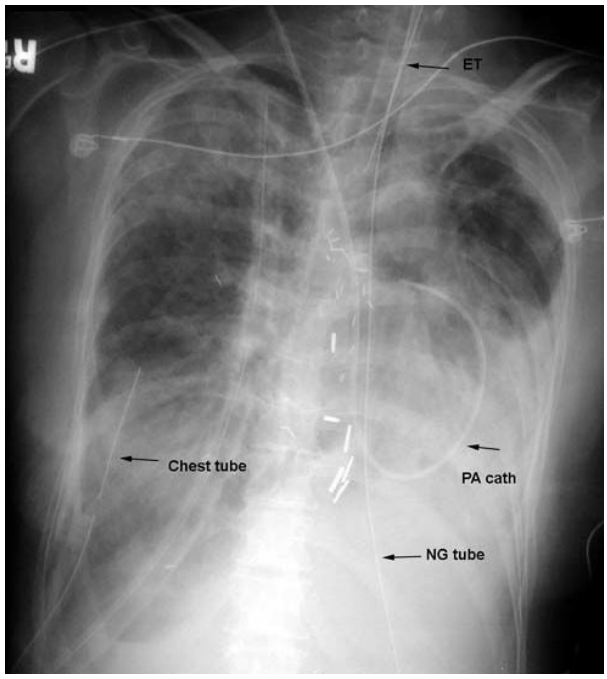
Cavitating lesion

Hiatus hernia

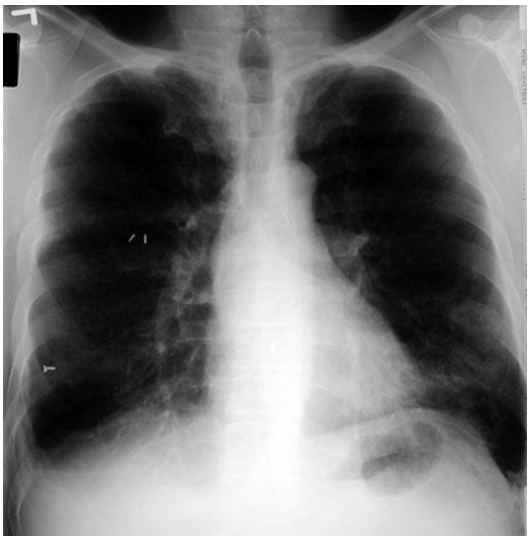
Hiatus hernia



Miliary shadowing



Chest tube, NG tube, Pulmonary artery catheter



Dextrocardia

The end of CXR talk.