Primary Care Radiology
X-Ray Initial Evaluation Workshop
Chest X-Ray Interpretation

Delwin B Jacoby, DNP, APRN, FNP-C, PNP-C, AGN-C
University of Kentucky College of Medicine, Department of Pediatrics,
Division of Genetics & Metabolism
Baby Health Service

Conflict of Interest Statement
The author has no conflict of interest nor financial interest regarding any content within this presentation.

This talk is presented in memory of Robert Becher
... father, husband, friend

Primary Care Radiology - Objectives
Upon completion of this presentation the learner will be able to:
1. Review the basic physics and historical perspectives associated with radiographic examination.
2. Identify the 4 basic radiographic densities and their significance.
3. Discuss the importance of multiple views in radiologic interpretation.
4. Identify normal radiographic anatomy of the chest and common plain bones.
5. Interpret common radiographic findings encountered in primary care such as lung infiltrates, masses, common fractures, foreign bodies and others.

Wilhelm Roentgen
German physicist
1895
Discovered "x-rays"

Early X-ray - Bertha Roentgen
Electromagnetic Spectrum

4 Basic Densities on Radiograph
- Air - absorbs little radiation - black
- Fat - gray, darker than muscle
- Bone - most dense thus white
- Water (Soft tissue/blood) - gray, but lighter than fat.

Remember - where different densities intersect an interface will exist

Chest Films - Projections
- PA
- Upright vs Supine
- Lateral
- AP

Ideal is PA and lateral - Upright

PA vs AP View – Chest X-Ray

Chest x-ray – Ordering the Film
- Remember – Give the radiologist a brief history.
- Order the type of study with desired views
- Remember – The radiologist is a consult, specialist, colleague and friend.
Chest X-rays

- Remember – x-rays are a 2 dimensional view of a 3 dimensional object, so "1 view is 1 too few."

Technical Considerations

- Exposure
  - Overexposed – film too dark
  - Underexposed – film too light
  - Perfect – thoracic vertebra should be seen (should see 4 spinous processes)

- Good Inspiration
  - 6 anterior ribs
  - 10 posterior ribs

- Rotation
  - T-spine center of sternum
  - Clavicles level

Steps in Chest X-Ray Interpretation

1. Identify correct pt, correct view, correct date.
2. View x-ray as if the patient is standing and looking at the provider.
3. Check exposure.
5. Check rotation.

Radiographic Anatomy – Chest PA

Radiographic Anatomy – Lateral Chest

Radiographic Anatomy
Practice the Anatomy

ABC’s of Chest X-Ray Interpretation
- A – Airway
- B – Bones
- C – Cardiac
- D – Diaphragm
- E – Edges
- F – Fields
- G – Guts
- H – Hilum
- I – Interpretation

Normal

Normal
Pleural Effusion

Foreign Body

Mass Chest

Chest Mass
Chest Mass

Barrel Chest

Atelectasis

43

44

45