

Reading Hospital
School of Health Sciences
Medical Imaging Program

MI123: Clinical Seminar I – Summer 2021
Routine Chest Demonstration



1

Patient Preparation

- Remove everything from waist up
(Example: Bras, necklaces, and piercings)
- Gown opens in back
- Straighten EKG wires and pull down center over heart
- Move oxygen tubing up and over shoulder
- Be careful of snaps on gowns!

2

Radiographic Views

Routine Chest

- PA
- Lateral
- AP Erect or AP supine*
(if unable to obtain PA)

* AP erect and Lateral litter CXR, AP supine, and decubitus will be demonstrated at the end of the semester in Advanced CXR within MI133: Clinical Seminar II.

3

Technique

Procedure:	Optimal kVp	AEC	Receptor	mAs (non AEC)*
PA CXR (adult)	120 kVp		Bucky/detector	1.4 mAs
Lateral CXR (adult)	120 kVp		Bucky/detector	3.6 mAs

- Double mAs if using CR
- Divide mAs by 3 if no grid
- Bucky IR = gridded technique
- * mAs used for fixed techniques only
- ** Techniques can vary based on patient age and size

4

Considerations

- Best to perform PA and Left Lateral in the Erect position
 - Demonstrates fluid levels; PA and left side lateral places the heart closest to IR to reduce magnification.
- Least desirable is AP Supine
 - Supine will not show fluid levels; lungs do not expand as well; great vessels may become engorged in this position.
- Some institutions allow for a 'Semi-Erect' Chest view (**Not** allowed at RH)

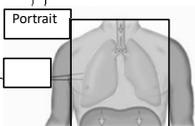
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Collimation Orientation

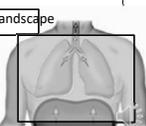
Portrait (lengthwise) OR Landscape (crosswise) ????

- Most females typically imaged lengthwise – soft tissue of body is NOT lung!
- Most males typically imaged crosswise

* Exception: AP Erect CXRs and Portable CXRs



Portrait



Landscape

6

PA CXR

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Entire lung fields from the apices to the costophrenic angles
- No rotation
 - Sternal ends of the clavicles equidistant from the vertebral column
 - Trachea visible in the middle
 - Equal distance from the vertebral column to the lateral border of the ribs on each side
- Proper anterior shoulder rotation demonstrated by scapulae projected outside the lung fields
- Proper inspiration demonstrated by **ten** posterior ribs visible above the diaphragm
- Sharp outlines of heart and diaphragm
- Faint shadows of the ribs and superior thoracic vertebrae visible through the heart shadow
- Pulmonary vascular markings from the hilar regions to the periphery of the lungs
- Lung markings visible from the hilum to the periphery of the lung

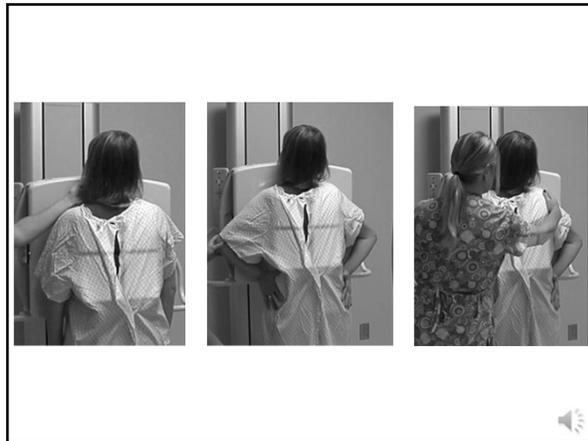


* RH - if patient is pregnant, perform PA image only and add an image check

7



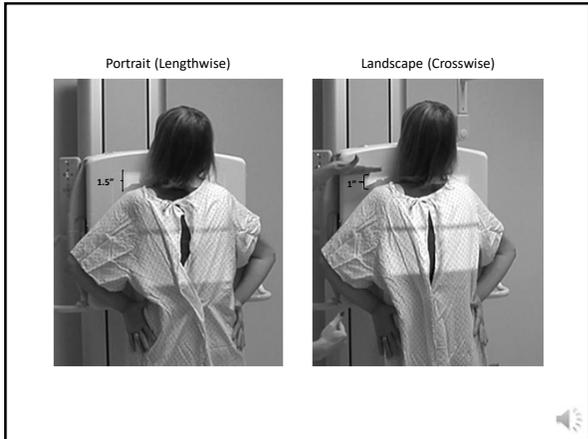
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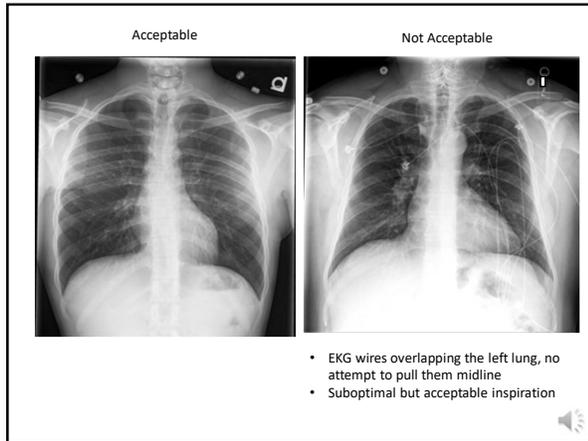
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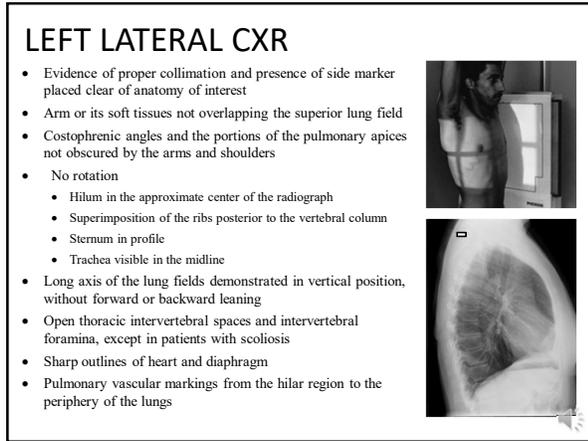
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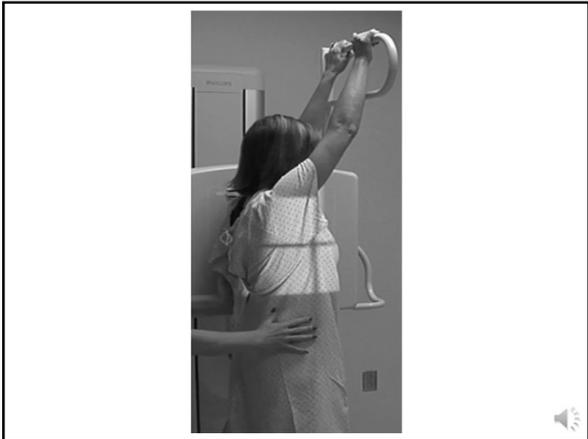
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17



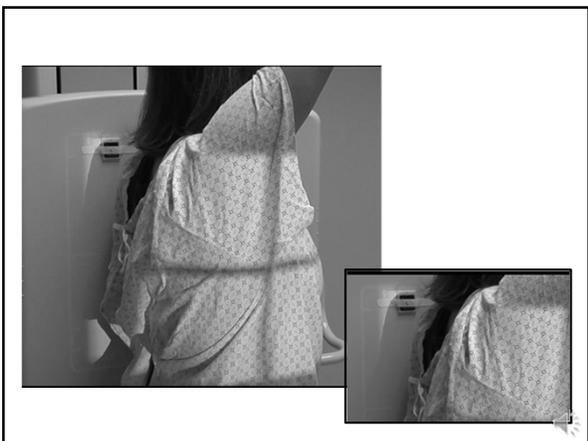
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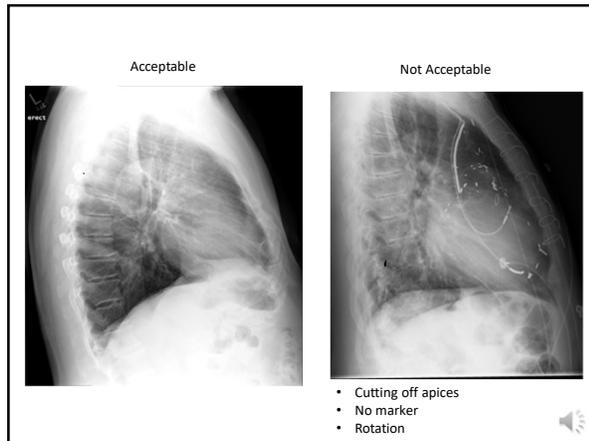
21

LEFT LATERAL CXR

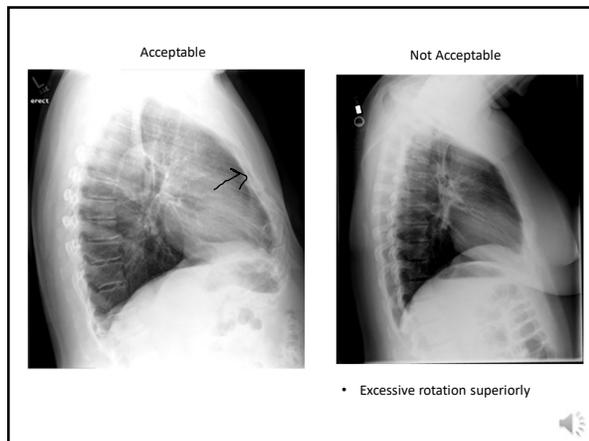
- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Arm or its soft tissues not overlapping the superior lung field
- Costophrenic angles and the portions of the pulmonary apices not obscured by the arms and shoulders
- No rotation
 - Hilum in the approximate center of the radiograph
 - Superimposition of the ribs posterior to the vertebral column
 - Sternum in profile
 - Trachea visible in the midline
- Long axis of the lung fields demonstrated in vertical position, without forward or backward leaning
- Open thoracic intervertebral spaces and intervertebral foramina, except in patients with scoliosis
- Sharp outlines of heart and diaphragm
- Pulmonary vascular markings from the hilar region to the periphery of the lungs



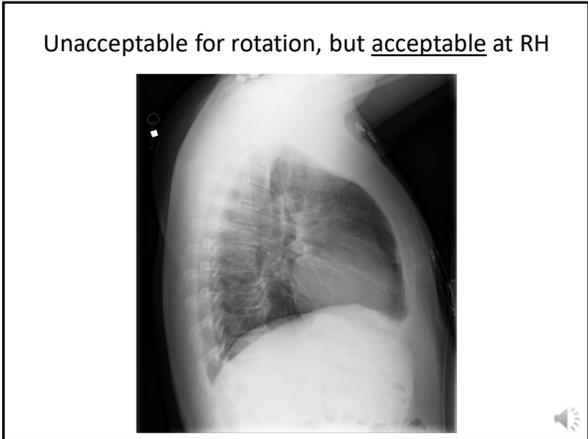
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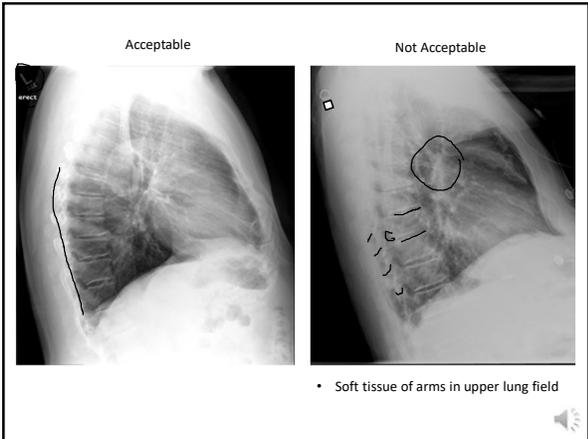
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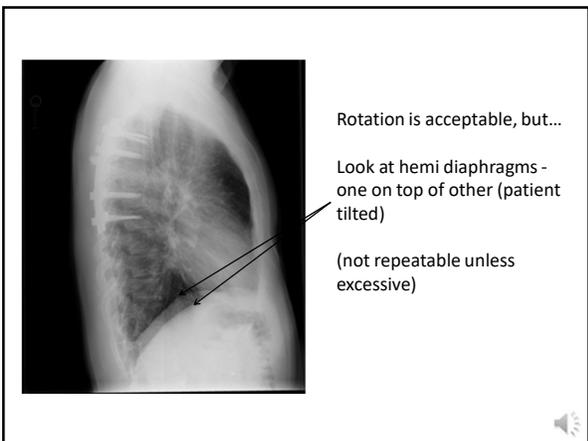
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25



26



27

Special Notes:

- If patient has had a pacemaker implanted in the previous 6 weeks, **do not** raise arm above heart level.
- If obtaining chest images on a **KNOWN** pregnant patient, only perform the PA view. There is no need to contact a Radiologist prior to imaging. Add an image check to the procedure. The Radiologist can request a lateral, if needed, without the patient having to return.
- If you are performing a chest with nipple markers (per ordering physician or Radiologist), only do the PA view. **Do not** take a lateral image with nipple markers. In addition, if Radiologist recommends an image with nipple markers, the image is taken after a new order is received from the ordering physician.
- PA chest considerations:
 - If evaluating for pneumothorax or foreign body, inspiration and expiration views may be ordered.
 - Inferior lobes of both lungs should be carefully checked for adequate penetration in women with large pendulous breasts
- Cardiac studies with barium: PA chest and left lateral may be obtained while swallowing thick barium during the exposures to outline posterior heart and aorta.

28



What's Next?

Positioning Skills Practice

- Arrive prepared to simulate PA and Lateral for the Routine Chest
 - Knowledge of:
 - Anatomy
 - Positioning Specifics
 - Image Criteria

29



Positioning Skills Practice Guidelines located in the Clinical Seminar Manual

“Positioning Skills Lab Practice”

Expectations	Acceptable Performance	Performance Needs Improvement
Students will be prepared to properly demonstrate the following skills for the procedures being performed: <ul style="list-style-type: none"> • patient positioning • tube angles • SID • collimation • lead marker placement • shielding • breathing instructions • align central ray and IR 	Correct positioning of patient for view(s) being performed. Appropriate manipulation of room equipment including SID, tube angle, central ray/IR alignment and collimation. Accurate lead marker placement. Adequate shielding of the gonadal region. Effective breathing instructions.	Gross mal-positioning of patient for view(s) being performed. Inability to properly manipulate equipment or unsafe use of room equipment to obtain proper SID, tube angle, central ray/IR alignment and/or collimation. Grossly incorrect tube angle, SID, central ray/IR alignment, and/or collimation used. Placement of incorrect marker or marker placement on the wrong anatomical side. Inadequate shielding of gonadal region. Ineffective breathing instructions. Excessive hesitation or the need for repeated intervention from the proctoring Clinical Seminar Faculty member.

30