X-rays- describe radiation which is part of the spectrum which includes visible light, gamma rays and cosmic radiation.

Unlike visible light, radiation passes through stuff.

When you shine a beam of X-Ray at a person and put a film on the other side of them a shadow is produced of the inside of their body.
Different tissues in our body absorb X-rays at different extents:

• Bone- high absorption (white)

• Tissue- somewhere in the middle absorption (grey)

• Air- low absorption (black)
Be systematic

:

1) Check the quality of the film
Film Quality

• First determine if the film is a PA or AP view.

PA- the x-rays penetrate through the back of the patient on to the film

AP- the x-rays penetrate through the front of the patient on to the film.

All x-rays in the PICU are portable and are AP view
Film Quality (cont)

- Was film taken under full inspiration?
  - 10 posterior ribs should be visible.

Why do I say posterior here?

When X-ray beams pass through the anterior chest on to the film, under the patient, the ribs closer to the film (posterior) are most apparent.

A really good film will show anterior ribs too, there should be 6 to qualify as a good inspiratory film.
Quality (cont.)

- Is the film over or under penetrated if under penetrated you will not be able to see the thoracic vertebrae.
Quality (cont)

• Check for rotation
  – Does the thoracic spine align in the center of the sternum and between the clavicles?
  – Are the clavicles level?
Verify Right and Left sides

• Gastric bubble should be on the left
Now you are ready

• Look at the diaphragm: for tenting
  free air
  abnormal elevation
• Margins should be sharp
  (the right hemidiaphragm is usually slightly higher than the left)
Check the Heart

- Size
- Shape
- Silhouette-margins should be sharp
- Diameter (>1/2 thoracic diameter is enlarged heart)

Remember: AP views make heart appear larger than it actually is.
1. R Atrium  
2. R Ventricle  
3. Apex of L Ventricle  
4. Superior Vena Cava  
5. Inferior Vena Cava  
6. Tricuspid Valve  
7. Pulmonary Valve  
8. Pulmonary Trunk  
9. R PA  
10. L PA
Loss of cardiac border

Consolidation
Check the costophrenic angles

Margins should be sharp
Loss of Sharp Costophrenic Angles

- Loss of cardiac border
- Consolidation
Check the hilar region

- The hilar – the large blood vessels going to and from the lung at the root of each lung where it meets the heart.
- Check for size and shape of aorta, nodes, enlarged vessels
Finally, Check the Lung Fields

- Infiltrates
- Increased interstitial markings
- Masses
- Absence of normal margins
- Air bronchograms
- Increased vascularity
wedge opacification elevating right hilum
Collapsed lung

Mediastinal shift — toward right

Absent vascular markings
Hemothorax