

Chapter 16

Bony Thorax, Chest, and Abdomen

Learning Objectives

- Name the bones that make up the bony thorax, and identify each on an anatomic diagram and on a radiograph
- Name and identify on an anatomic diagram the principal organs located within the thoracic cavity
- Name and identify on an anatomic diagram the principal organs located within the abdominal cavity

Learning Objectives (Cont' d)

- Identify significant positioning landmarks in the thoracic and abdominal areas by palpation
- Demonstrate correct body and part positioning for routine projections and common special projections of the bony thorax, chest, and abdomen

Learning Objectives (Cont' d)

- Correctly evaluate radiographs of the bony thorax, chest, and abdomen for positioning accuracy
- Describe and recognize on radiographs pathologic conditions common to the bony thorax, chest, and abdomen

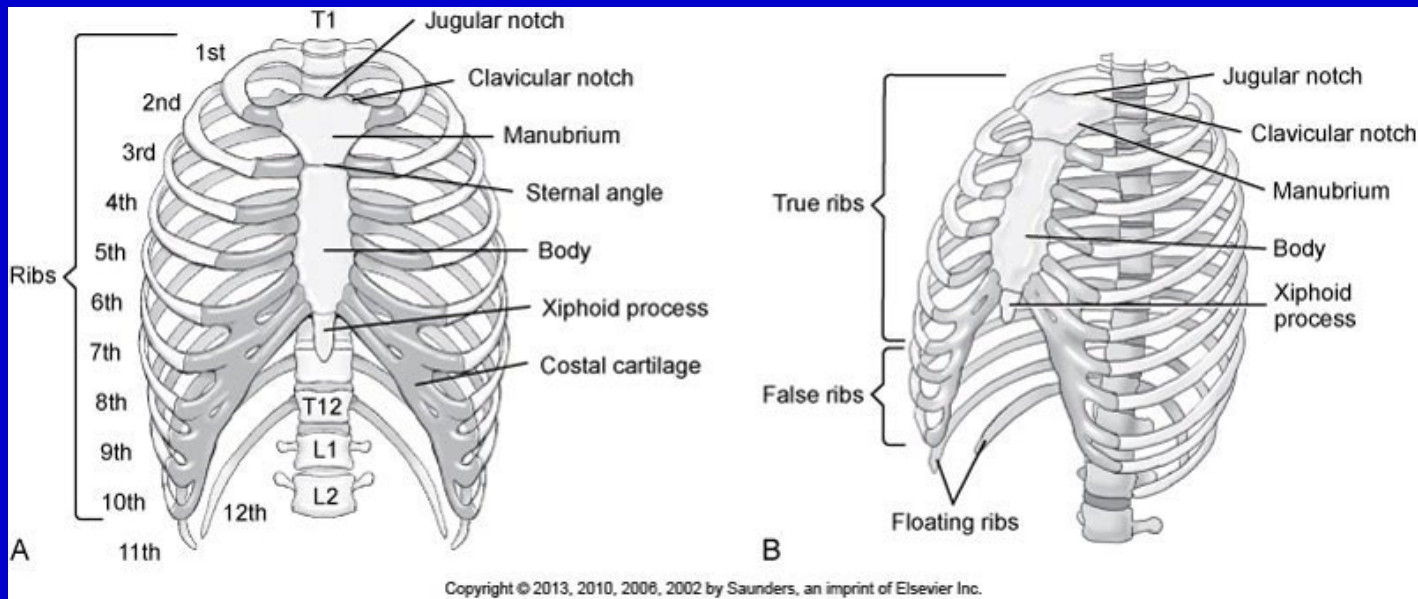
Parts of the Bony Thorax

- Ribs

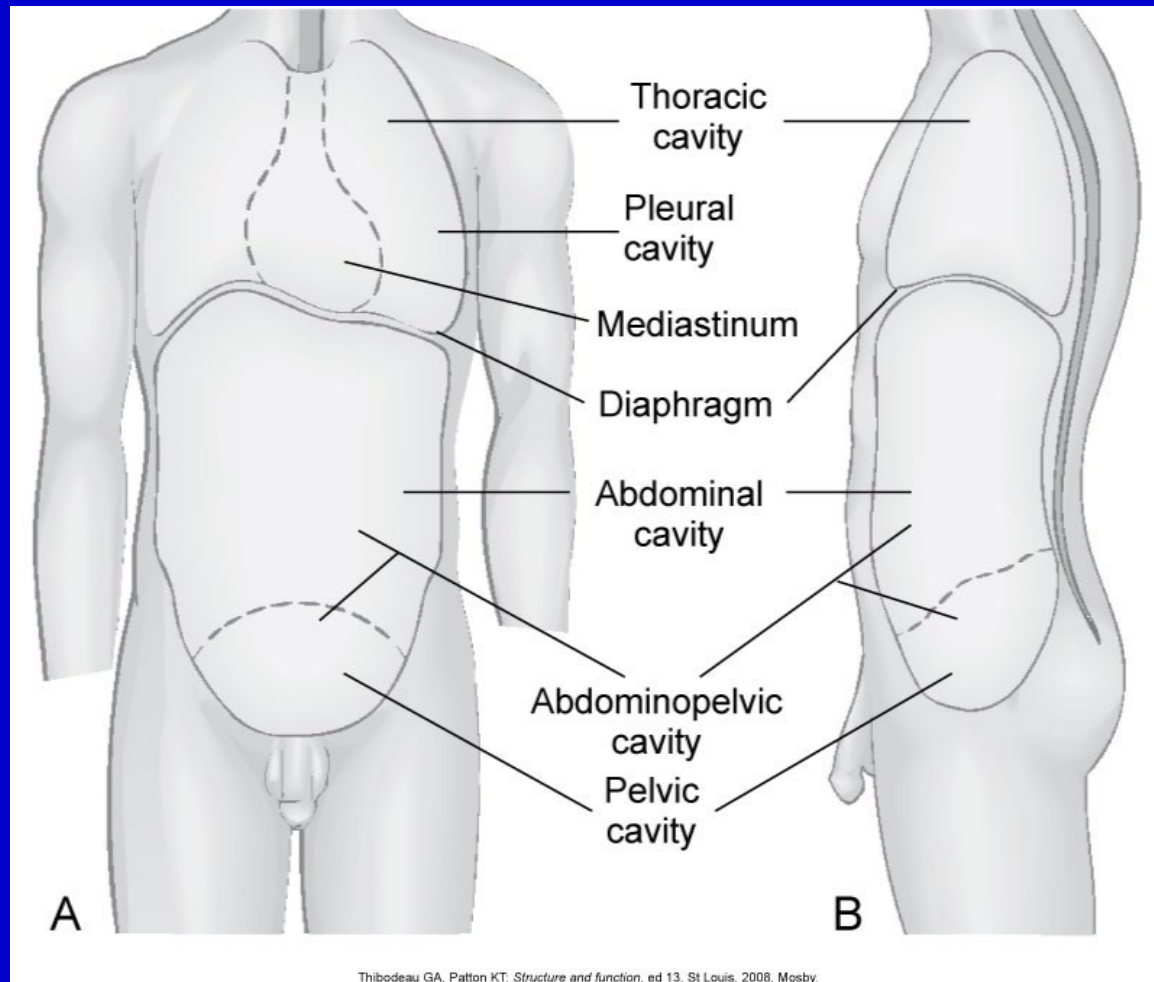
- True
- False
- Floating

- Sternum

- Manubrium
- Body
- Xiphoid

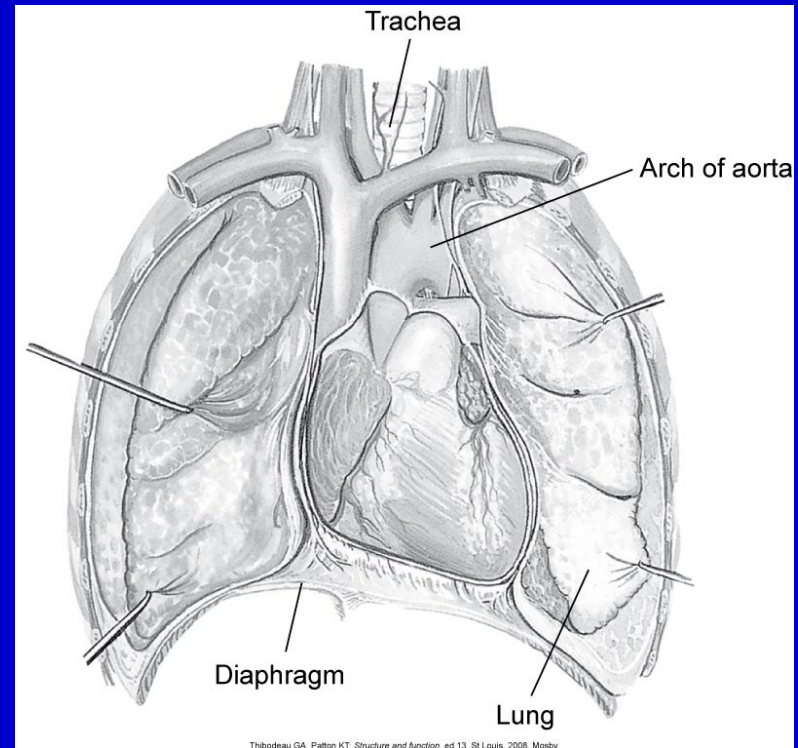


Body Cavities

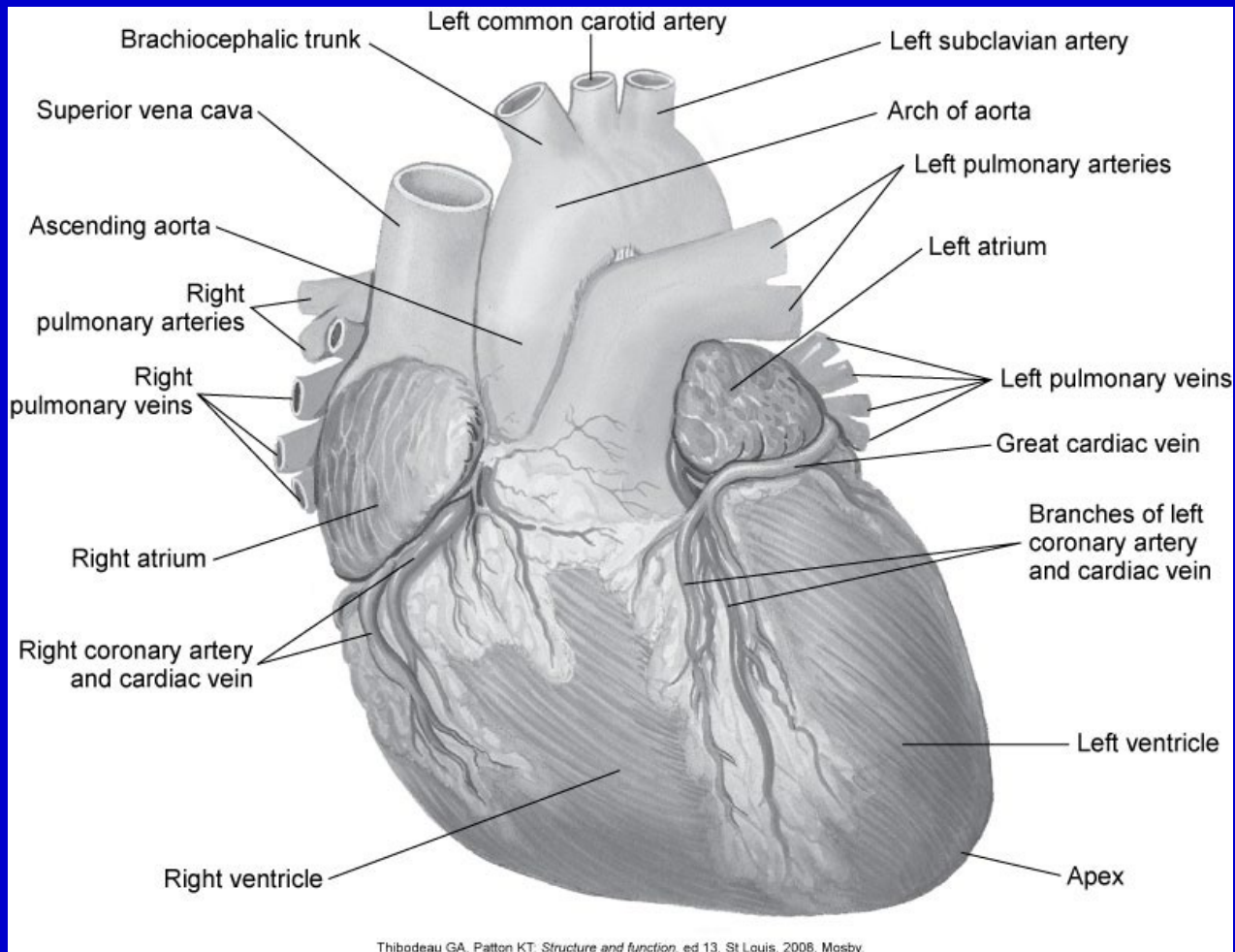


Divisions of the Thoracic Cavity

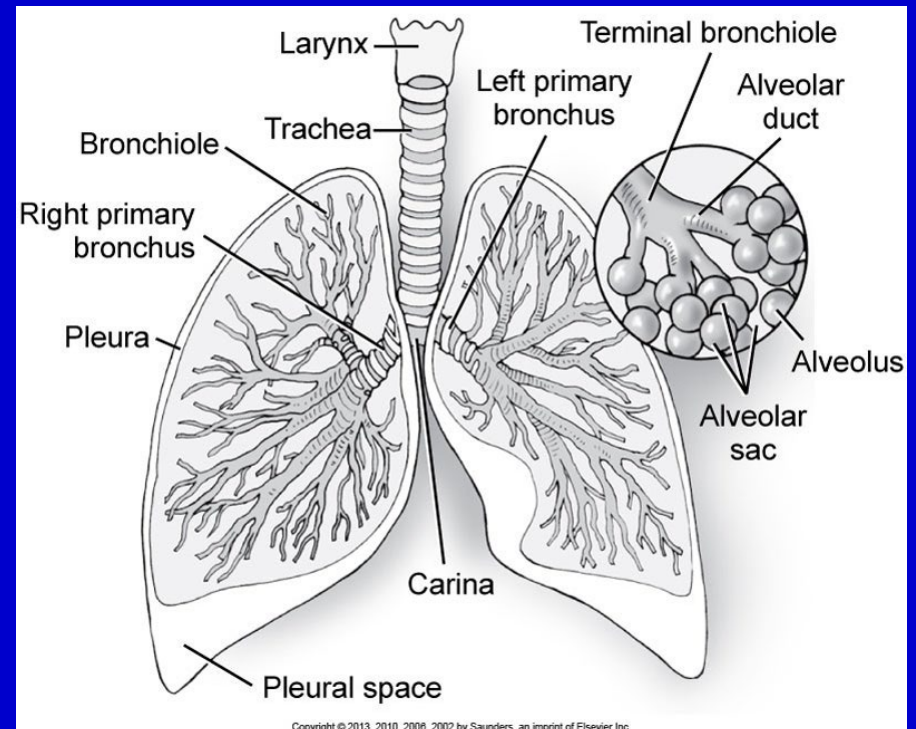
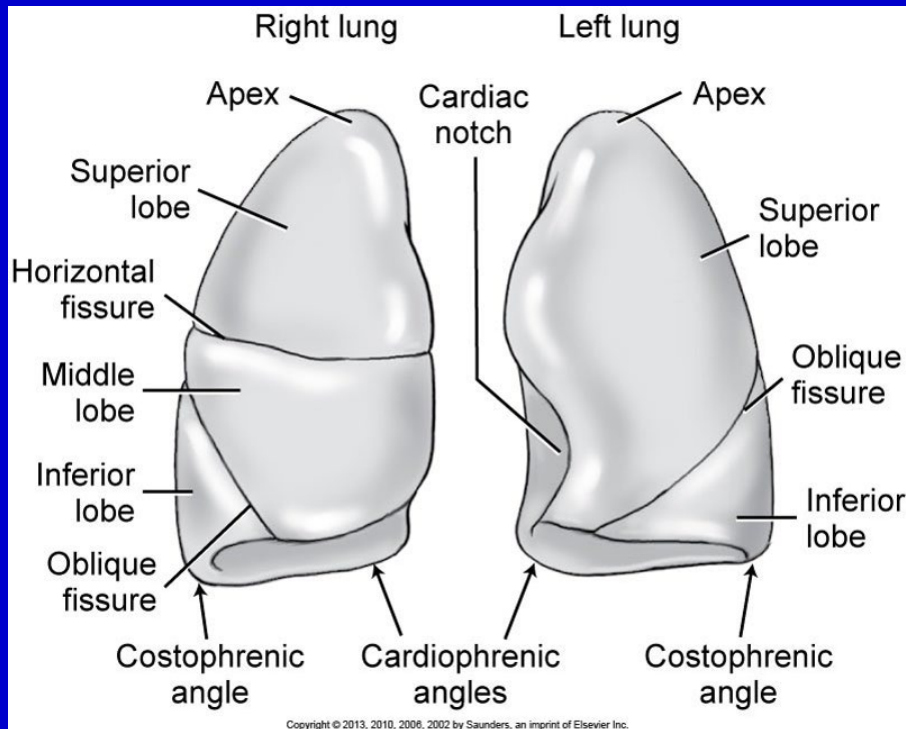
- Right and Left Plural Cavities
 - Contain lungs
- Mediastinum
 - Space between lungs
 - Contains heart, blood vessels, trachea, esophagus, and thymus



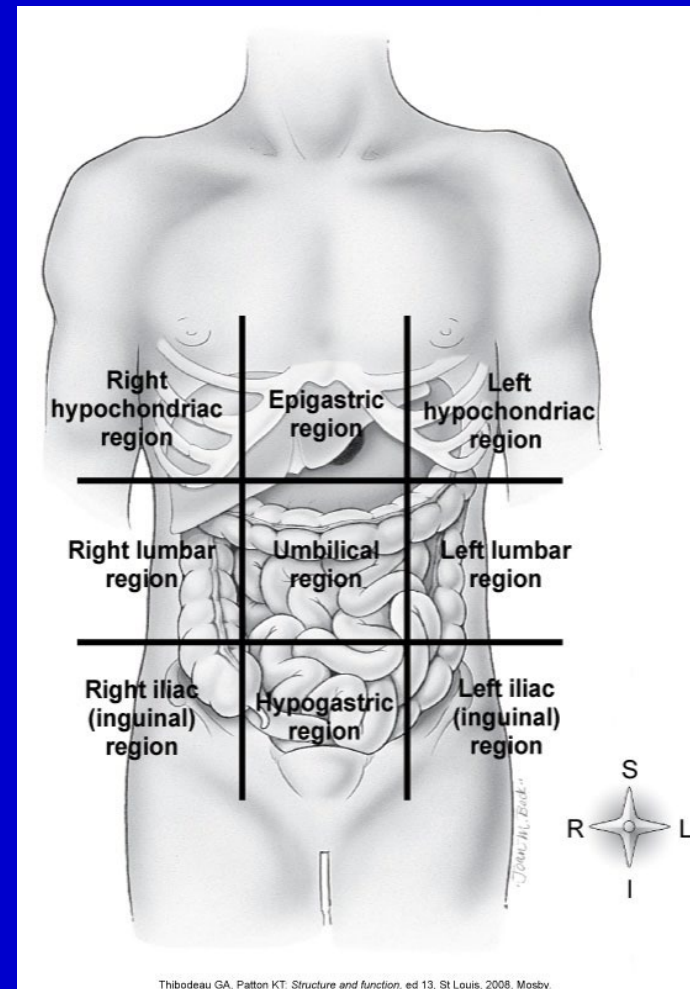
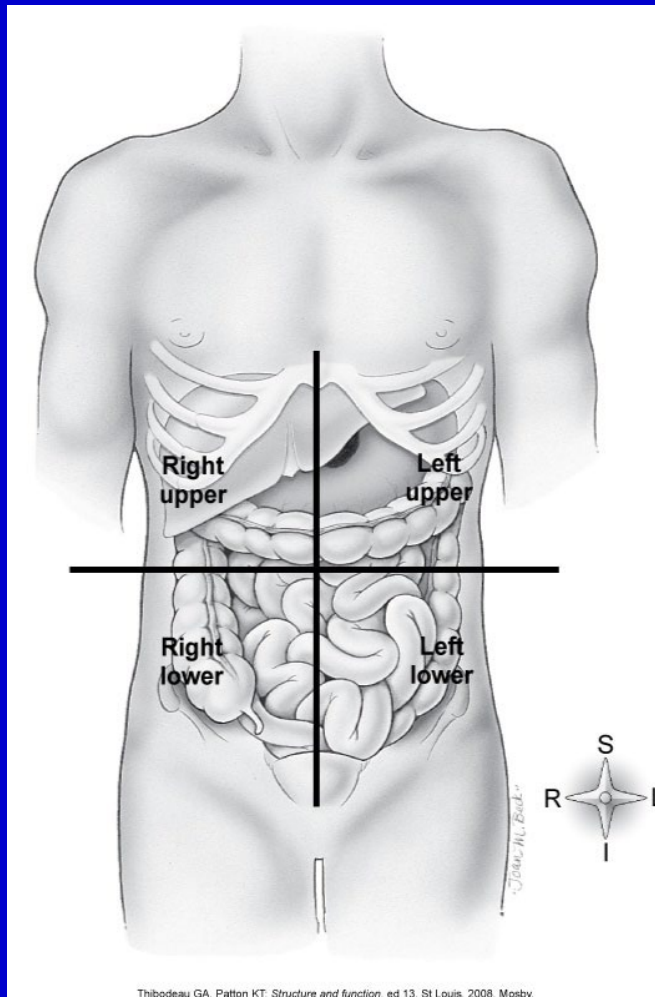
Heart



Lungs

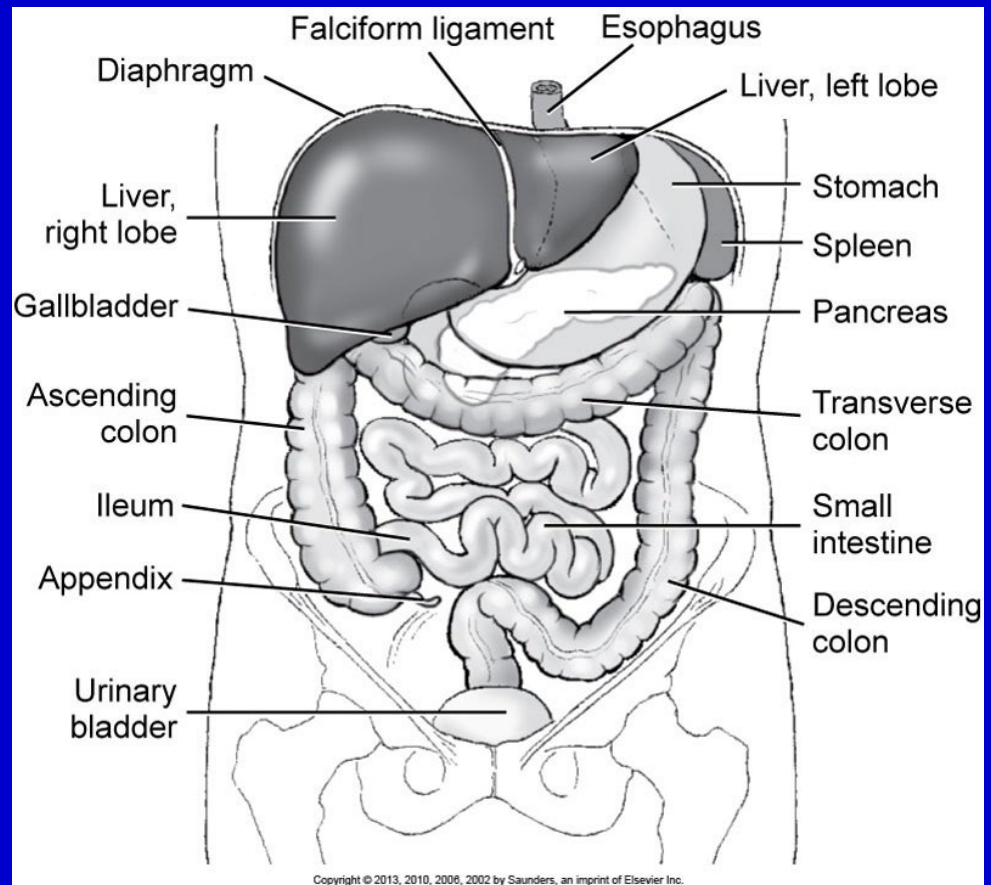


Abdominal Quadrants and Regions



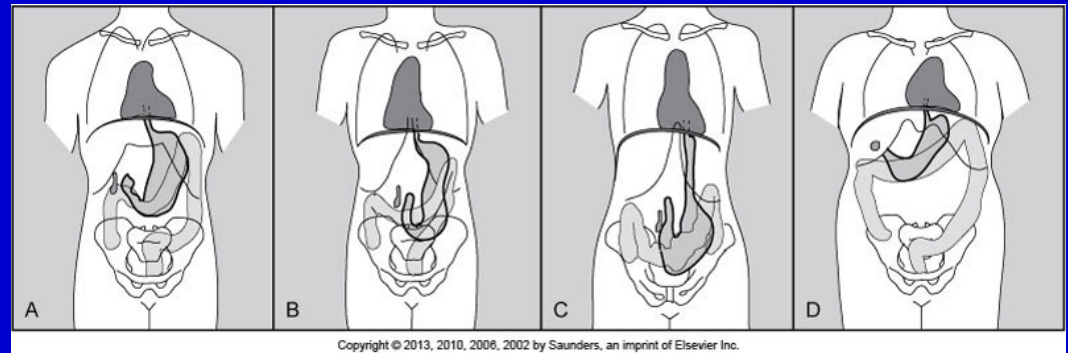
Major Organs of the Digestive System

- Stomach
- Large intestine
- Small intestine
- Liver
- Gallbladder
- Pancreas



Body Habitus

- Affects position of the thoracic and abdominal organs
- Body types include sthenic, hyposthenic, asthenic, and hypersthenic

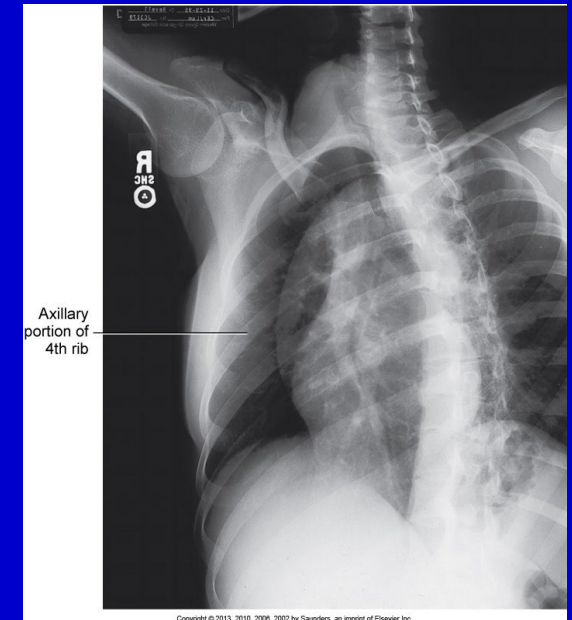
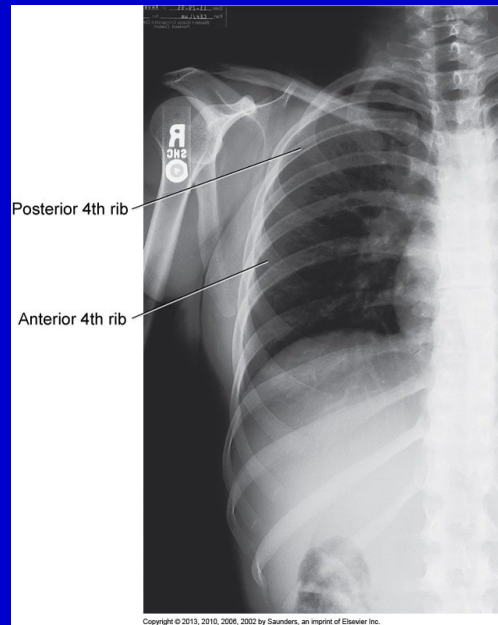


Examination of the Bony Thorax, Chest, and Abdomen

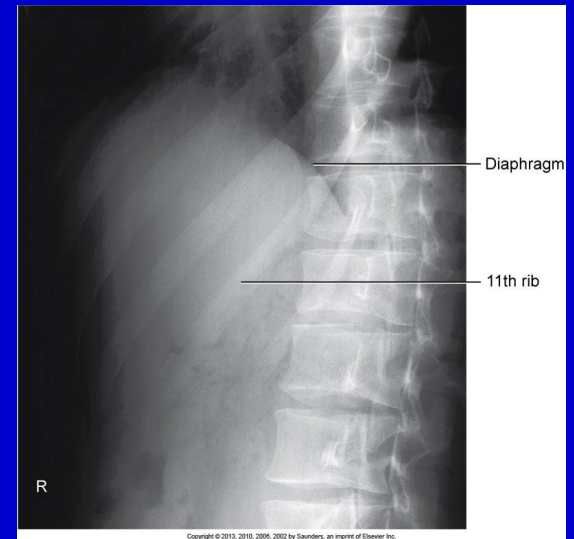
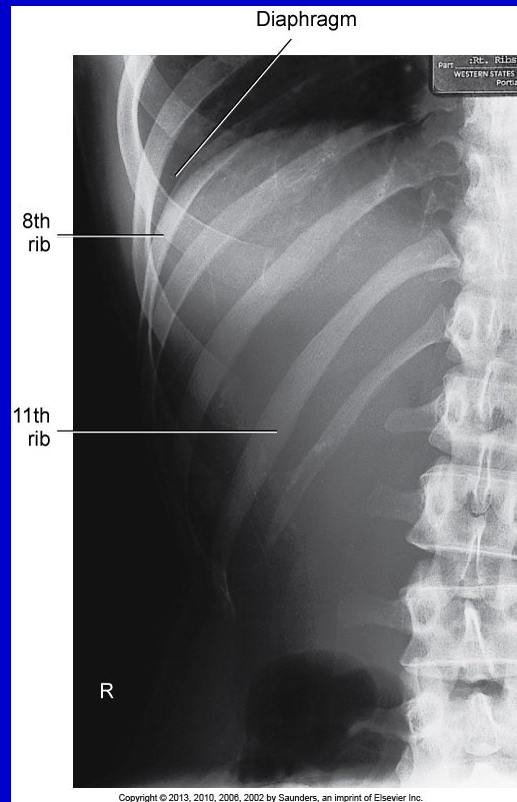
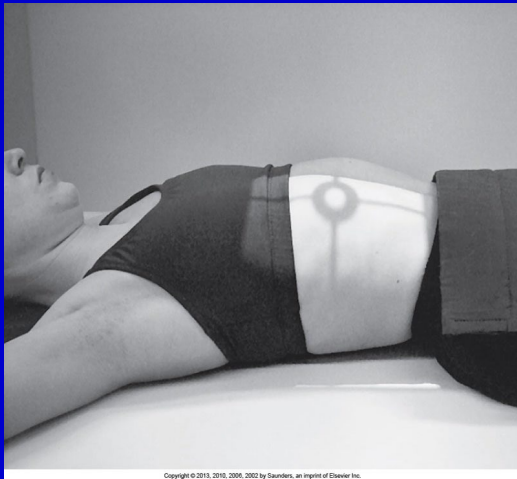
- Place IR in Bucky tray
- Place patient erect in front of upright cassette holder or recumbent on table
- Remove jewelry, clothing, or other items that may be within the radiation field
- Place appropriate image markers
- Shield gonads



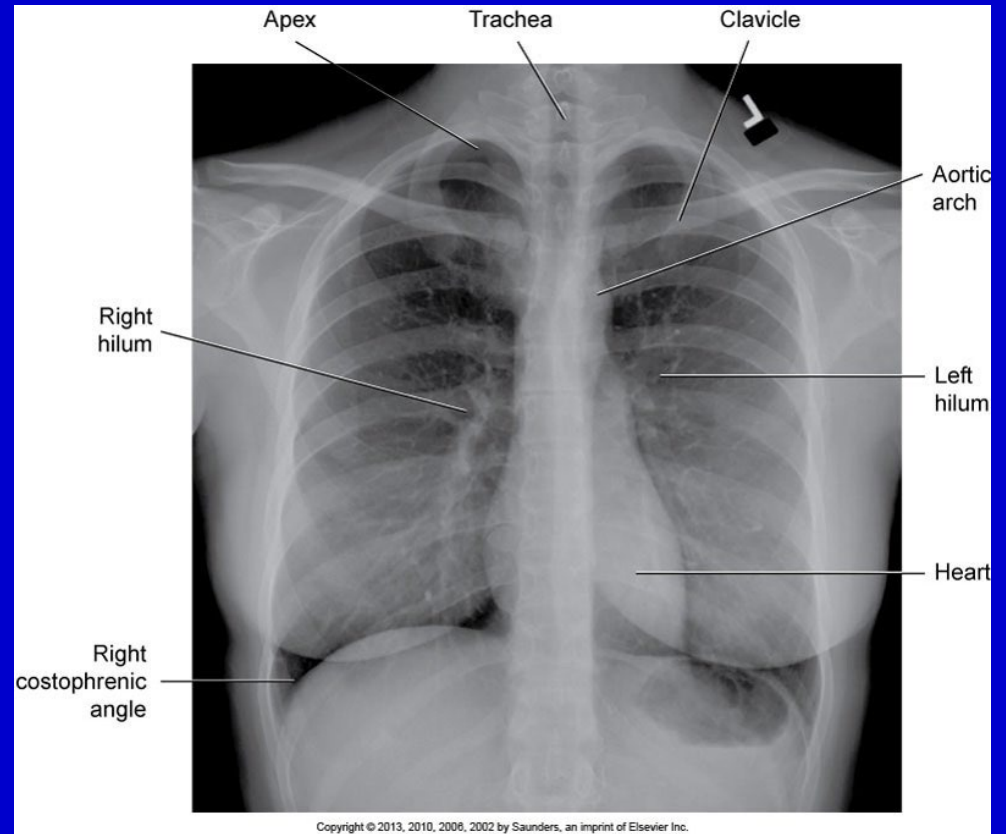
PA and PA Oblique Projections of the Upper Ribs



AP and AP Oblique Projections of the Lower Ribs



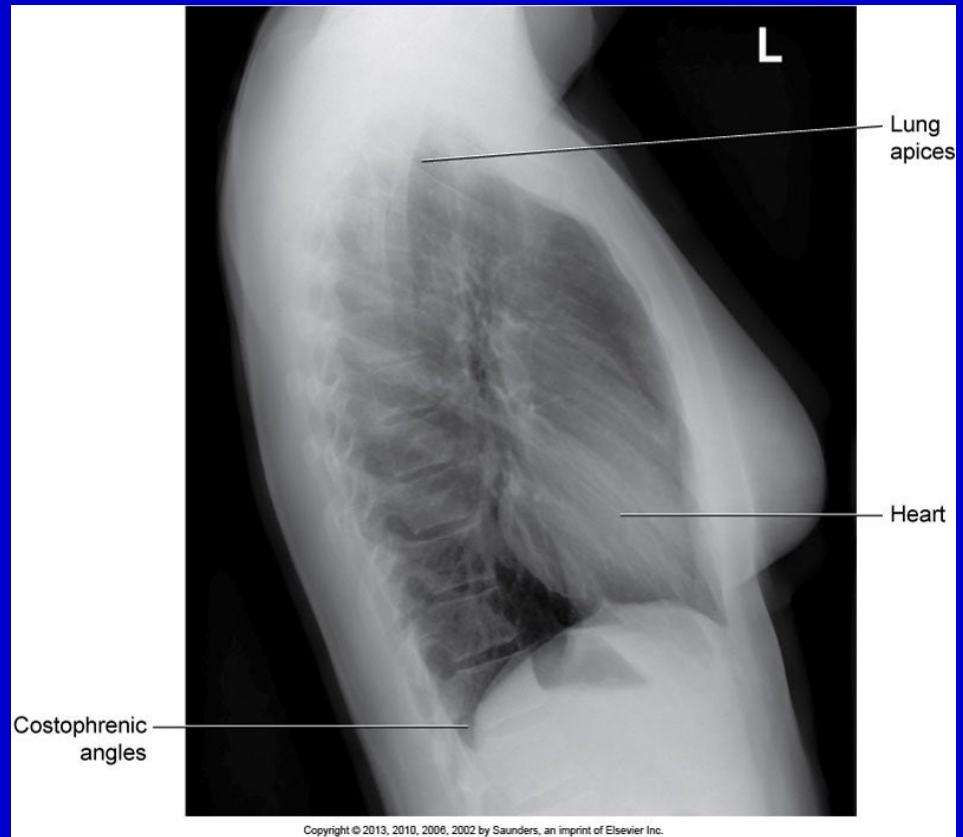
PA Projection of the Chest



Lateral Projection of the Chest

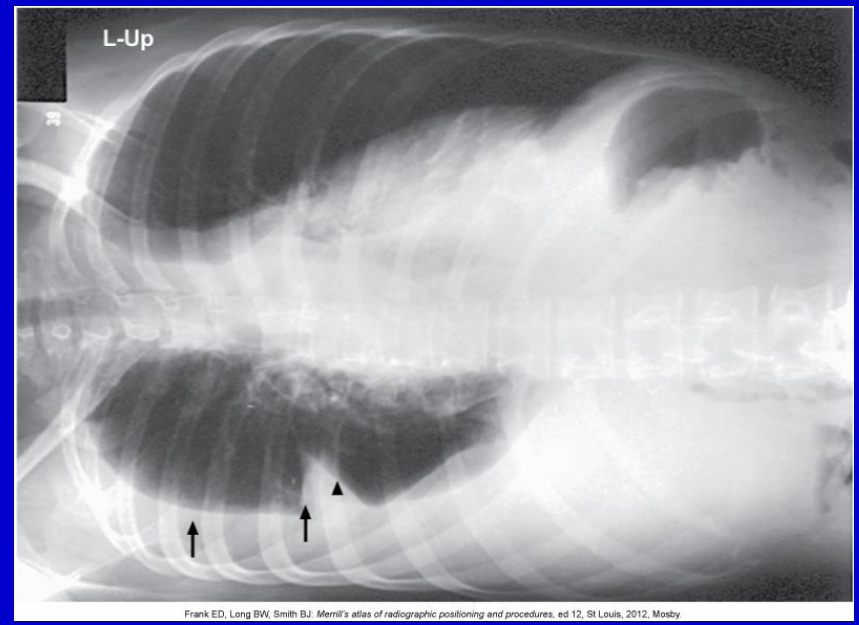


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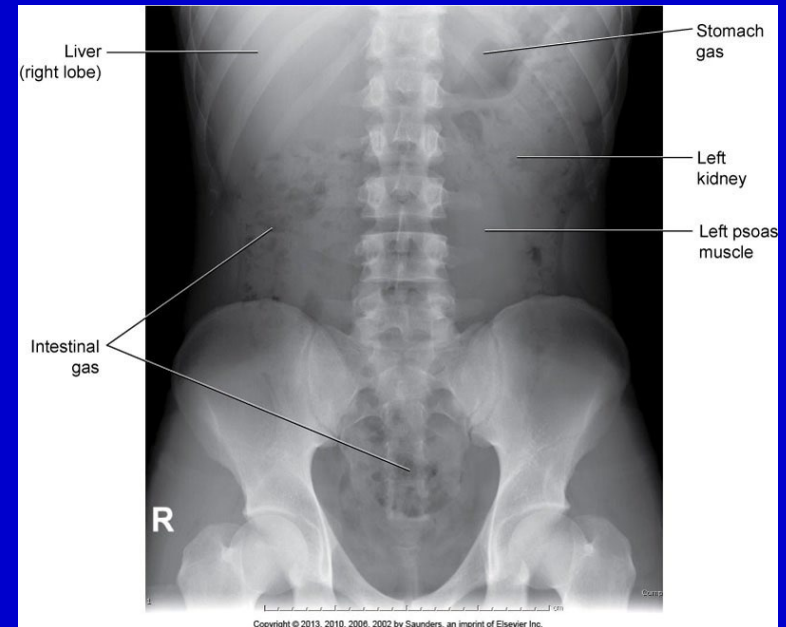
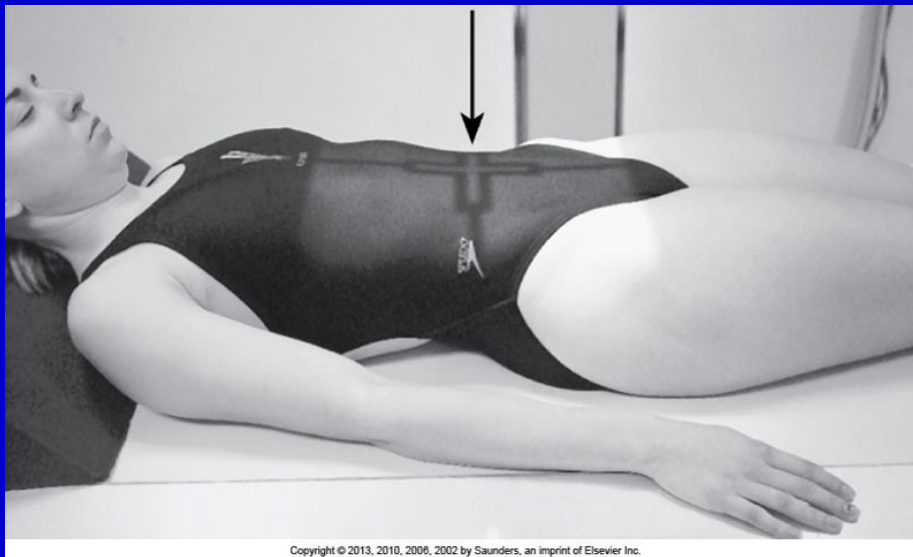


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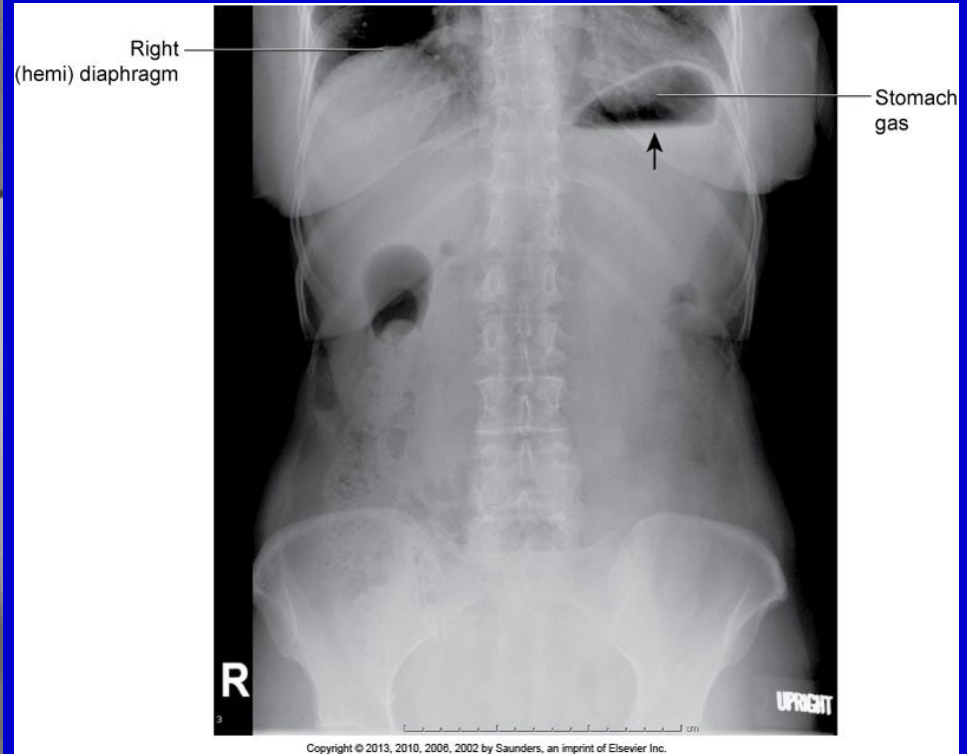
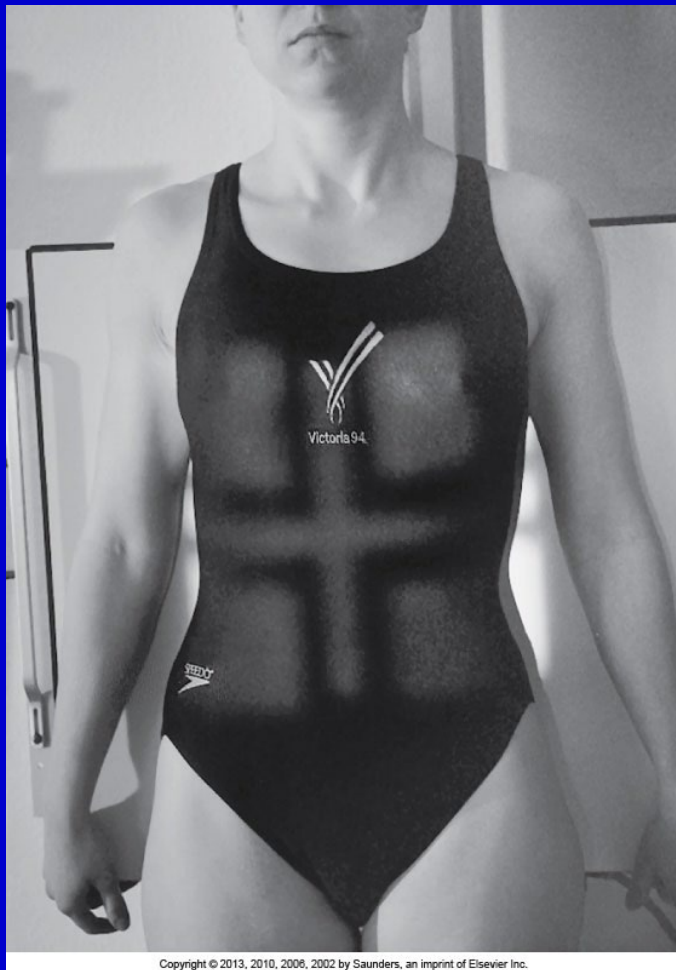
AP Projection of the Chest in the Decubitus Position



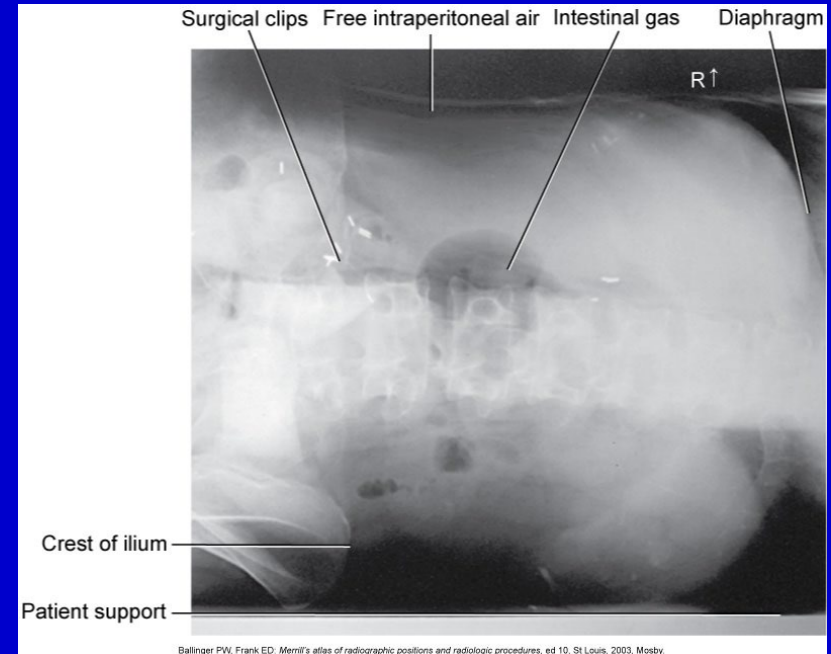
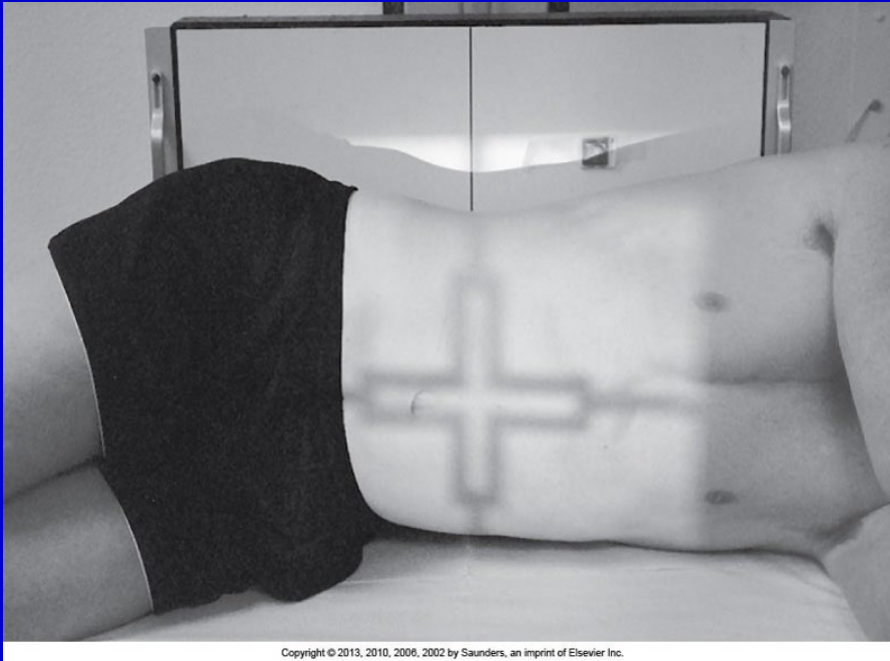
AP Projection of the Abdomen in the Recumbent Position



AP Projection of the Abdomen in the Erect Position



AP Projection of the Abdomen in the Decubitus Position



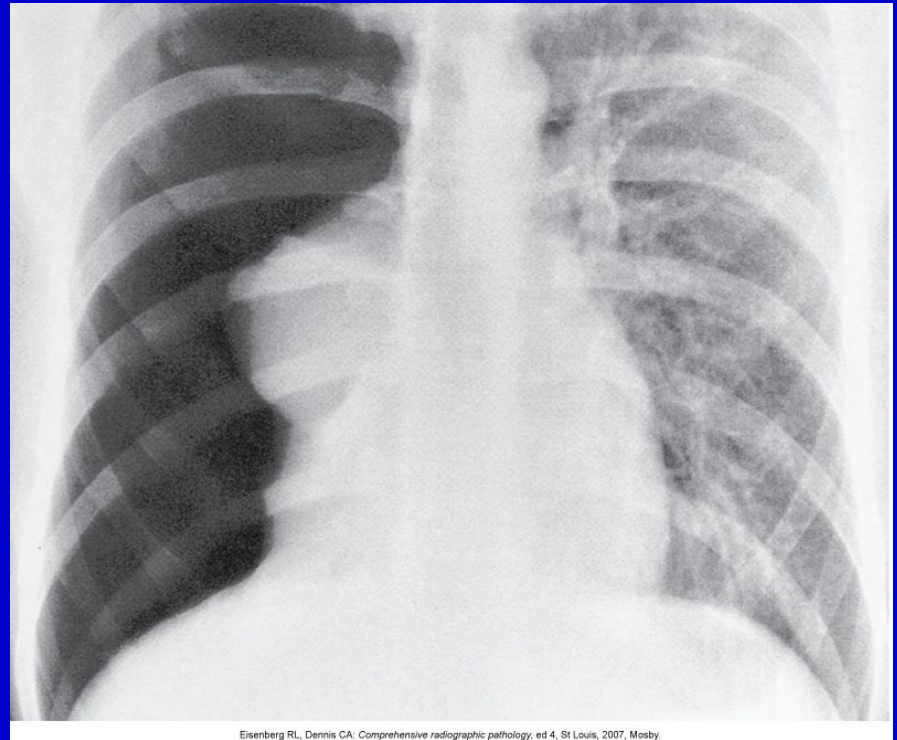
Pathology of the Bony Thorax

- Fracture
 - Trauma
- Neoplasm
- Metastasis
- Osteochondroma



Pathology of the Chest

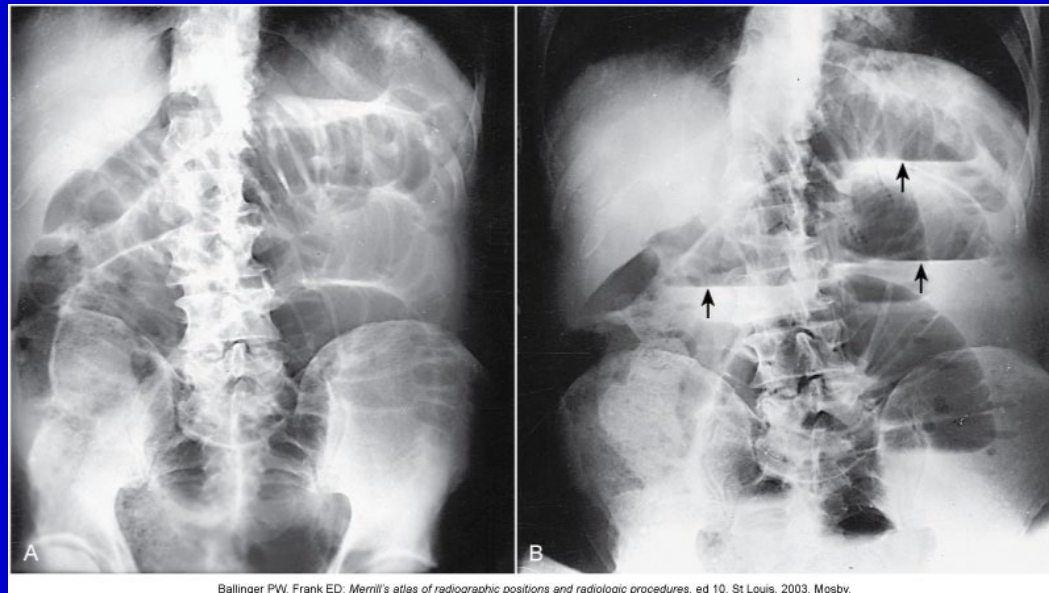
- Atelectasis
- Pneumothorax
- Pneumonia
- Emphysema
- Tuberculosis
- Pneumoconiosis
- Neoplasm
- Metastasis
- Congestive heart failure
- Pleural effusion



Eisenberg RL, Dennis CA: Comprehensive radiographic pathology, ed 4, St Louis, 2007, Mosby.

Pathology of the Abdomen

- Enlarged liver
- Enlarged kidney
- Displaced kidney
- Kidney stones and gallstones
- Free intraperitoneal air
- Calcified blood vessels
- Bowel obstruction
- Ascites



Ballinger PW, Frank ED: *Merrill's atlas of radiographic positions and radiologic procedures*, ed 10, St Louis, 2003, Mosby.

Summary

- The ribs and sternum make up the bony thorax
- The body may be divided into thoracic, abdominal, and abdominopelvic cavities
- Divisions of the thoracic cavity include the right and left pleural cavities and the mediastinum

Summary (Cont' d)

- The abdomen may be divided into four quadrants or nine regions
- Body habitus affects the position of the thoracic and abdominal organs
- Body habitus types include sthenic, hyposthenic, asthenic, and hypersthenic

Summary (Cont' d)

- For examination of the bony thorax, chest, and abdomen, place IR in Bucky tray, position the patient erect or recumbent, remove any items that may be within the radiation field, place appropriate image markers, and shield gonads

Summary (Cont' d)

- Basic projections include

- Ribs

- AP or PA and oblique

- Sternum

- AP or PA oblique and lateral

- Chest

- AP or PA and lateral

- Abdomen

- AP

Summary (Cont' d)

- Pathologic conditions of the bony thorax include fracture, neoplasm, metastasis, and osteochondroma
- Atelectasis, pneumothorax, pneumonia, emphysema, tuberculosis, pneumoconiosis, neoplasm, metastasis, congestive heart failure, and pleural effusion are examples of pathologic conditions of the chest

Summary (Cont' d)

- Pathologic conditions of the abdomen include enlarged organs, displaced kidneys, kidney stones and gallstones, free air, calcified blood vessels, bowel obstruction, and ascites