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Chest X-ray Taking Procedures Training for X-ray technicians/ Radiographer

“Anatomy of the Chest”

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Content



Bony Thorax



Topographic Positioning Landmarks



Lungs



Parts of the Lungs

Anatomy of The Chest

Thorough knowledge of the anatomy of the chest helps radiographer in producing quality CXR images.

Bony Thorax

- Provides a protective framework for the parts of the chest involved with breathing and blood circulation

Anteriorly

- Superior portion is the manubrium
- Large center portion is the body
- Smaller inferior portion is the xiphoid process

Superiorly

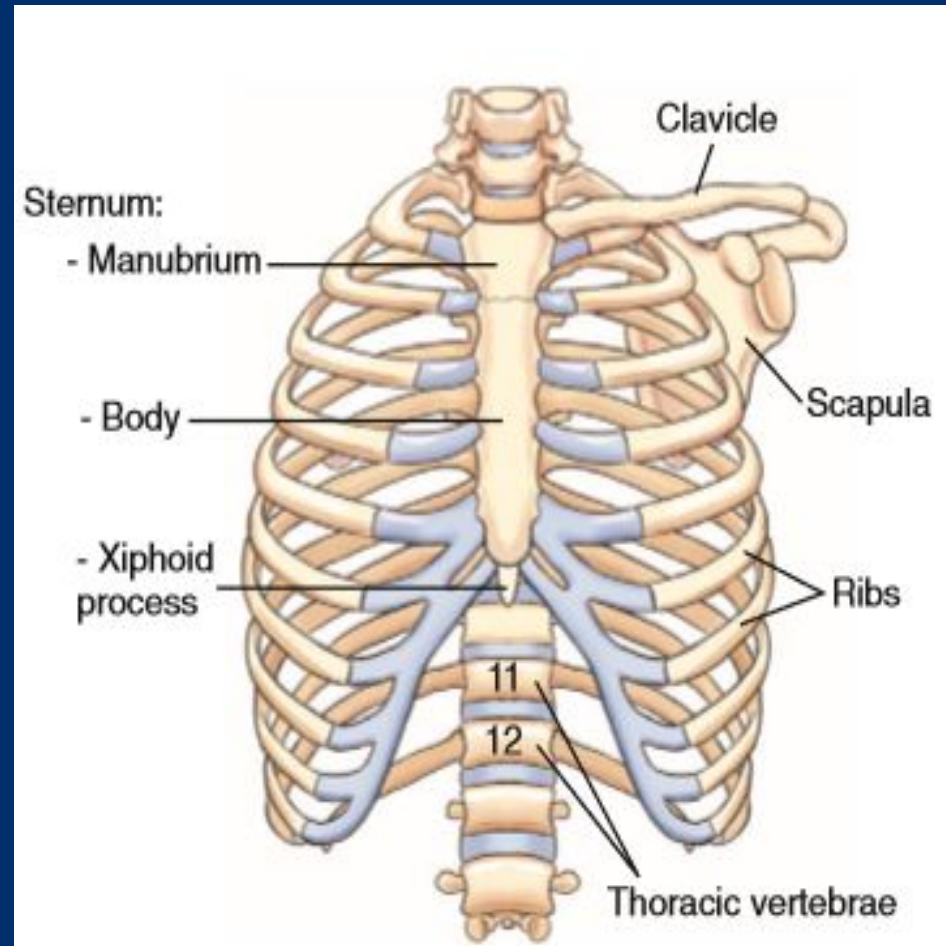
- Two clavicles (collarbones) that connect the sternum to the 2 scapulae (shoulder blades)
- The 12 pairs of ribs

Posteriorly

- 12 thoracic vertebrae

Anatomy for Diagnostic Imaging, 3rd Edition by Stephanie Ryan Michelle McNicholas Stephen Eustace

Bony Thorax – Cont.



Bony Thorax

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Topographic Positioning Landmarks

Vertebra prominence (7th cervical vertebra)

An **important landmark** for determining the central ray (CR) location on (PA) chest projection

Can be **palpated** readily on most patients by applying light pressure with the fingertips at the base of the neck

First prominent process felt as you gently but firmly palpate down the back of the neck with the head

Jugular notch

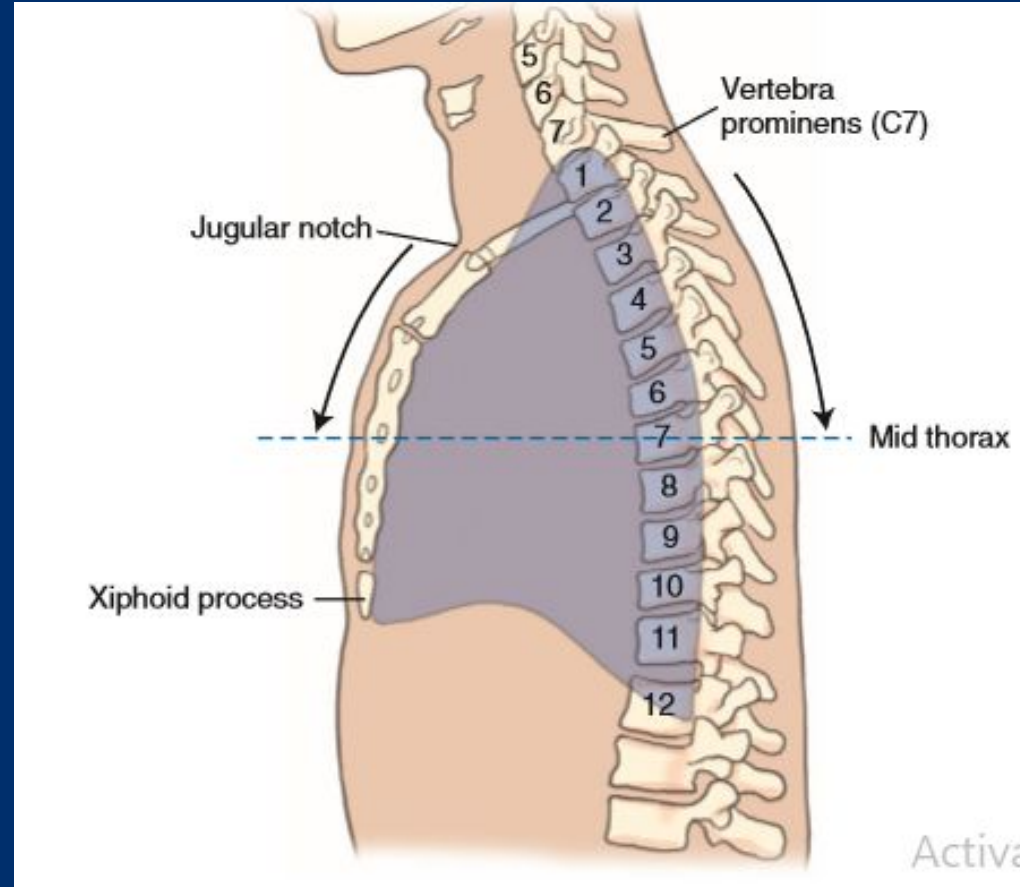
An **important landmark** for determining the CR placement on (AP) chest projections

(manubrial or suprasternal notch)

This is **palpated easily** as a deep notch or depression on the superior portion of the sternum below the thyroid cartilage dropped forward

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Topographic Positioning Landmarks – Cont.



Topographic landmarks

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Lungs

- Located on each side of the thoracic cavity
- **Right lung** is made up of **three lobes** - the superior (upper), middle, and inferior (lower) lobes divided by **two deep fissures**
- **Inferior fissure**, which separates the inferior and middle lobes, is called the oblique fissure

Lungs – Cont.

- **Horizontal fissure** separates the superior and middle lobes
- **Left lung** has only **two lobes** - the superior (upper) and inferior (lower)
- Separated by a **single deep oblique fissure**
- Composed of a light, spongy, highly elastic substance called parenchyma, allows for the breathing mechanism responsible for expansion and contraction of the lungs

Lungs – Cont.

- Each lung is contained in a delicate double-walled sac, or membrane, called the pleura
- Outer layer of this pleural sac lines the inner surface of the chest wall and diaphragm and is called the parietal pleura
- Inner layer that covers the surface of the lungs, also dipping into the fissures between the lobes, is called the pulmonary or visceral pleura

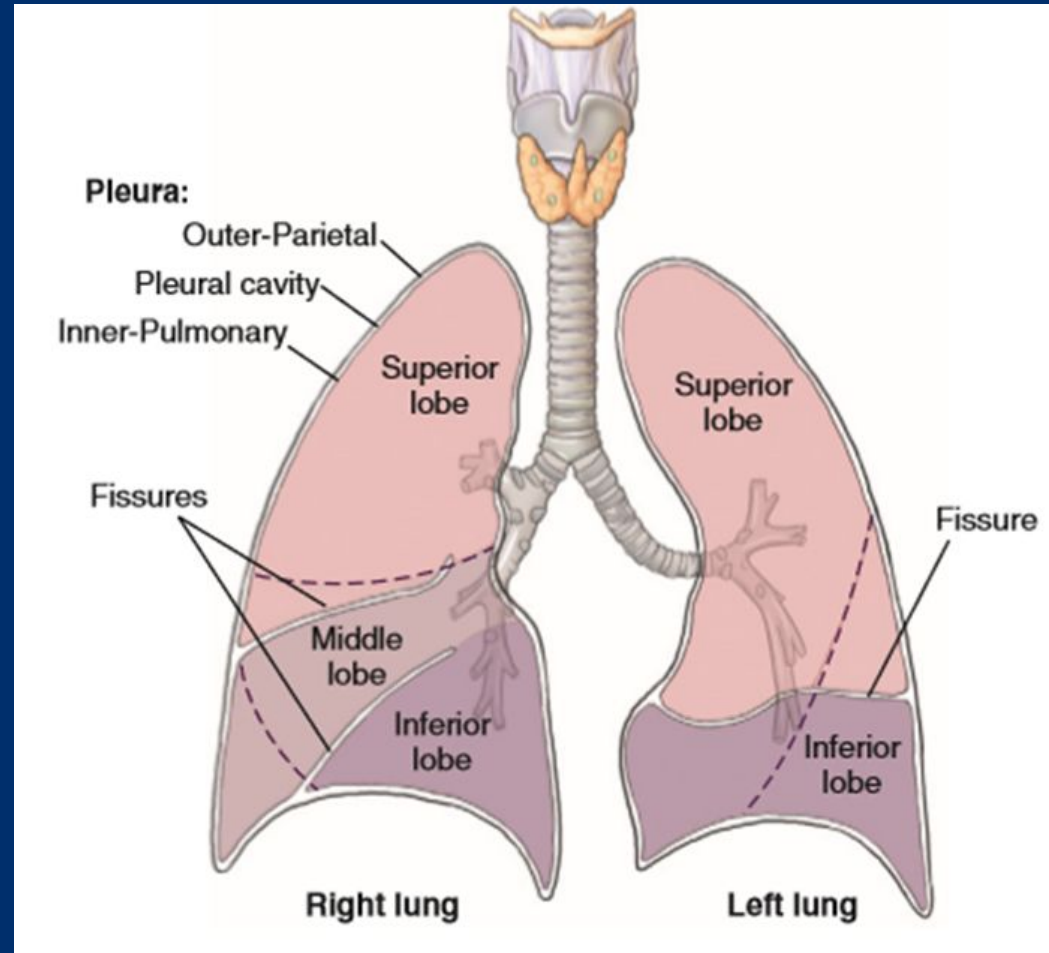
Lungs – Cont.

- **Potential space between the double-walled pleura**, called the **pleural cavity**, contains a lubricating fluid that allows movement of one or the other during breathing
- When a lung collapses, or when air or fluid collects between these two layers, this space may be visualized radiographically

Lungs – Cont.

- Air or gas present in this pleural cavity results in a condition called a **pneumothorax**, air or gas pressure in the pleural cavity may cause the lung to collapse
- Accumulation of fluid in the pleural cavity (pleural effusion) creates a condition called a **haemothorax**

Lungs – Cont.



Lungs

Reference: The Textbook of Radiographic Positioning & Related Anatomy, 8th Edition (ISBN 978-0-323-08388-1). Authors Kenneth L. Bontrager and John P. Lampignano.

Parts of Lungs

Radiographically important parts of the lungs

Diaphragm (E) is a muscular partition that separates the thoracic and abdominal cavities

Apex (B)

The rounded upper area above the level of the clavicles

Important part of the lungs must be included on chest radiographs

Carina (C)

The point of bifurcation, the lowest margin of the separation of the trachea into the right and left bronchi

Base (C)

Each lung is the lower concave area of each lung that rests on the diaphragm (E)

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Parts of Lungs – Cont.

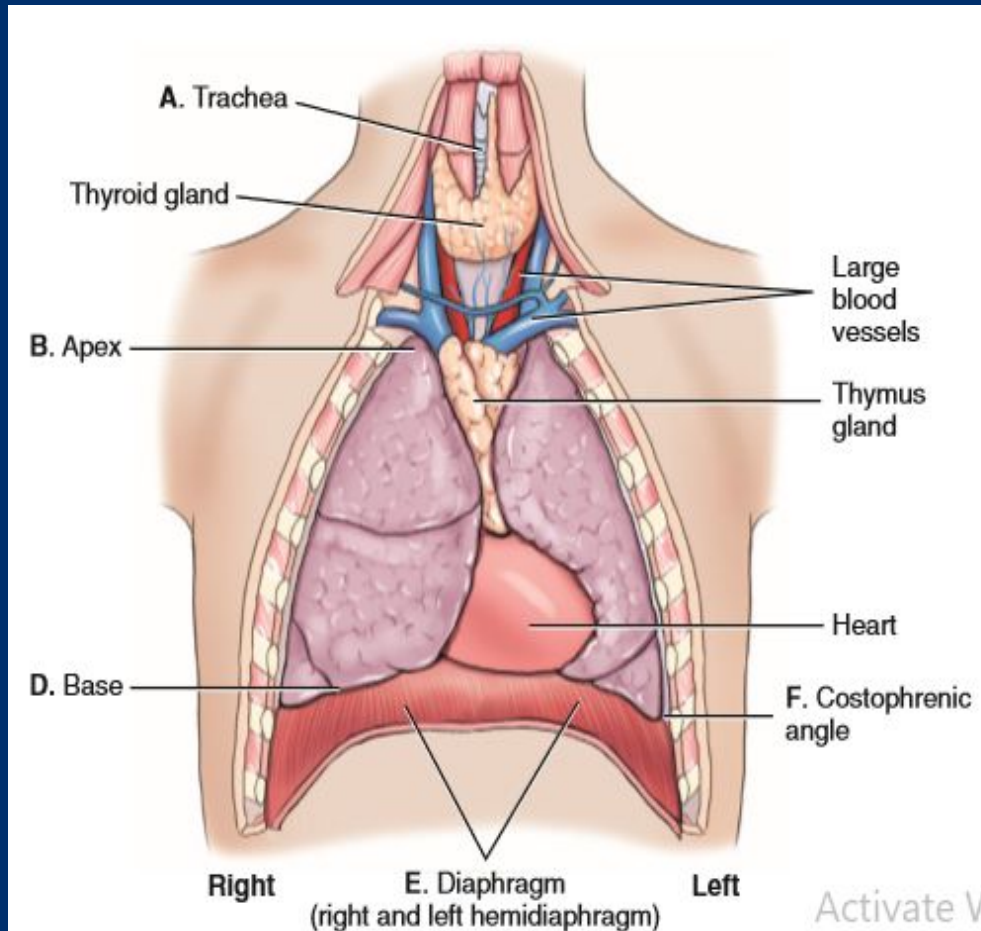
- **Costophrenic angle** (F) refers to the extreme outermost lower corner of each lung, where the diaphragm meets the ribs
- Relative locations of the uppermost and lowermost parts of the **lungs - the apices** and the costophrenic angles, respectively should be included **on every chest radiograph**

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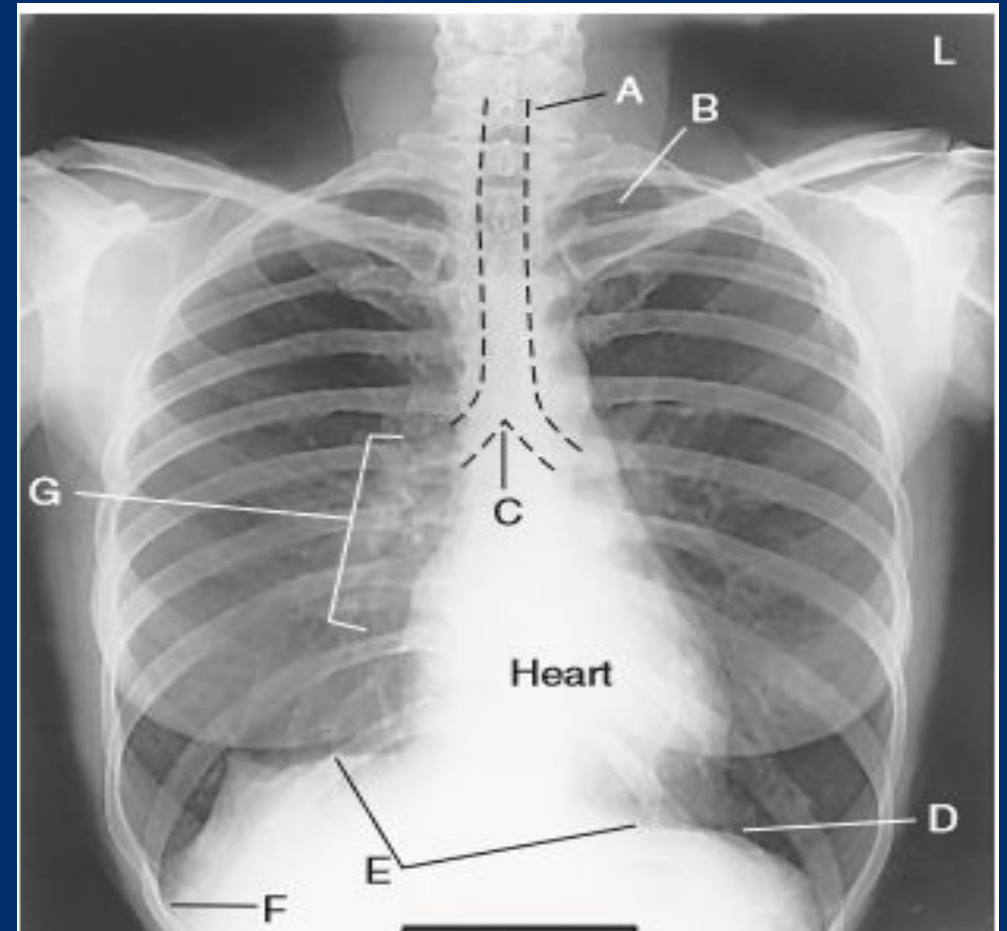
Parts of Lungs – Cont.

- Pathology, such as a small amount of **fluid collection**, would be evident at these costophrenic angles in the **erect** position
- **Hilum** (G), also known as the root region, is the central area of each lung, where the bronchi, blood vessels, lymph vessels, and nerves enter and leave the lungs

Parts of Lungs – Cont.



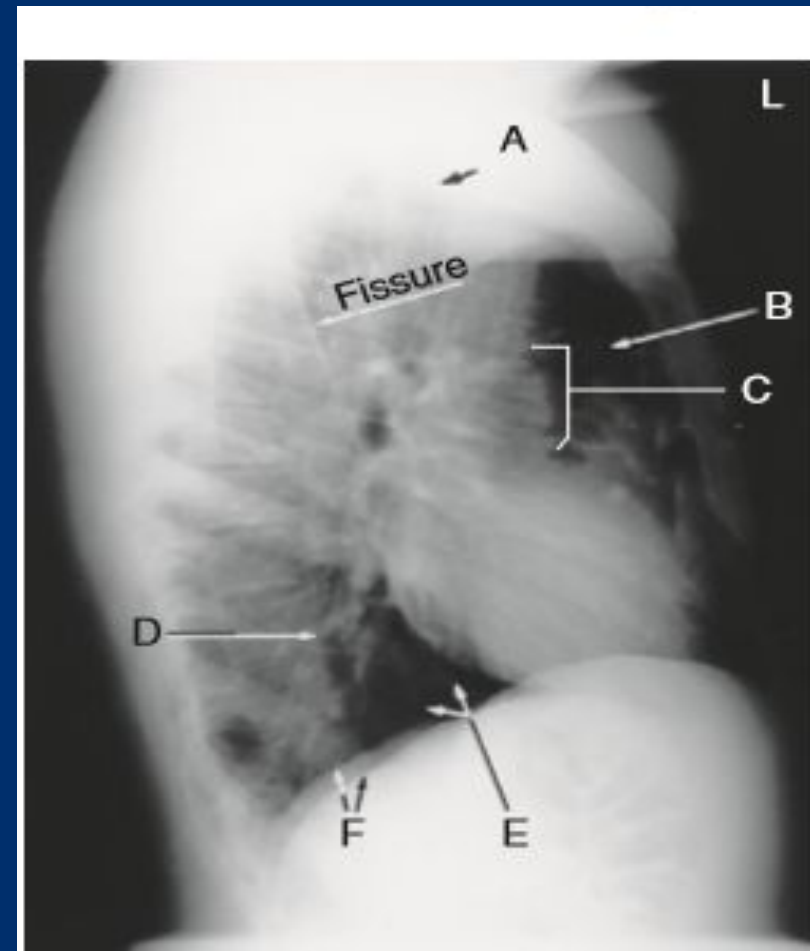
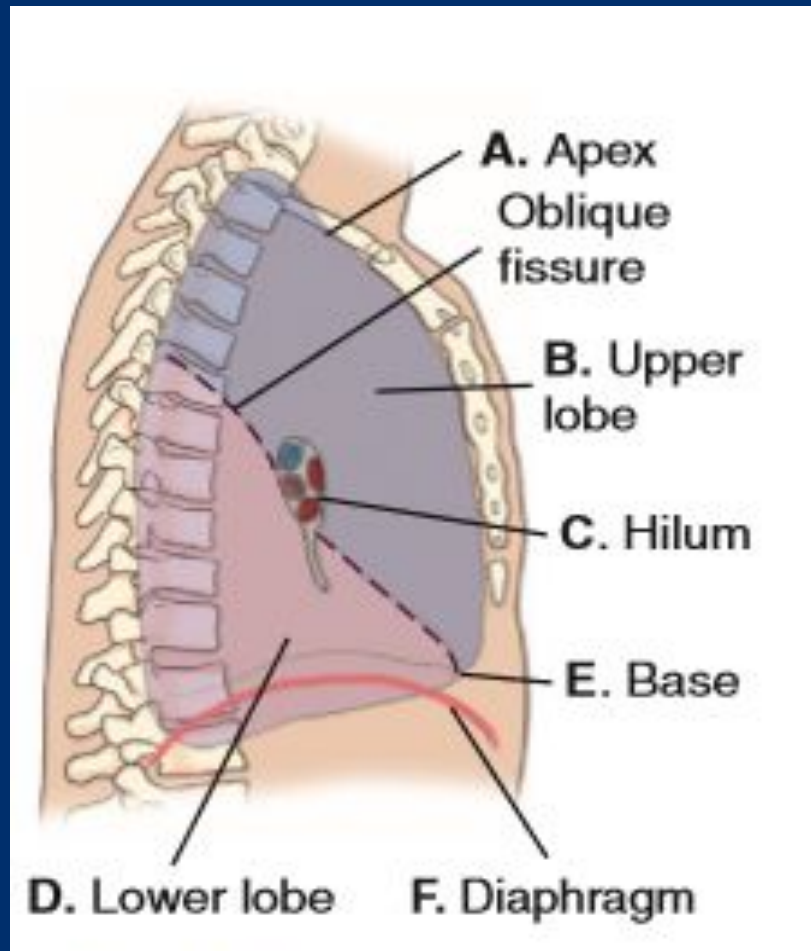
Lungs



PA chest radiograph

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Parts of Lungs – Cont.



Lateral Chest View

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THANK YOU !