Thorax

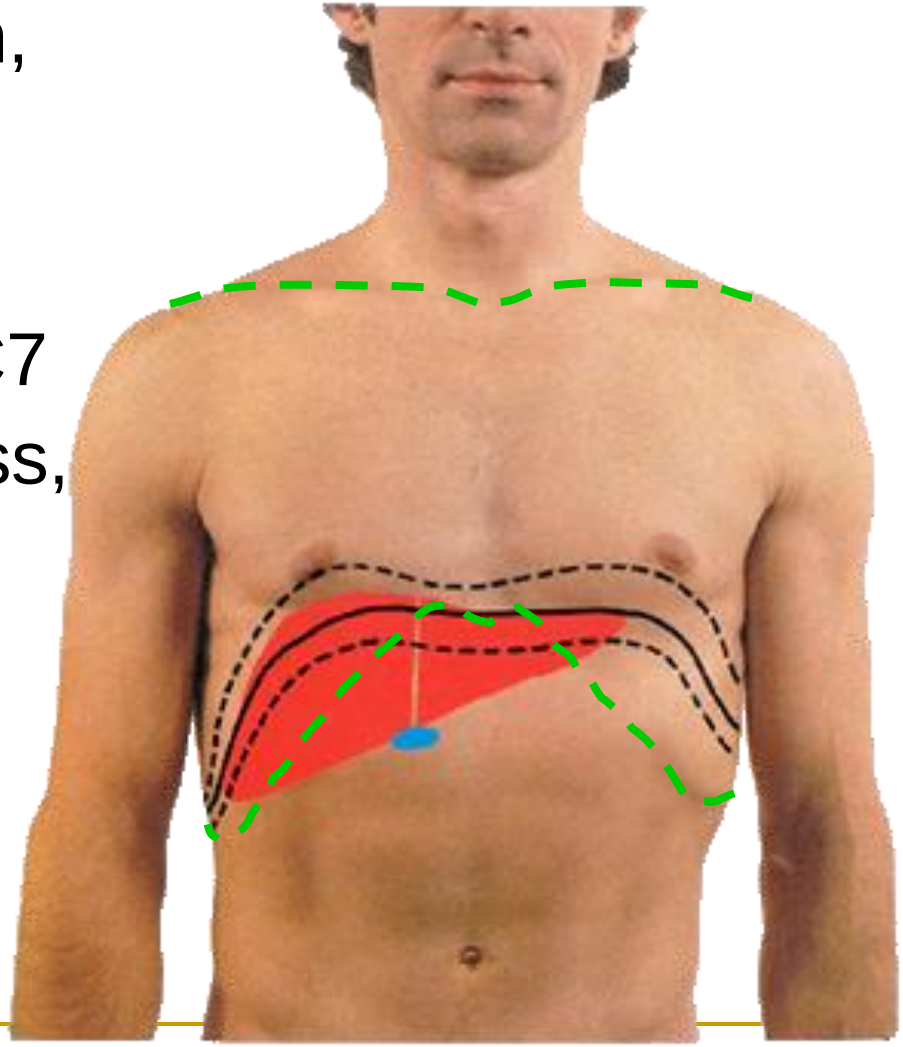
- Superior part of the trunk between the neck and abdomen. The thoracic cavity, surrounded by the thoracic wall, contains the heart, lungs, thymus, distal part of the trachea, and most of the esophagus.

Boundaries

- Superior - jugular notch, sternoclavicular joint, superior border of clavicle, acromion, spinous processes of C7
- Inferior - xiphoid process, costal arch, 11th and 12th ribs, vertebra T12

Regions

- Thoracic wall
- Thoracic cavity



THORACIC WALL

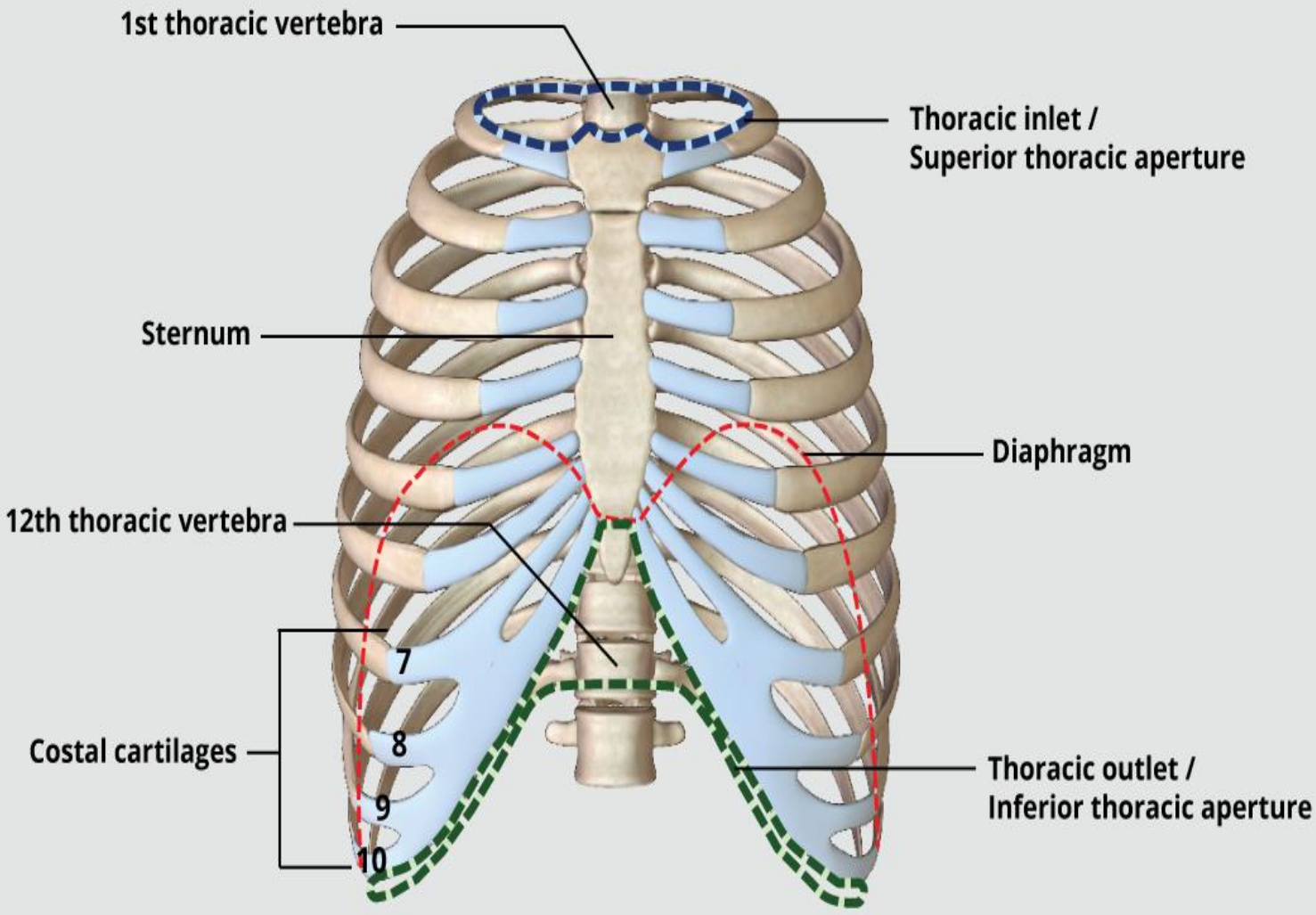
- The thoracic wall consists of skin, fascia, nerves, vessels, muscles, cartilages, and bones. The functions of the thoracic wall include protecting the thoracic and abdominal internal organs

Skeleton of Thoracic Wall

- The thoracic skeleton forms the osteocartilaginous thoracic cage.
- The thoracic skeleton includes 12 pairs of ribs and costal cartilages, 12 thoracic vertebrae and intervertebral (IV) discs, and the sternum.
- Costal cartilages form the anterior continuation of the ribs, providing a flexible attachment at their articulation with the sternum.

- The ribs and their cartilages are separated by intercostal spaces, which are occupied by intercostal muscles, vessels, and nerves.

INLET AND OUTLET OF THORACIC CAVITY



Thoracic Apertures

- The thoracic cavity communicates with the neck and upper limb through the superior thoracic aperture, the anatomical **thoracic inlet.** Structures entering and leaving the thoracic cavity through this aperture include the trachea, esophagus, vessels, and nerves. The adult superior thoracic aperture measures approximately 6.5 cm anteroposteriorly and 11 cm transversely.

- Because of the obliquity of the first pair of ribs, the superior thoracic aperture slopes anteroinferiorly.
- The superior thoracic aperture is bounded:

Posteriorly by the T1 vertebra.

Laterally by the first pair of ribs and their costal cartilages.

Anteriorly by the superior border of the manubrium.

- The thoracic cavity communicates with the abdomen through the inferior thoracic aperture, the anatomical **thoracic outlet**. In closing the inferior thoracic aperture, the diaphragm separates the thoracic and abdominal cavities almost completely.
- Structures passing to or from the thorax to the abdomen pass through openings in the diaphragm.

- The inferior thoracic aperture is bounded:

Posteriorly by the T12 vertebra.

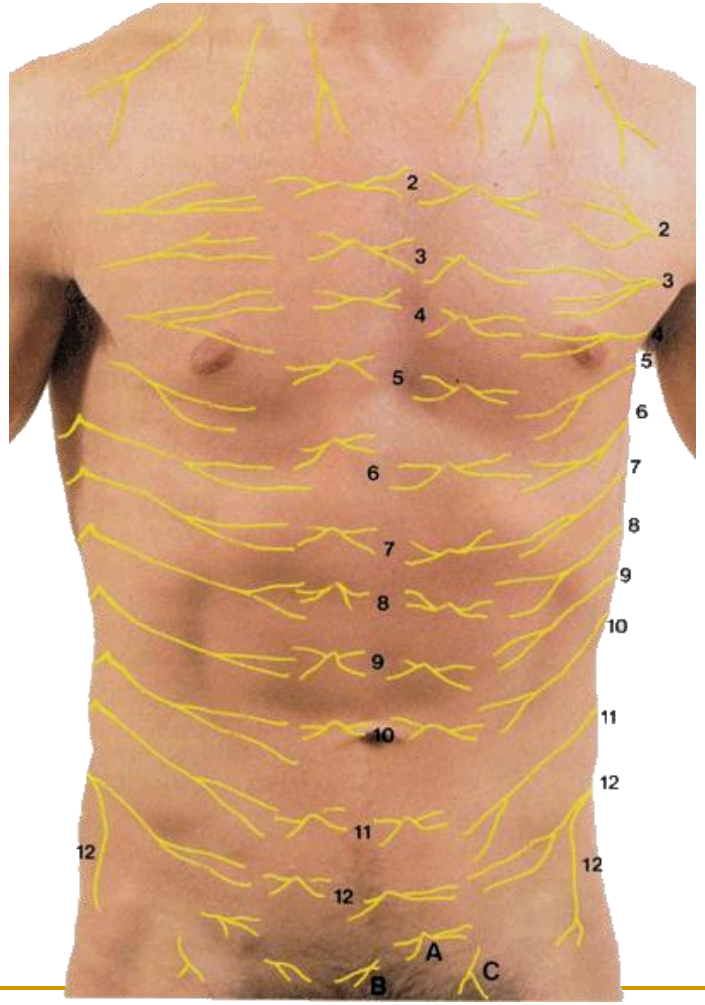
Posterolaterally by the eleventh and twelfth pairs of ribs.

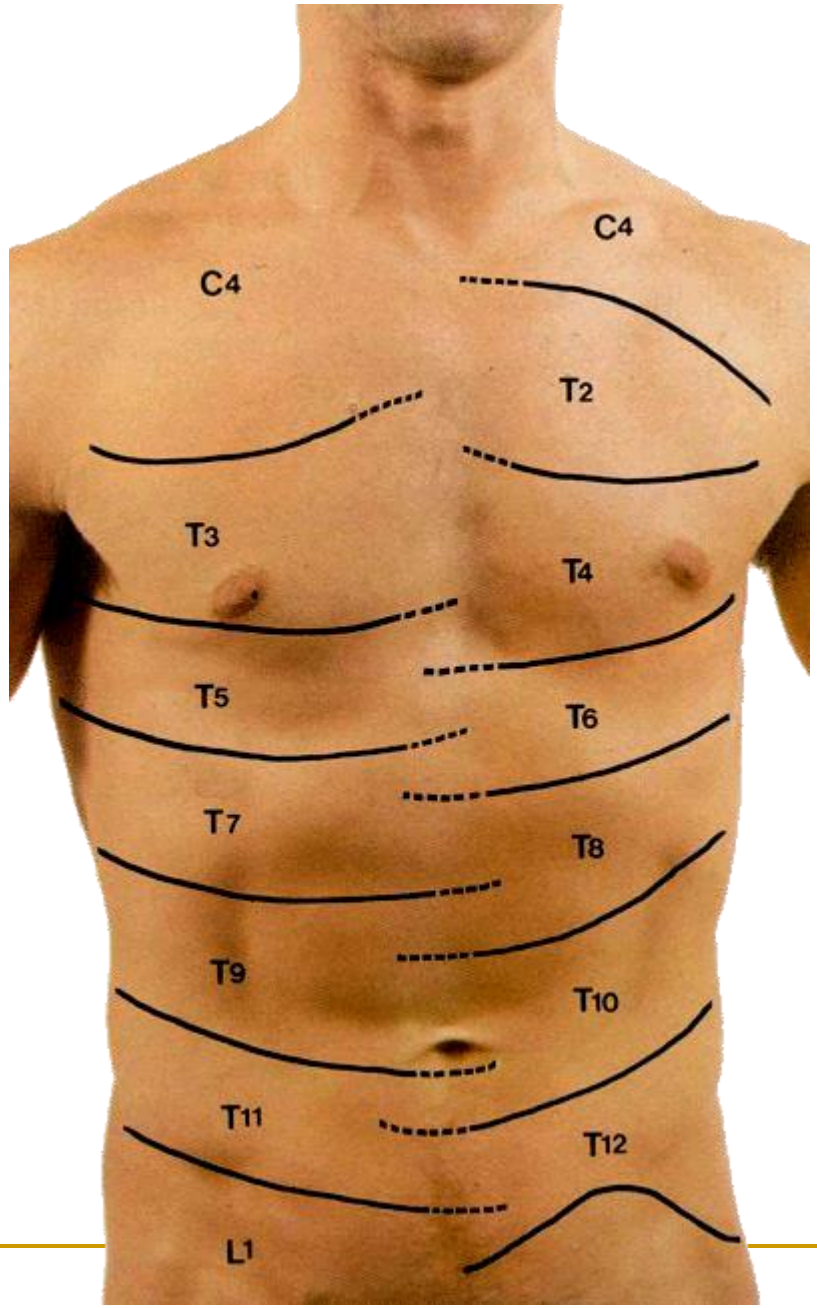
Anterolaterally by the joined costal cartilages of ribs 7-10, forming the costal margin.

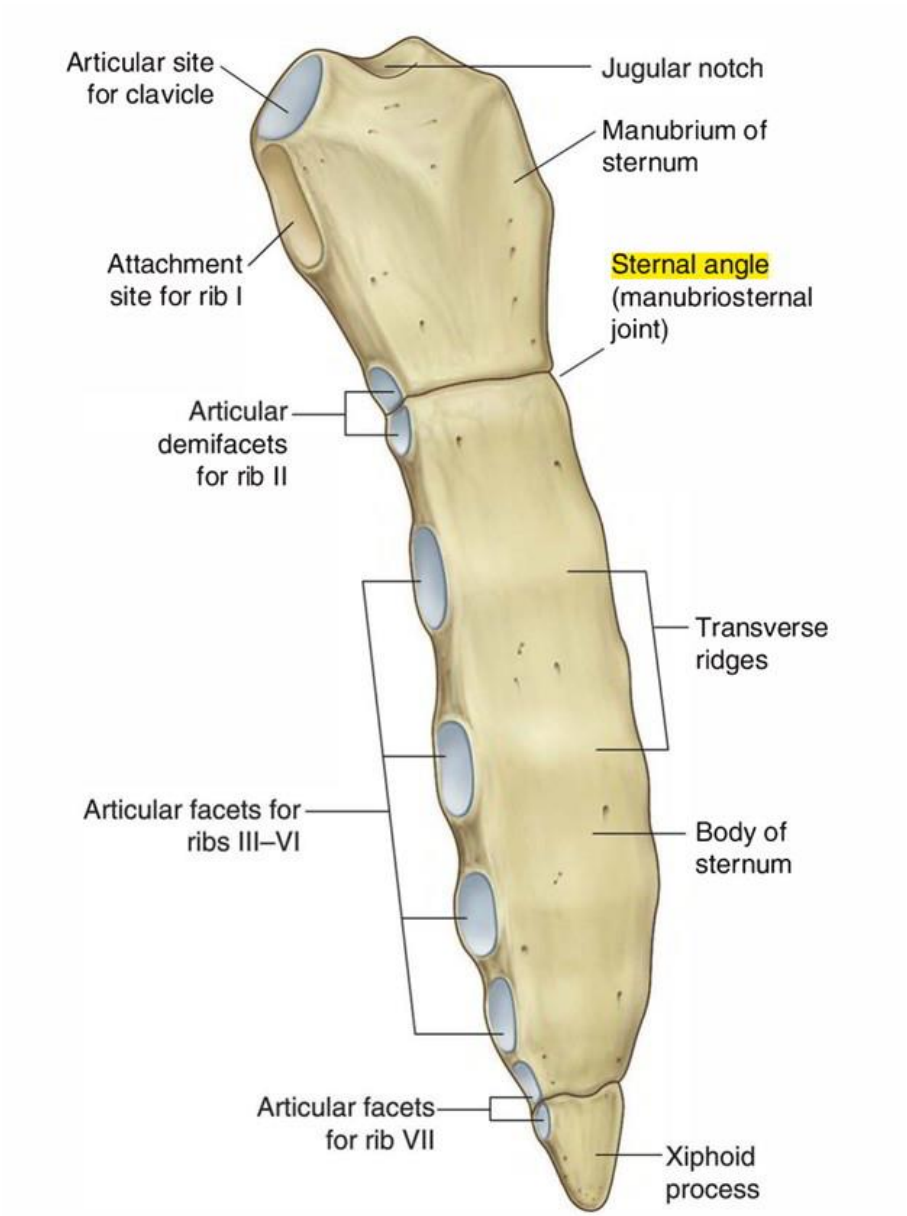
Anteriorly, by the xiphisternal joint.

The segmental innervation of anterior surface of trunk

- T2—sternal angle
- T4— nipple
- T6—xiphoid process
- T8—costal arch
- T10—umbilicus
- T12—midpoint between umbilicus and symphysis pubis




C4
C4
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
L1


Articular site for clavicle
Jugular notch
Manubrium of sternum
Attachment site for rib I
Sternal angle (manubriosternal joint)
Articular demifacets for rib II
Transverse ridges
Articular facets for ribs III–VI
Body of sternum
Articular facets for rib VII
Xiphoid process

STERNAL ANGLE

- Also c/d angle of Louis
- Angle b/w manubrium and body of sternum.
- Manubrium crosses the body of the sternum around 4 cm inferior towards the **jugular notch**, at the **manubriosternal joint**. The sternal angle located at the level of the intervertebral disc between T4 – T5. The 2nd rib combines with the sternum at the sternal angle, and makes it an important site for determining rib number.

Important anatomical landmarks at this level that have surgical, anatomical and clinical significance:

- Termination of ascending aorta,Origination and termination of the aortic arch and commencement of descending aorta.
- Division of the trachea into Rt. And Lt. principal bronchus.
- Division of the pulmonary trunk into Rt and Lt pulmonary arteries.

- Division b/w superior and inferior mediastinum.
- Azygos vein drains into superior vena cava.
- Presence of Cardiac plexus.
- The crossing of Thoracic duct.