

THORAX EXAM DETAILS FROM THORAX EXAM VIDEO

WASH HANDS

- 1. Locate and identify the surface markings of the trachea and major bronchi**
Location of trachea bifurcation into right and left mainstem bronchi:
 - ▶ *Anteriorly: at sternal angle=angle of Louis*
 - ▶ *Posteriorly: at spinous process of T 4**Trachea should be in the midline or just slightly to the right of midline, and it runs from the base of the neck inferiorly and then behind the manubrium of the sternum.*
- 2. Locate and identify the suprasternal notch.**
Above manubrium of the sternum, and between the two sternal heads of the sternocleidomastoid
- 3. Locate and identify the sternal angle of Louis.**
The boney ridge joining the manubrium to the body of the sternum
The second costal cartilages are adjacent to the sternal angle.
- 4. Locate and identify the xiphoid process.**
The boney tip from the bottom of the body of the sternum in the midline
- 5. Counting ribs.**
Anteriorly - The second costal cartilage is adjacent to the sternal angle. An intercostal space is named by the rib above it. Posteriorly, the lowest rib is the twelfth rib. The inferior angle of the scapula is located horizontally at the seventh rib or seventh intercostal space.
- 6. Locate and identify the spinous process of C7 and T1.**
These are the 2 most prominent spinous processes on the neck if the patient flexes the neck.
- 7. Locate and identify the vertebral line.**
A vertical line that runs over the middle of the spinous processes posteriorly
- 8. Locate and identify the inferior angle of the scapula.**
Lowest part of the scapula, normally located horizontally at the 7th rib or 7th intercostal space
- 9. Locate and identify the scapular line.**
A vertical line that runs through the inferior angle of the scapula
- 10. Locate and identify the anterior axillary line.**
A vertical line running inferiorly from the anterior axillary muscle fold

11. **Locate and identify the posterior axillary line.**
A vertical line running inferiorly from the posterior axillary muscle fold
12. **Locate and identify the midaxillary line.**
A vertical line that runs inferiorly from the dome of the axilla
13. **Locate and identify the midsternal line.**
A vertical line that runs through the middle of the sternum and xiphoid process
14. **Locate and identify the midclavicular line.**
A vertical line running through the midpoint of the clavicle and inferiorly

(The purpose of all the above is to help the student describe and locate findings vertically and horizontally around the thorax.)

15. **Locate and identify the surface markings of the lungs, fissures, and lobes.**
LUNGS: ***Anteriorly**, the apex of each lung rises about 2 – 4 cm above the inner third of the clavicle. The lower border of the lung crosses the 6th rib at the midclavicular line. **Laterally**: the lower lung border crosses the 8th rib at the midaxillary line. **Posteriorly**: the lower border of the lung lies at about the level of T 10. During normal breathing, the lower border of the lung may descend about 5-6 cm as the diaphragm contracts.*
FISSURES and LOBES: *Each lung is roughly divided in half by an **oblique=**major fissure. This fissure can be approximated by a line from T3 spinous process posteriorly and then runs obliquely down and around the chest to the sixth rib in the midclavicular line. Posteriorly, above this line are the upper lobes, and below is the **lower lobe**.*

*A **horizontal=**minor fissure also further divides the right lung. Anteriorly, this fissure runs from about the 4th rib and then travels roughly horizontally around the chest wall to the 5th rib in the midaxillary line. Above this fissure is **RUL**, and below is **RML**. Key teaching point: The **right middle lobe** does not have a posterior projection. To exam the **RML**, you need to auscultate/percuss in the lateral and anterior chest.*

16. **Test for respiratory expansion**
*Technique: First, the student should **inspect** the chest wall for symmetric expansion. Second, the student places their hands on the lower posterior chest wall with their thumbs at about the level of the 10th rib and parallel to the 10th rib. As the student grasps the lower chest wall, they should slide their thumbs medially so that they raise a vertical skin fold medial to their thumbs and lateral to the patient's spine. Student should then ask the patient to take a deep breath. As the patient breathes deeply, the student's hands and thumbs should move laterally and equally about 2 –5 inches as the chest expands. The skin fold the student created should also decrease in size as the chest wall expands. If the student starts too close to the midline over the spine, there is usually not enough loose skin available to create a skin fold.*

17. **Test for tactile fremitus**

Purpose for examining for tactile fremitus: detects palpable vibrations transmitted through the broncho-pulmonary tree to the chest wall. In a normal patient, both right and left lungs have normal and equal/ symmetric vibrations that the examiner appreciates. Increased, decreased, or absent tactile fremitus of one lung as compared to the other is abnormal. Admittedly this is a “rough” assessment tool at best, but as a scouting technique it directs the examiner’s attention to possible abnormalities and to areas where the examiner wants to pay particular attention later on in the rest of the lung exam. Technique: Ideally, the student should ask the patient to grab their opposite shoulder with their hands so as to move the scapulae laterally and increase the examinable area of the posterior lung fields.

- ▶ *Must be done on skin, not over a gown or an article of clothing*
- ▶ *Student should place either*
 - i. *the dorsal surface of their fingers or*
 - ii. *the ulnar surface of their hands and fifth fingers or*
 - iii. *the “ball” of their hand (metacarpal phalangeal joints of fingers 2-5) on patient’s posterior chest, beginning at the **top** of the chest first.*

Any of these three positions helps optimize the examiner’s appreciation of vibration through the bones of their hands/fingers.
- ▶ *Student then asks the patient to keep repeating a phrase such as “ninety-nine” or “one-one-one” while they examine the patient for tactile fremitus.*
- ▶ *If the student cannot appreciate the fremitus at first, they should ask the patient to speak more loudly or in a deeper voice.*
- ▶ *The student should examine for tactile fremitus in at least three locations posteriorly (upper, middle, and lower chest wall) and then one area laterally (remember the right middle lobe has no posterior projection.)*

18. **Demonstrate the technique of percussion**

- ▶ *Purpose of percussion: to determine if the tissues 5-7 cm deep to/underlying the percussed site are air filled (normal lung), fluid filled (e.g., pleural effusion), or solid (e.g., tumor/mass).*
- ▶ *Technique of percussion:*
 - *Ideally, the student should ask the patient to grab their opposite shoulders with their hands so as to move the scapulae laterally and increase the examinable area of the lung fields.*
 - *Must be done on skin, not over a gown or an article of clothing*
 - *Student places the end of (from the DIP joint to the tip of the finger) their index or middle finger firmly against the patient’s posterior chest, ideally in an intercostal space and not over a rib.*
 - *No other part of the student’s hand should be resting on the patient’s posterior chest. If they rest more of their finger or hand against the posterior chest, the student dampens the percussed sound.*
 - *Using the other hand’s index and/or middle finger, the student quickly strikes at the finger on the chest and withdraws the percussing finger quickly. If the percussing finger is left on the chest, this will also dampen the percussed sound.*

- *The action of percussion works best if the percussing hand's wrist is already close to the chest wall and the act of percussing comes from flexion at the wrist. Flexion of the percussing finger alone does not provide enough strength to create a percussed sound. Also, if the percussing hand is far from the patient's chest, it is very difficult to accurately strike the finger on the chest.*
- *The student should **always start at the top** of the lungs and should **always compare right side to left** at a given level. How many areas that need to be percussed is debatable. Bates recommends 7 different areas posteriorly and 3 anteriorly. It is probably sufficient for the student to assess the same areas by percussion as they did by tactile fremitus – upper, middle, and lower posterior chest wall and then lateral chest wall.*

19. **State the five percussion notes and their characteristics**

<u>Percussion Note</u>	<u>Intensity</u>	<u>Pitch</u>	<u>Duration</u>	<u>Example of Location</u>
<i>Flatness:</i>	<i>Soft</i>	<i>High</i>	<i>Short</i>	<i>Thigh</i>
<i>Dullness:</i>	<i>Medium</i>	<i>Medium</i>	<i>Medium</i>	<i>Liver</i>
<i>Resonance:</i>	<i>Loud</i>	<i>Low</i>	<i>Long</i>	<i>Normal lung</i>
<i>Hyperresonance:</i>	<i>Very loud</i>	<i>Lower</i>	<i>Longer</i>	<i>None normally</i>
<i>Tympany:</i>	<i>Loud</i>	<i>High</i>		<i>Gastric air bubble or puffed-out cheek</i>

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