

Chest Examination Benchmarks

Preparation and Positioning

The only equipment you will need for the chest exam is your stethoscope. The patient should be sitting up. If a hospitalized patient cannot sit up, ask him to roll to one side to auscultate the posterior lung fields, with assistance if needed.

The steps of the exam are:

1. Inspection	Observe respiratory effort and note any signs of respiratory distress
	Inspect the skin as you perform the chest exam
2. Palpation	Assess symmetry of respiratory excursion
	Assess tactile fremitus
3. Percussion	Percuss the chest posteriorly, comparing the right and left side from the apices to the interscapular areas to the bases
	Percuss the spine and the costovertebral angles, observing for focal tenderness
4. Auscultation	Auscultate the chest using the diaphragm of the stethoscope placed firmly on bare skin, comparing left to right at each level: <ul style="list-style-type: none">○ Posteriorly, from the apex to the interscapular area to the base○ Laterally, in the midaxillary line○ Anteriorly, over the upper lobes and right middle lobe

1. Inspection	Observe respiratory effort and note any signs of respiratory distress
	Inspect the skin as you perform the chest exam

Tips on Technique:

- Untie the gown in the back as you examine the chest, rather than slipping your stethoscope beneath it. This will give you a better view of the skin, and make percussion easier later in the exam.

Abnormal Findings:

- Accessory muscle use is defined as contraction of muscles other than the diaphragm during inspiration, usually the sternocleidomastoids and scalenes. It is a finding of COPD or another cause of respiratory muscle fatigue.
- Nasal flaring. This is another sign of respiratory distress, more common in children than adults.
- Paradoxical movement of the abdomen is a sign of diaphragmatic weakness or fatigue. Normally, the abdomen moves outward during inspiration as the diaphragm contracts and descends. If the diaphragm is weak, it is pulled into the chest in inspiration and pulls the abdomen in with it. Paradoxical movement is defined as inward movement of the abdominal muscles during inspiration.
- Intercostal retractions. This is a finding of obstructive lung disease. Increased airway resistance causes slow filling of the lungs, so the negative pleural pressure generated in inspiration pulls the intercostal muscles inward.

2. Palpation	Assess symmetry of respiratory excursion
	Assess tactile fremitus

Tips on Technique:

- To assess tactile fremitus, place your hands on the posterior chest. Ask the patient to repeat any phrase 'one-two-three' or 'ninety-nine'. Move your hands over the posterior lung fields and middle lobes, comparing the vibration on one side to the other. Tactile fremitus should be symmetric.

Abnormal Findings:

- Decreased excursion of the chest:
 - Unilateral: consolidation or pleural effusion
 - Bilateral: COPD or neuromuscular disease
- Asymmetric tactile fremitus:
 - Decreased vibration occurs over pleural effusion, pneumothorax, or large pulmonary blebs
 - Increased vibration occurs over consolidated lung, as in pneumonia

3. Percussion	Percuss the chest posteriorly, comparing the right and left side from the apices to the interscapular areas to the bases
	Percuss the spine and the costovertebral angles, observing for focal tenderness

Tips on Technique:

- To percuss, press the distal interphalangeal joint of the left middle finger onto the chest, and strike it with the right middle finger. Let your right hand swing freely at the wrist. Reverse if you are left handed.
- Compare resonance side to side. Differences in resonance may be both felt and heard.

Abnormal Findings:

- Dullness occurs when normal lung tissue has been filled with or displaced by fluid or solid tissue:
 - Pneumonia
 - Pleural effusion
 - Cancer
- Hyperresonance occurs when normal lung tissue is replaced by air. It is suggestive of:
 - Obstructive lung disease
 - Pneumothorax

4. Auscultation	<p>Auscultate the chest using the diaphragm of the stethoscope placed firmly on bare skin, comparing the left and right sides at each level:</p> <ul style="list-style-type: none"> ○ Posteriorly, from the apex to the interscapular area to the base ○ Laterally, in the midaxillary line ○ Anteriorly, over the upper lobes and right middle lobe
------------------------	---

Abnormal Findings:

- Bronchial breath sounds are normally heard over central airways. If they are heard peripherally, they suggest underlying consolidation.
- Crackles are discontinuous sounds. Most are caused by the sudden reopening of partially collapsed airways. Crackles that disappear promptly when the patient coughs may be caused by air bubbling through airway secretions.

- Fine crackles sound like hairs being rubbed together or fine Velcro being pulled apart. They are thought to originate in small distal airways. Fine crackles are characteristic of interstitial lung disease.
- Coarse crackles are typically louder, lower in pitch than fine crackles, and less frequent. They are thought to originate in larger airways, and are typical of chronic obstructive pulmonary disease.
- Crackles from congestive heart failure and pneumonia often fall in between fine and coarse.
- Wheezes ARE high-pitched musical sounds produced by the flow of air forced through tightly constricted airways, as in asthma or COPD exacerbations.
- Pleural rubs are creaky, “sandpaper” sounds caused by inflamed visceral and parietal pleura rubbing together.
- Stridor: Whistling or shrieking noise caused by airway obstruction
 - Inspiratory stridor suggests upper airway obstruction, a medical emergency
 - Expiratory stridor alone suggests obstruction of a lower airway, as with an aspirated foreign body
- Egophony: If consolidation is suspected clinically, auscultate over the area of suspected consolidation while asking the patient to say “E.” It may sound like “A” in areas of pulmonary consolidation.