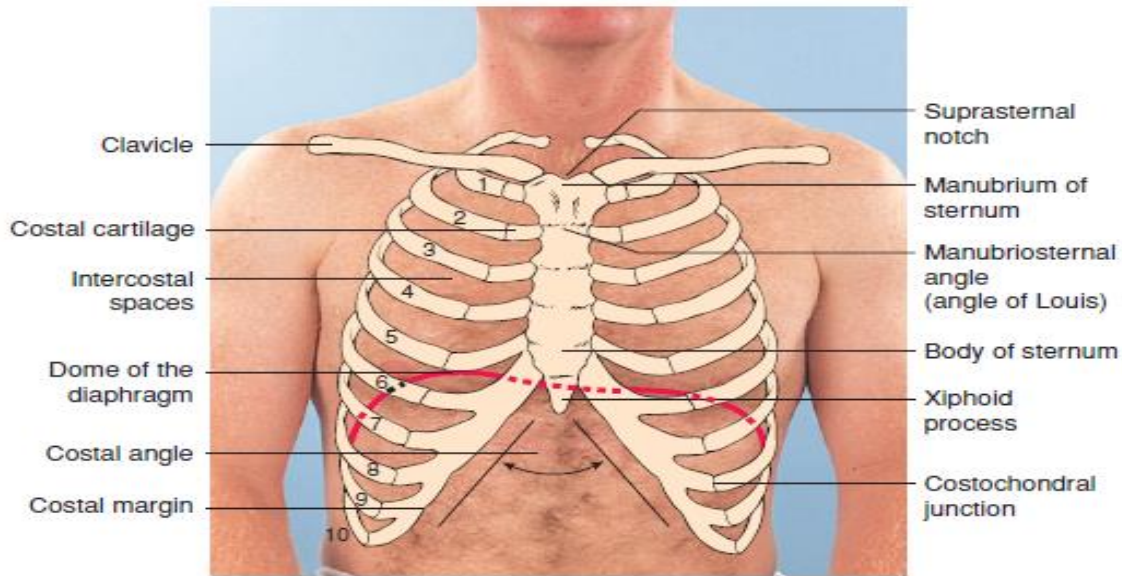


Module Four

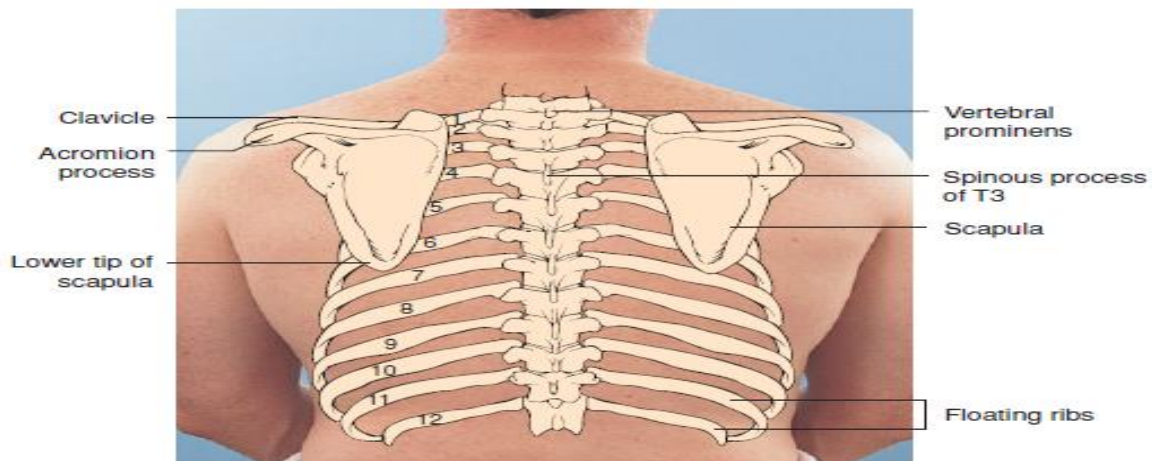


Physical examination of Respiratory Assessment

THORACIC CAGE:



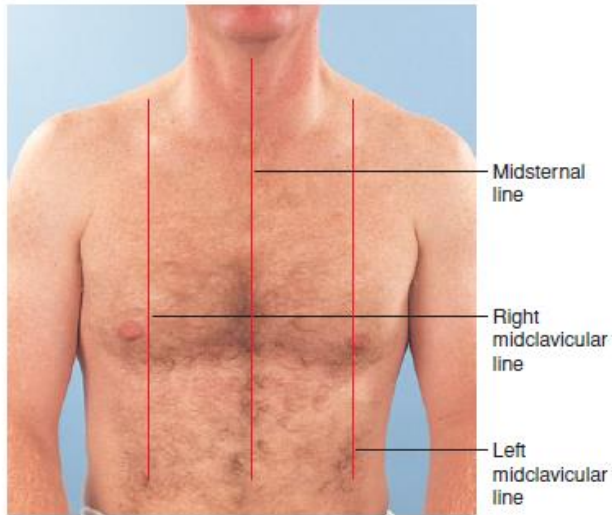
Anterior thoracic cage



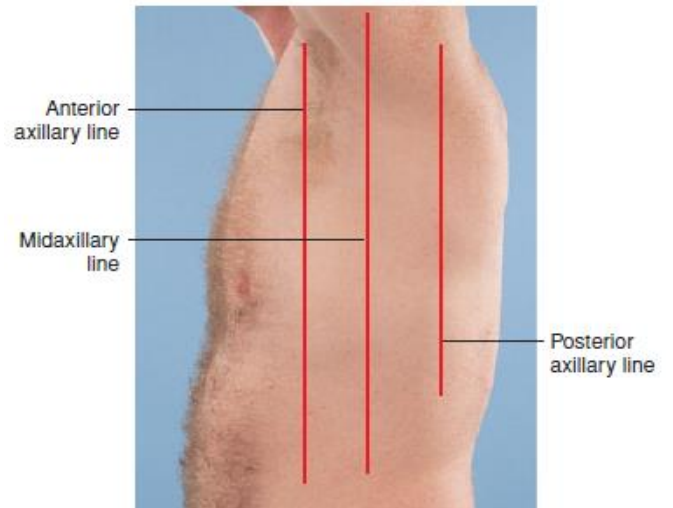
Posterior thoracic cage

Reference lines:

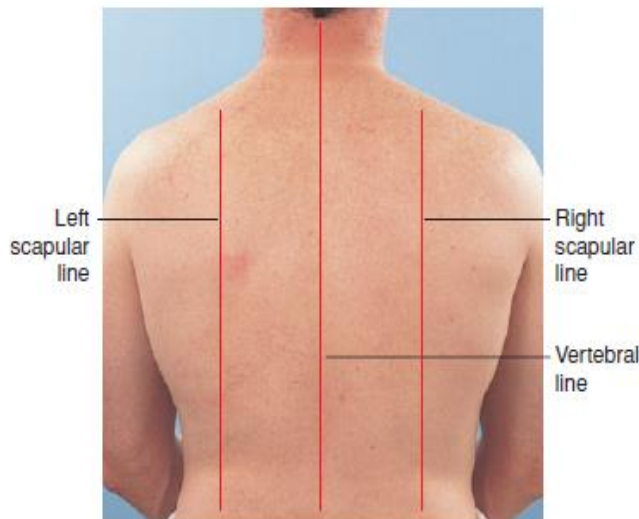
Anterior vertical lines



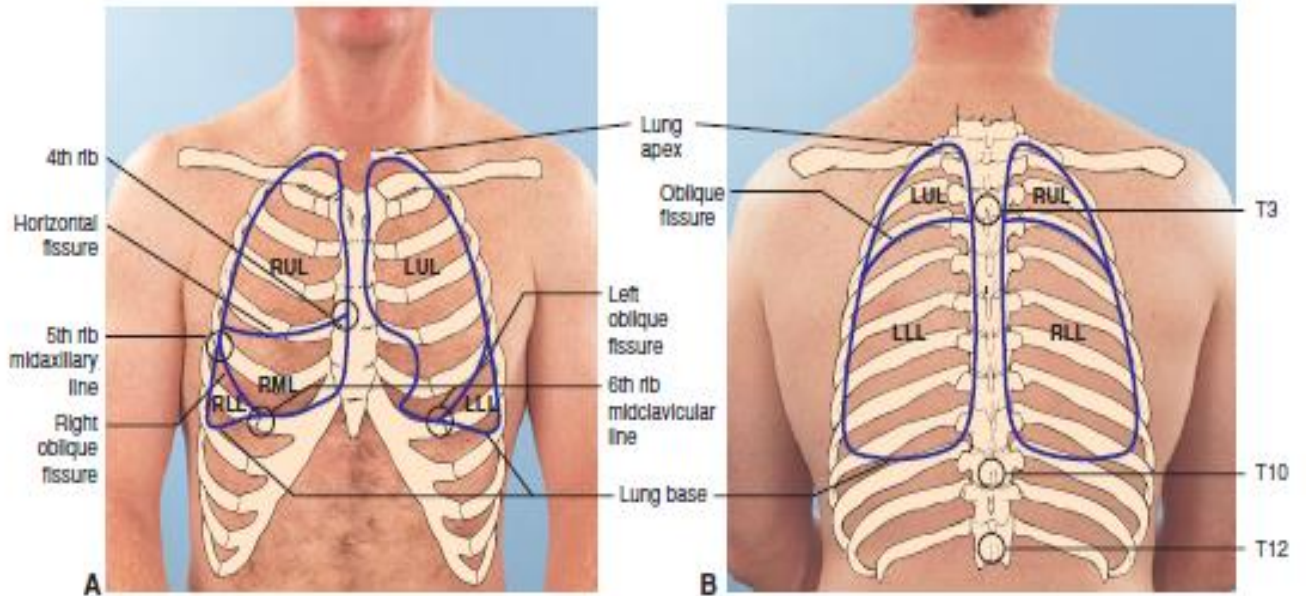
Lateral vertical line



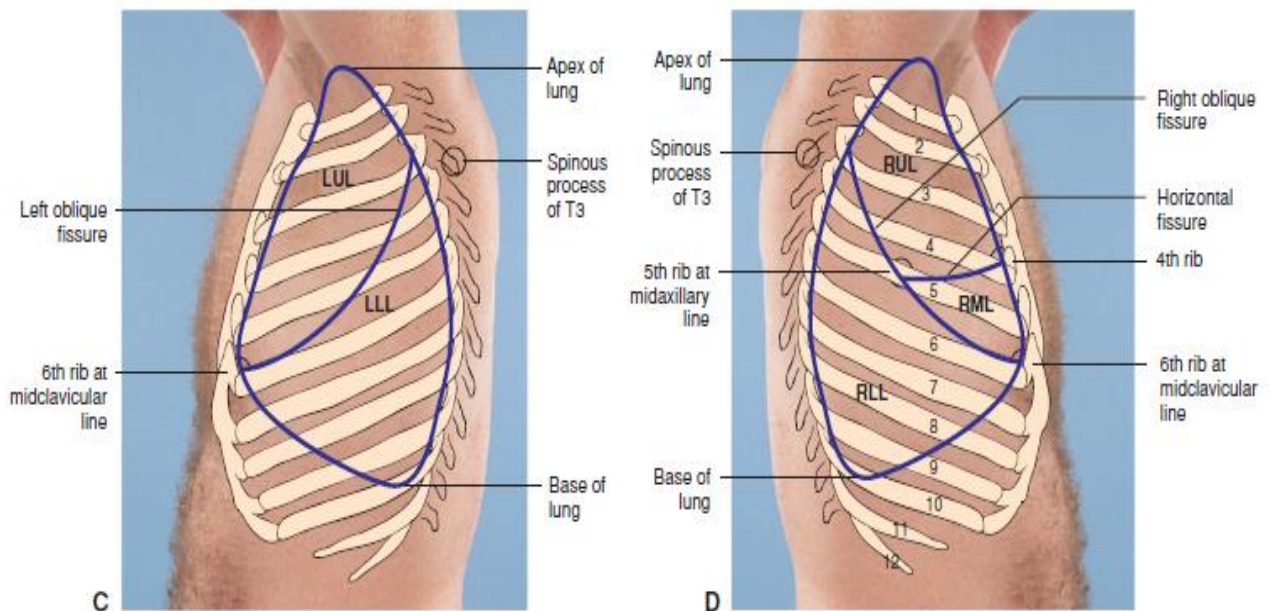
Posterior vertical lines



Position of the Lungs:



(A) Anterior view of lung position (B) Posterior view of lung position



(C) Lateral view of left lung position (D) Lateral view of Right lung position

Equipment:

- EXAMINATION GOWN AND DRAPE
- GLOVES
- STETHOSCOPE
- LIGHTSOURCE
- MASK
- SKIN MARKER
- METRIC RULER



Assessment Procedure	Normal finding	Abnormal finding
General		
Inspection		
Inspect for nasal flaring and pursed lip breathing.	Nasal flaring is not observed.	Nasal flaring is indicative of hypoxia. Pursed lip breathing may be seen in asthma, emphysema, or CHF.
Observe color of face, lips, and chest.	The client has evenly colored skin tone, without unusual or prominent discoloration.	Ruddy to purple in clients with COPD or CHF as a result of polycythemia. Cyanosis may be seen if client is cold or hypoxic.
Inspect color and shape of nails.	Pink tones should be seen in the nailbeds.	Pale or cyanotic nails may indicate hypoxia. Clubbing can occur from hypoxia.

Posterior Thorax

INSPECTION

Inspect configuration. While the client sits with arms at the sides, stand behind the client and observe the position of scapulae and the shape and configuration of the chest wall.



Normal chest configuration.



Scapulae are symmetric and nonprotruding.

Shoulders and scapulae are at equal horizontal positions.

The ratio of anteroposterior to transverse diameter is 1:2.

Spinous processes appear straight, and thorax appears symmetric, with ribs sloping downward.

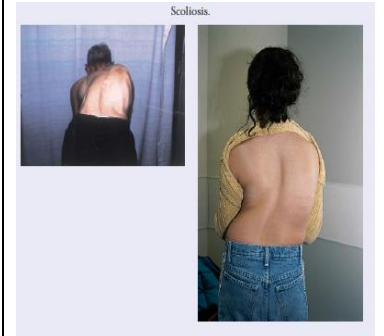
**OLDER ADULT
CONSIDERATIONS**

Kyphosis (an increased curve of the thoracic spine) is common in older and it may be a normal finding.

Kyphosis.



Spinous processes that deviate laterally in the thoracic area may indicate scoliosis.






Spinal configurations may have respiratory implication.

barrel chest: result of an increased ratio between the anteroposterior transverse diameter due to emphysema (hyperinflation of the lungs).

Barrel chest.



<p>Observe use of accessory muscles. Watch as the client breathes and note use of muscles.</p>	<p>The client does not use accessory (trapezius/ shoulder) muscles to assist breathing.</p>	<p>Use accessory muscle in cases of acute and chronic airway obstruction or atelectasis.</p>
<p>Inspect the client's positioning. Note the client's posture and ability to support weight while breathing comfortably.</p>	<p>Client should be sitting up and relaxed, breathing easily with arms at sides or in lap</p>	<p>Client leans forward and uses arms to support weight and lift chest to increase breathing capacity, referred to as the tripod position. This is often seen in COPD.</p> 
<p>PALPATION</p>		
<p>Palpate for tenderness and sensation. Palpation may be performed with one or both hands.</p> <p>Use your fingers to palpate for tenderness, warmth, pain, or other sensations. Start toward the midline at the level of the left scapula (over the apex of the left lung) and move your hand left to right, comparing findings bilaterally. Move systematically downward and out to cover the lateral portions of the lungs at the bases.</p> 	<p>Client reports no tenderness, pain, or unusual sensations. Temperature should be equal bilaterally.</p>	<p>Tender or painful areas may indicate fibrous connective tissue.</p> <p>Pain over the intercostal spaces may be from inflamed pleurae.</p> <p>Pain over the ribs is a symptom of fractured ribs.</p> <p>Increased warmth may be related to local infection.</p>

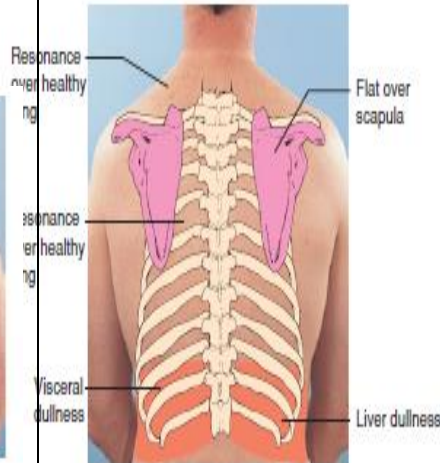
<p>Palpate for crepitus. Crepitus, also called subcutaneous emphysema, is a crackling sensation that occurs when air passes through fluid or exudate.</p> <p>Use your fingers and follow the sequence when palpating.</p>	<p>The examiner finds no palpable crepitus.</p>	<p>In such situations, mark margins and monitor to note any decrease or increase in the crepitant area.</p>
<p>Palpate for fremitus. Following the sequence described previously, use the ball or ulnar edge of one hand to assess for fremitus (vibrations of air in the bronchial tubes transmitted to the chest wall). As you move your hand to each area, ask the client to say “ninety-nine.” Assess all areas for symmetry and intensity of vibration.</p> <p>CLINICAL TIP</p> <p>The ball of the hand is best for assessing tactile fremitus because the area is especially sensitive to vibratory sensation</p> <p>Assess chest expansion. Place your hands on the posterior chest wall with your thumbs at the level of T9 or T10 and pressing together a small skin fold. As the client takes a deep breath, observe the movement of your thumbs.</p> 	<p>fremitus should remain symmetric for bilateral positions.</p> <p>When the client takes a deep breath, the examiner’s thumbs should move 5 to 10 cm apart symmetrically.</p>	<p>Unequal fremitus is usually the result of consolidation (which increases fremitus)</p> <p>Bronchial obstruction, emphysema, pleural effusion, or pneumothorax (which all decrease fremitus).</p> <p>Unequal chest expansion can occur with atelectasis, pneumonia, trauma, or pneumothorax (air in the pleural space).</p>

PERCUSSION

Percuss for tone. Start at the apices of the scapulae and percuss across the tops of both shoulders. Then percuss the intercostal spaces across and down, comparing sides. Percuss to the lateral aspects at the bases of the lungs, comparing sides.



Resonance is the percussion tone elicited over normal lung tissue. Percussion elicits flat tones over the scapula.



Hyperresonance is elicited in cases such as emphysema or pneumothorax.

Percuss for diaphragmatic excursion. Ask the client to exhale forcefully and hold the breath. Beginning at the scapular line (T7), percuss the intercostal spaces of the right posterior chest wall. Percuss downward until the tone changes from resonance to dullness. Mark this level and allow the client to breathe. Next ask the client to inhale deeply and hold it. Percuss the intercostal spaces from the mark downward until resonance changes to dullness. Mark the level and allow the client to breathe. Measure the distance between the two marks. Perform this assessment technique on both sides of the posterior thorax.

Excursion should be equal bilaterally and measure 3–5 cm in adults. The level of the diaphragm may be higher on the right because of the position of the liver.

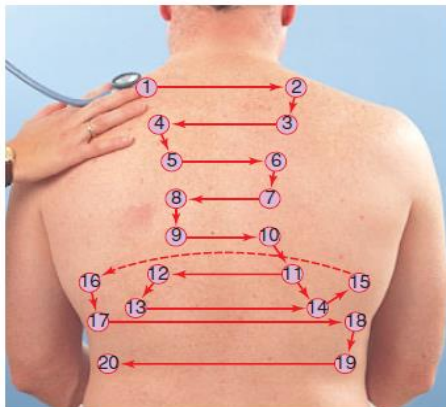


Uneven excursion may be seen with inflammation from unilateral pneumonia, damage to the phrenic nerve, or splenomegaly

AUSCULTATION

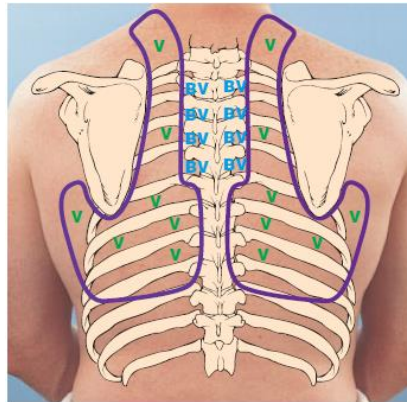
Auscultate for breath sounds. To best assess lung sounds, you will need to hear the sounds as directly as possible. Do not attempt to listen through clothing or a drape, which may produce additional sound. To begin, place the diaphragm of the stethoscope firmly and directly on the posterior chest wall at the apex of the lung at C7. Ask the client to breathe deeply through the mouth for each area of auscultation (each placement of the stethoscope) in the auscultation sequence so that you can best hear inspiratory and expiratory sounds. Be alert to the client’s comfort and offer times for rest and normal breathing if fatigue is becoming a problem.

Auscultate from the apices of the lungs at C7 to the bases of the lungs at T10 and later- ally from the axilla down to the seventh or eighth rib. Listen at each site for at least one complete respiratory cycle. Follow the auscultating sequence shown.





Three types of normal breath sounds may be auscultated— bronchial, bronchovesicular, and vesicular.

locations of normal breath sounds:



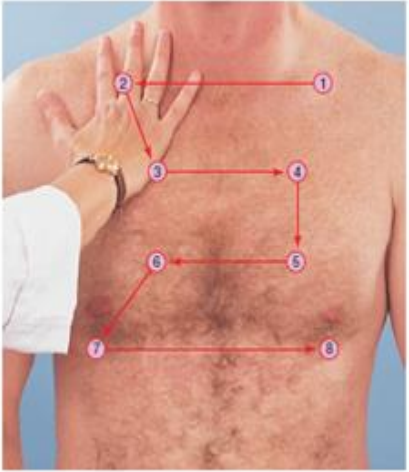
Diminished or absent breath sounds often indicate obstruction within the lungs as a result of secretions, mucus plug, or a foreign object.


Increased (louder) breath sounds often occur when consolidation or compression results in a denser lung area that enhances the transmission of sound.

<p>Auscultate for adventitious sounds. Adventitious sounds are sounds added or superimposed over normal breath sounds and heard during auscultation. Be careful to note the location on the chest wall where adventitious sounds are heard as well as the location of such sounds within the respiratory cycle.</p> <p>CLINICAL TIP</p> <p>If you hear an abnormal sound during auscultation, always have the client cough, then listen again and note any change. Coughing may clear the lungs.</p>	<p>No adventitious sounds, such as crackles or wheezes are auscultated.</p>	<p>crackles and wheezes are evident.</p>
<p>Anterior Thorax Inspection</p>		
<p>Inspect for shape and configuration.</p> <p>Inspect position of the sternum. Observe the sternum from an anterior and lateral viewpoint.</p>	<p>The anteroposterior diameter is less than the transverse diameter.</p> <p>Sternum is positioned at midline and straight.</p>	<p>barrel Funnel chest is a markedly sunken sternum and adjacent cartilages</p> <p><small>Pectus excavatum (funnel chest).</small></p>  <p>Pigeon chest is a forward protrusion of the sternum causing the adjacent ribs to slope back word</p> <p><small>Pectus carinatum (pigeon chest).</small></p>  <p>Both conditions may restrict expansion of the lungs and decrease lung capacity.</p>

<p>Observe quality and pattern of respiration. Note breathing characteristics as well as rate, rhythm, and depth.</p>	<p>Respirations are relaxed, effortless, and quiet, regular rhythm and depth. rate of 12–20 per minute in adults.</p>	<p>Labored and noisy breathing is often seen with severe asthma or chronic bronchitis. Abnormal breathing patterns include tachypnea, bradypnea, hyperventilation, hypoventilation, Cheyne-Stokes respiration, and Biot’s respiration.</p>
<p>Inspect intercostal spaces. Ask the client to breathe normally and observe the intercostal spaces.</p>	<p>No retractions or bulging of intercostal spaces are noted.</p>	<p>Retraction indicates obstruction of the respiratory tract or atelectasis. Bulging indicates emphysema or asthma.</p>
<p>Observe for use of accessory muscles. Ask the client to breathe normally and observe for use of accessory muscles.</p>	<p>Use of accessory muscles (sternomastoid and rectus abdominis) is not seen with normal respiratory effort.</p>	<p>Accessory muscle are used to facilitate inspiration in cases of acute or chronic airway obstruction or atelectasis.</p>

PALPATION

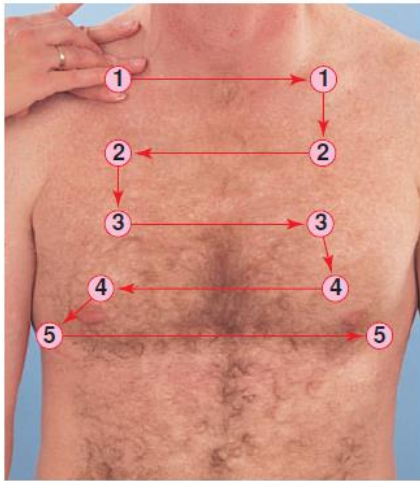
<p>Palpate for tenderness, sensation, and surface masses. Use your fingers to palpate for tenderness and sensation. Start with your hand positioned over the left clavicle (over the apex of the left lung) and move your hand left to right, comparing findings bilaterally. Move your hand systematically downward toward the midline at the level of the breasts and outward at the base to include the lateral aspect of the lung. The established sequence for palpating the anterior thorax serves as a guide for positioning your hands.</p>	<p>No tenderness or pain is palpated over the lung area with respirations.</p>  <p>The diagram shows a sequence of 7 numbered points for palpating the anterior thorax. Point 1 is at the right clavicle, 2 at the left clavicle, 3 at the right breast level, 4 at the left breast level, 5 at the right base, 6 at the left base, and 7 at the right lateral base. Red arrows indicate the path: 1 to 2, 2 to 3, 3 to 4, 4 to 5, 5 to 6, 6 to 7, and 7 to 8 (at the far left base).</p>	<p>Tenderness</p>
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<p>Palpate for crepitus as you would on the posterior thorax.</p>	<p>No crepitus is palpated.</p>	<p>In areas of extreme congestion or consolidation, crepitus may be palpated.</p>
<p>Palpate for fremitus. Using the sequence for the anterior chest described previously, palpate for fremitus using the same technique as for the posterior thorax.</p> <p>CLINICAL TIP</p> <p>When you assess for fremitus on the female client, avoid palpating the breast. Breast tissue dampens the vibrations.</p>	<p>fremitus should be symmetric bilaterally.</p>	<p>Diminished or absent.</p>
<p>Palpate anterior chest expansion. Place your hands on the client's anterolateral wall with your thumbs along the costal margins and pointing toward the xiphoid process. As the client takes a deep breath, observe the movement of your thumbs.</p> 	<p>Thumbs move outward in a symmetric fashion from the midline.</p>	<p>Unequal or decreased chest expansion.</p>

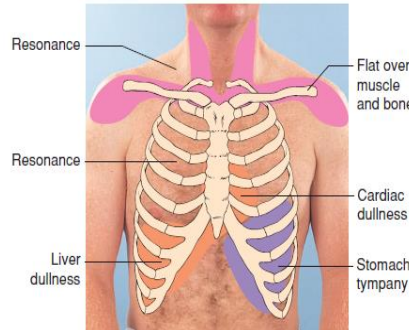
PERCUSSION

Percuss for tone.

Percuss the apices above the clavicles. Then percuss the intercostal spaces across and down, comparing sides.



Resonance is the percussion tone elicited over normal lung tissue.



Hyperresonance is elicited in cases of trapped air such as in emphysema or pneumothorax. Dullness may characterize areas of increased density such as consolidation, pleural effusion, or tumor.

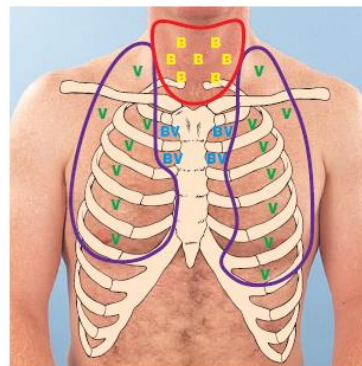
Auscultation

Auscultate for anterior breath sounds, adventitious sounds, and voice sounds.

Place the diaphragm of the stethoscope firmly and directly on the anterior chest wall. Auscultate from the apices of the lungs slightly above the clavicles to the bases of the lungs at the sixth rib. Ask the client to breathe deeply through the mouth in an effort to avoid transmission of sounds that may occur with nasal breathing. Be alert to the client's comfort and offer times for rest and normal breathing if fatigue is becoming a problem, particularly for the older client. Listen at each site for at least one complete respiratory cycle.



Three types of normal breath sounds may be auscultated—bronchial, bronchovesicular, and vesicular.



Abnormal voice sounds.

Performance checklist

Respiratory System

The student nurse should be able to:

Performance criteria	Competency Level						Comment
	Trial 1			Trial 2			
	Done correctly (2)	Done with assistance (1)	Not done (0)	Done correctly (2)	Done with assistance (1)	Not done (0)	
<ul style="list-style-type: none"> -Collect appropriate objective data about respiratory system related to general survey. -Collect appropriate subjective data related to respiratory system. - Chest pain, shortness of breath (dyspnea), wheezing, cough dry or produce sputum, sputum or hemoptysis. - Sputum or hemoptysis characteristics: color, odor, amount, frequency and consistency. 							
Physical examination							
General							
Inspection	Done correctly (2)	Done with assistance (1)	Not done (0)	Done correctly (2)	Done with assistance (1)	Not done (0)	
<ul style="list-style-type: none"> Inspect for nasal flaring and pursed lip breathing. Observe color of face, lips, and chest. Inspect color and shape of nails. 							
Posterior Thorax							
Inspection	Trial 1			Trial 2			Comment
	Done correctly (2)	Done with assistance (1)	Not done (0)	Done correctly (2)	Done with assistance (1)	Not done (0)	
<ul style="list-style-type: none"> - Inspect configuration. - Observe use of accessory muscles. - Inspect the client's positioning. 							
Palpation							
<ul style="list-style-type: none"> - Palpate for tenderness and sensation. - Palpate for crepitus. - Palpate for fremitus. - Assess chest expansion. 							

Percussion							
- Percuss for tone. - Percuss for diaphragmatic excursion.							
Auscultation							
- Auscultate for breath sounds. - Auscultate for adventitious sounds.							
Anterior Thorax							
Inspection							
- Inspect for shape and configuration. - Inspect position of the sternum. - Observe quality and pattern of respiration. - Inspect intercostal spaces. - Observe for use of accessory muscles.							
Palpation							
- Palpate for tenderness, sensation, and surface masses. - Palpate for crepitus. - Palpate for fremitus. - Palpate anterior chest expansion.							
Percussion							
- Percuss for tone.							
Auscultation							
- Auscultate for anterior breath sound. - Adventitious sounds.							
Documentation.							

Evaluated by: _____

Date Evaluated: _____

Name and Signature of Faculty

Total grade _____