

Lung sound



Prepared by

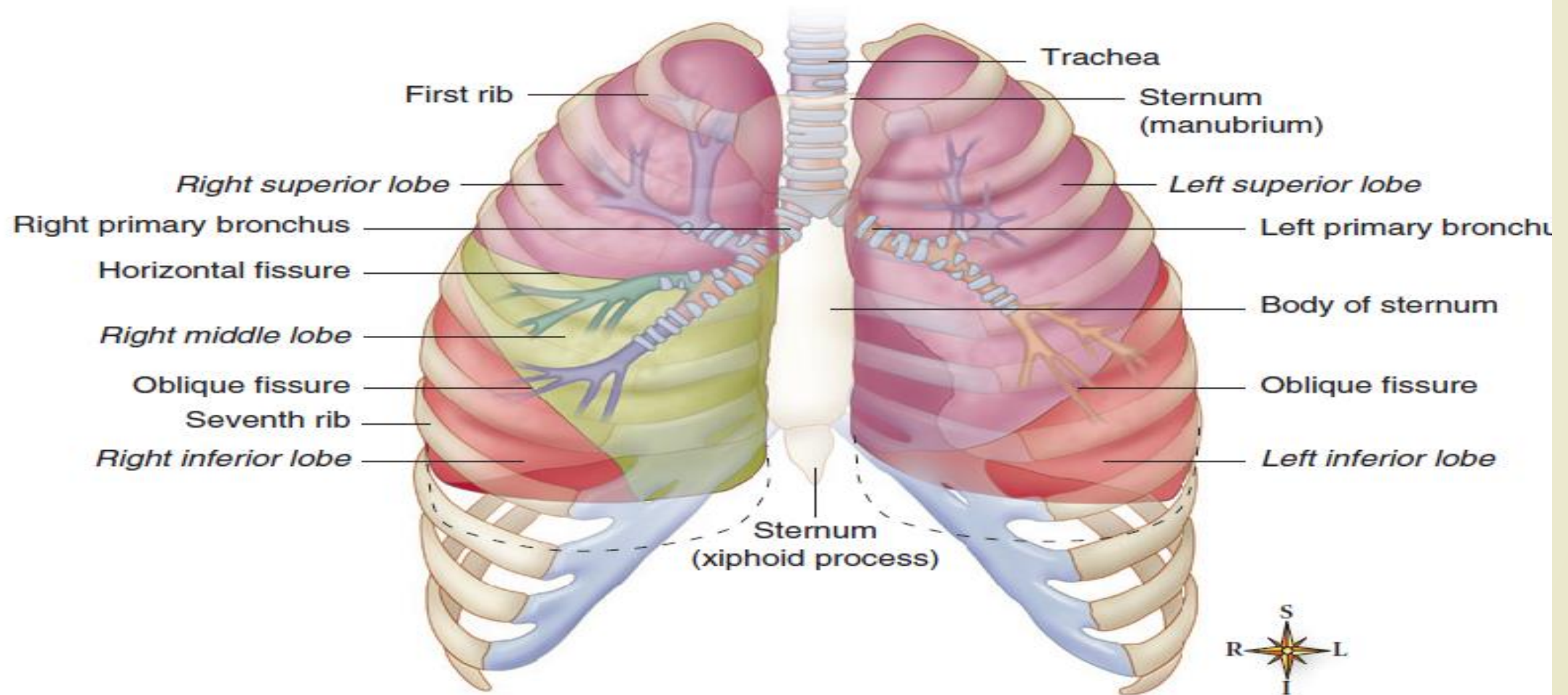
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Definition of lung

- ▶ Lung are the main component of the respiratory system.
- ▶ **Function of lung**
- ▶ They inspire air, and exhale the waste product carbon dioxide.

Anatomy and physiology of lung



Location of the lobes of the lungs within the thoracic cavity.

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- ▶ The right lung has three lobes; the left has two.
 - ▶ The mediastinum is the space between the two lungs.
 - ▶ The lungs are surrounded by a framework of ribs, vertebrae (posteriorly), and the sternum (anteriorly), creating the *chest*.

Alveoli

Alveoli are the small, saclike structures in which the exchange of oxygen and carbon dioxide takes place. Each alveolus is surrounded by many capillaries. **Throughout the first 12 years of life,** the alveoli change in size and shape and increase in number, resulting in an increased area available for gas exchange as the child grows.

A neonate's lung tissue **contains about 25 million alveoli;** this number increases to **about 300 million by age 8.**

Indication for assessing lung sound

- Pneumonia
- respiratory distress
- Prolonged expiration is a sign of bronchial or bronchiolar obstruction. Bronchiolitis, asthma, pulmonary edema, and an intrathoracic foreign body can cause prolonged expiratory phases.
- obstruction in the lower trachea or bronchioles
- chronic lung disease, or cystic fibrosis

Nursing steps to assess lung sound

To assess the child's Respiratory Sounds or lung sound,

By using Auscultation Technique :

- 1- prepare the equipment and Warm instrumentation is essential.
- 2- room with a minimum of noise distraction.
- 3- requires propping the infant in a parent's lap or examination during sleep.
- 4- Use the bell of the stethoscope or switch to a small diaphragm to auscultate lung sounds in the infant or child in a sitting position.
- 5- Quiet breathing is best heard during feeding or with use of a pacifier.
- 6- Playing games may encourage younger children to cooperate with deep breathing during lung assessment.

Nursing steps to assess lung sound

7-Infants and young children have loud breath sounds because of their thin chest walls.

8- Breath sounds should be clear with adequate aeration throughout all lung fields. Listen to a full inspiration and expiration at the apices of the lungs as well as symmetrically across the entire lung field.

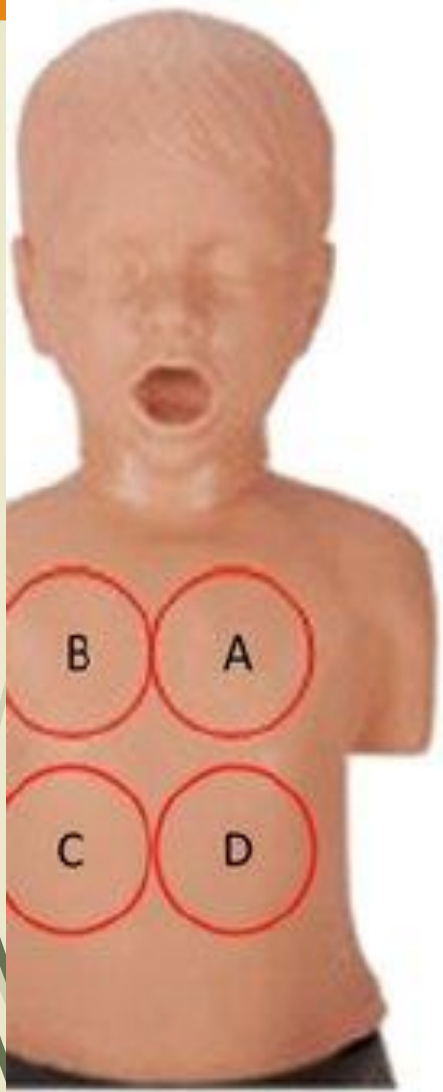
9- Listen on the anterior chest, on the posterior chest, and in the axillary regions.

10 Older children are capable of deep breathing when instructed to do so

11-systematically comparing the right to the left side , Breath sounds should be equal bilaterally. The intensity and pitch should be equal throughout the lungs.

12- documenting their location and whether they are present on inspiration, expiration, or both.

It is most important to describe the abnormal breath sounds



Classification of lung Sounds

- ❖ **physiologically** or According to their location, as
 1. **vesicular,**
 2. **bronchial,**
 3. **bronchovesicular**
 4. **and tracheal** sounds.
- ❖ breath sounds are described by:
 - *duration* (how long the sound lasts),
 - *intensity* (how loud the sound is),
 - *pitch* (how high or low the sound is),
 - *timing* (when the sound occurs in the respiratory cycle).

Normal breathing sounds

Vesicular sounds are soft, rustling sounds normally heard throughout most of the lung fields. Vesicular sounds are normally heard throughout inspiration, continue without pause through expiration, and then fade away about one third of the way through expiration

Bronchial sounds are present over the large airways in the anterior chest near the 2nd and 3rd intercostal spaces, Bronchial sounds are high in pitch, louder and more tubular and hollow-sounding than vesicular sounds, but not as harsh as tracheal breath sounds. Expiratory sounds last longer than inspiratory sounds or duration is the same. Intensity of inspiration and expiration is the same. There is a short gap between inspiration and expiration.

bronchial sounds are heard over the body of the sternum

Normal breathing sounds

Bronchovesicular sounds are heard in the posterior chest between the scapulae and in the center part of the anterior chest. Bronchovesicular sounds are softer than bronchial sounds, but have a tubular quality.

Bronchovesicular sounds are about equal during inspiration and expiration; differences in pitch and intensity are often more easily detected during expiration.

Tracheal breath sounds are heard over the trachea. These sounds are harsh and sound like air is being blown through a pipe.

In a normal air-filled lung,, and tracheal sounds are heard over the trachea.

Breath sounds

Vesicular



Duration	Expiration	Location
inspiratory > expiratory Insp louder No gap	soft low pitch	over the whole lungs bottom of lungs



Bronchovesicular



inspiratory > expiratory Ins & Exp same loudness No gap	medium loud medium pitch	peristernal interscapular
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Bronchial



expiratory > inspiratory same loudness Exp longer Gap	loud, strong high pitched	above clavicle manubrium sterni
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Tracheal




expiratory > inspiratory	very loud high pitched	above trachea
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Sound recordings from: Bohadana, A. et al.: Fundamentals of lung auscultation. N Engl J Med. 2014 Feb 20;370(8):744-751.

Types of (abnormal breath sound)

Breath sound	Characteristics	Causes
Wheezing	<ul style="list-style-type: none">• Continuous, musical, high-pitched sounds heard in mid- to late expiration (may be audible without a stethoscope)	<ul style="list-style-type: none">• Indicative of edema and obstruction in small airways
Crackles	<ul style="list-style-type: none">• Intermittent, medium- to high-pitched popping sounds heard during inspiration (may clear with coughing)	<ul style="list-style-type: none">• Caused by fluid in the alveoli, bronchioles, or bronchi
Rhonchi	<ul style="list-style-type: none">• Continuous, snoring, low-pitched sounds heard throughout respiration (may clear with coughing)	<ul style="list-style-type: none">• Due to edema and obstruction in large bronchi and the trachea
Stridor	<ul style="list-style-type: none">• High-pitched crowing sound heard on inspiration	<ul style="list-style-type: none">• Caused by upper airway obstruction at or above the vocal cords
Pleural friction rub	<ul style="list-style-type: none">• Grating, rubbing, loud, high-pitched sound heard during inspiration and expiration	<ul style="list-style-type: none">• Due to inflamed pleural surfaces



Thank you
for your
attention