

RESPIRATORY REHABILITATION

By:

Dr. Fatima Makee AL-Hakak

University of kerbala

College of nursing

CHEST PHYSIOTHERAPY

Chest physiotherapy (CPT) includes:

1. Postural drainage.
2. Chest percussion and vibration.
3. Breathing exercises.
4. Breathing retraining.

In addition teaching the patient effective coughing technique is an important part of chest physiotherapy.

The goals

- 1- To remove bronchial secretions.
- 2- Improve ventilation.
- 3- Increase the efficiency of the respiratory muscles.

Postural Drainage

(Segmented Bronchial Drainage)

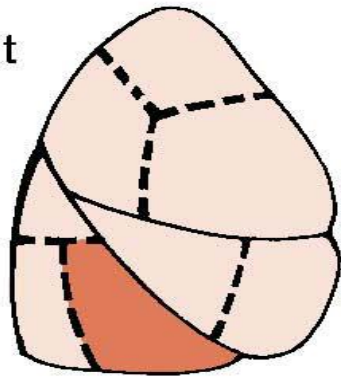
Postural drainage uses specific positions that allow the force of gravity to assist in the removal of bronchial secretions. The secretions drain from the affected bronchioles into the bronchi and trachea and are removed by coughing or suctioning. Postural drainage is used to prevent or relieve bronchial obstruction caused by accumulation of secretions.

Because the patient usually sits in an upright position, secretions are likely to accumulate in the lower parts of the lungs. With postural drainage, different positions (Fig. -1-) are used so that the force of gravity helps to move secretions from the smaller bronchial airways to the main bronchi and trachea. The secretions then are removed by coughing.

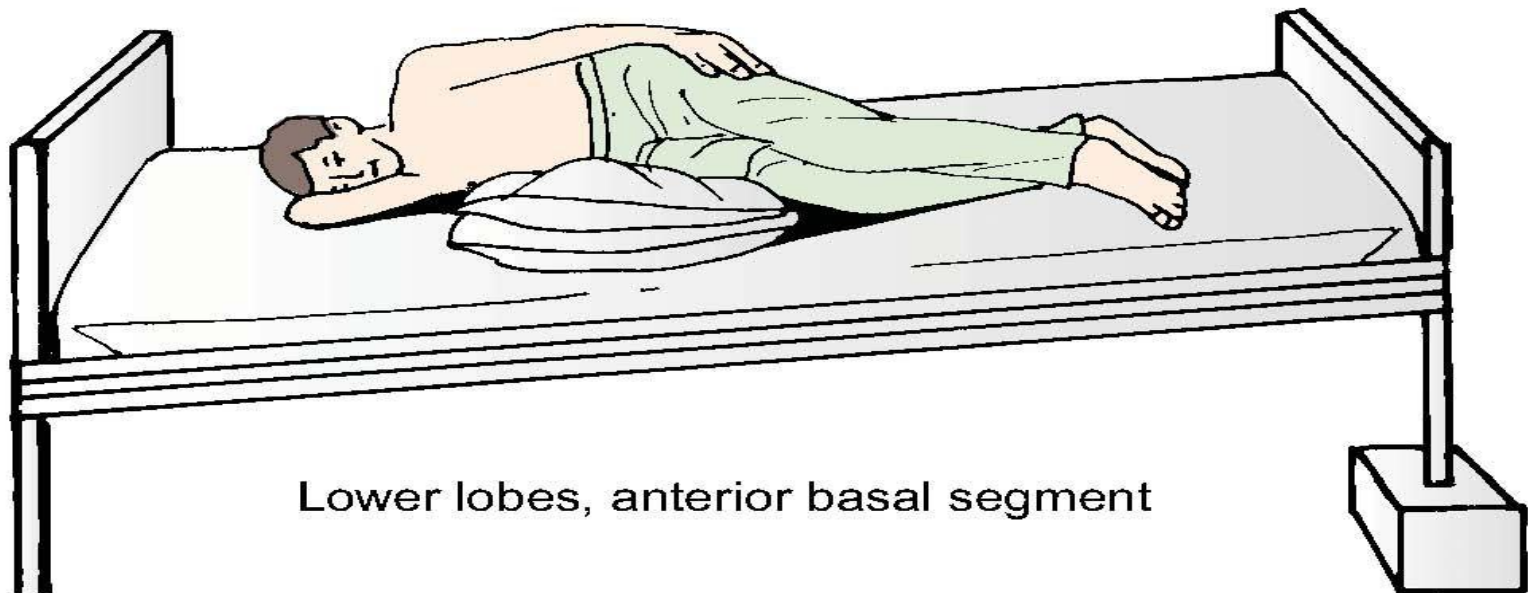
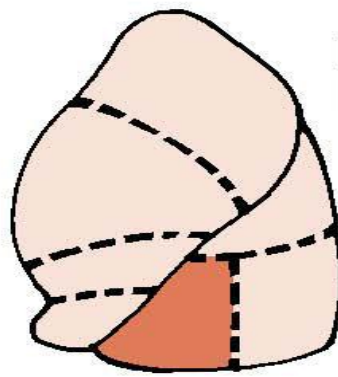
The nurse should instruct the patient to inhale bronchodilators and mucolytic agents, if prescribed, before postural drainage because these medications improve bronchial tree drainage.

Postural drainage exercises can be directed at any of the segments of the lungs. The lower and middle lobe bronchi drain more effectively when the head is down; the upper lobe bronchi drain more effectively when the head is up. Frequently, five positions are used, one for drainage of each lobe: head down, prone, right and left lateral, and sitting upright.

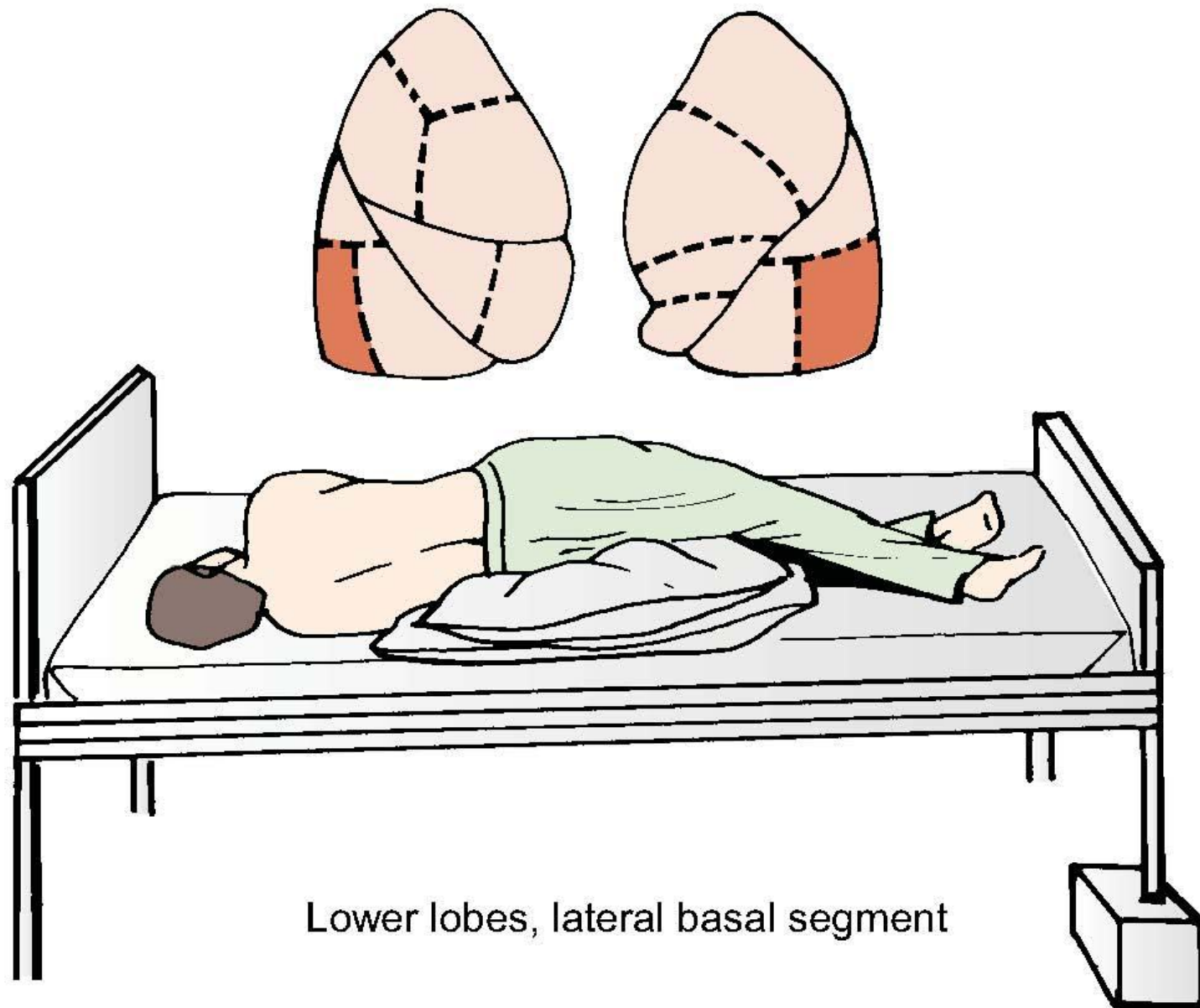
Right
lung



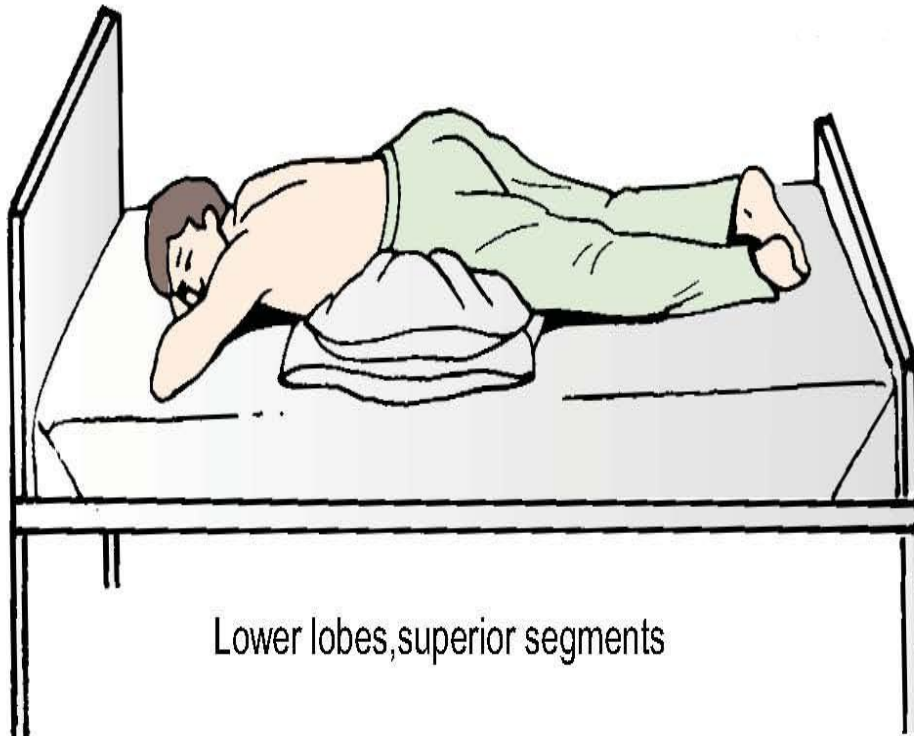
Left
lung



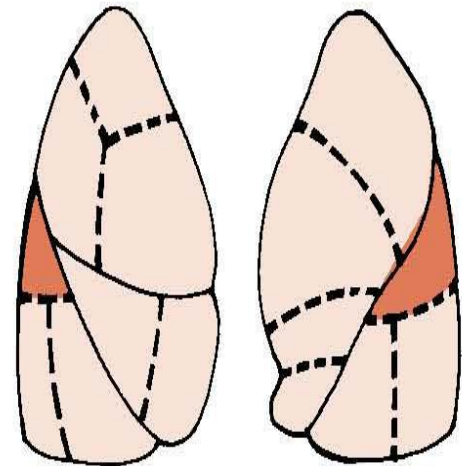
Lower lobes, anterior basal segment

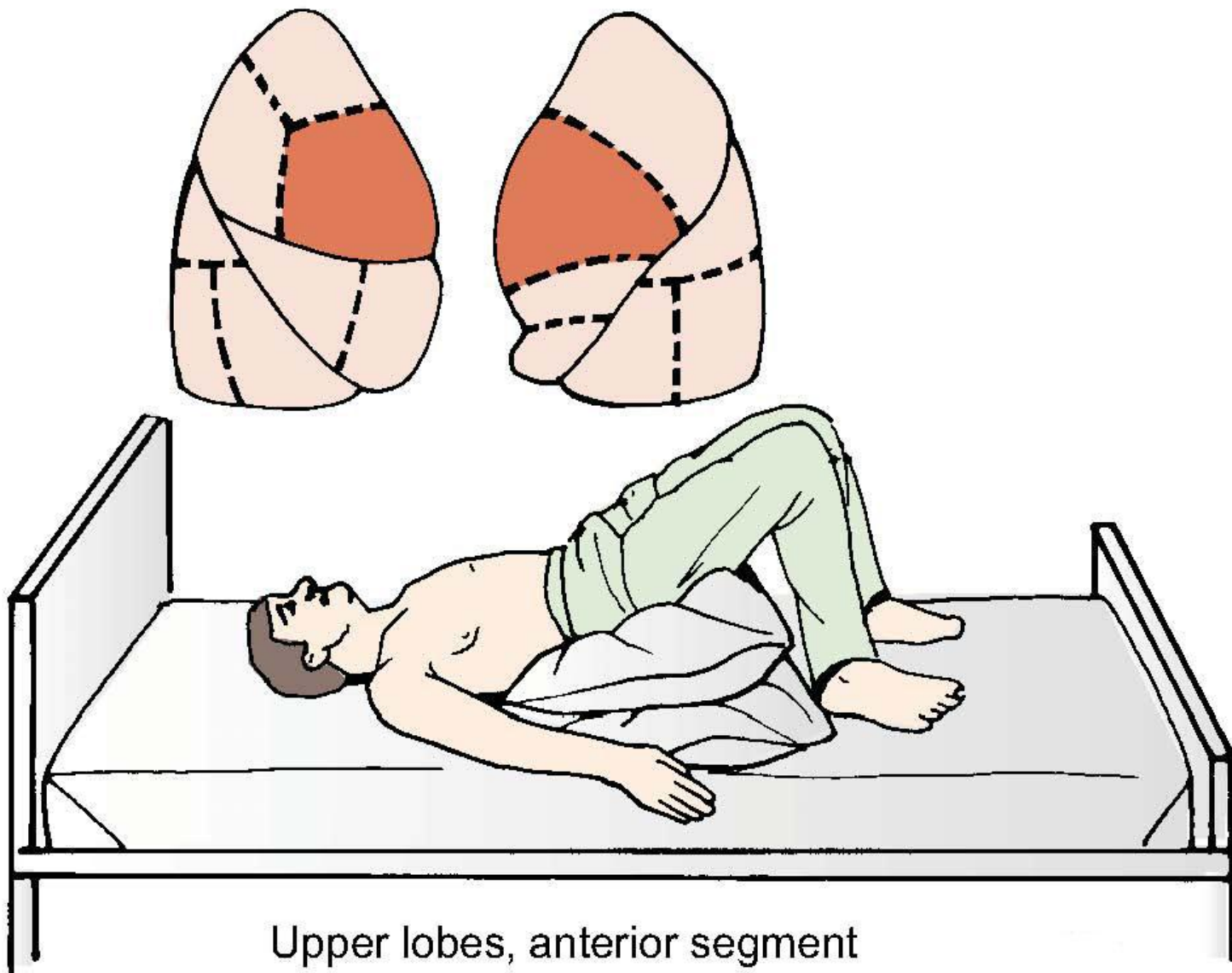


Lower lobes, lateral basal segment

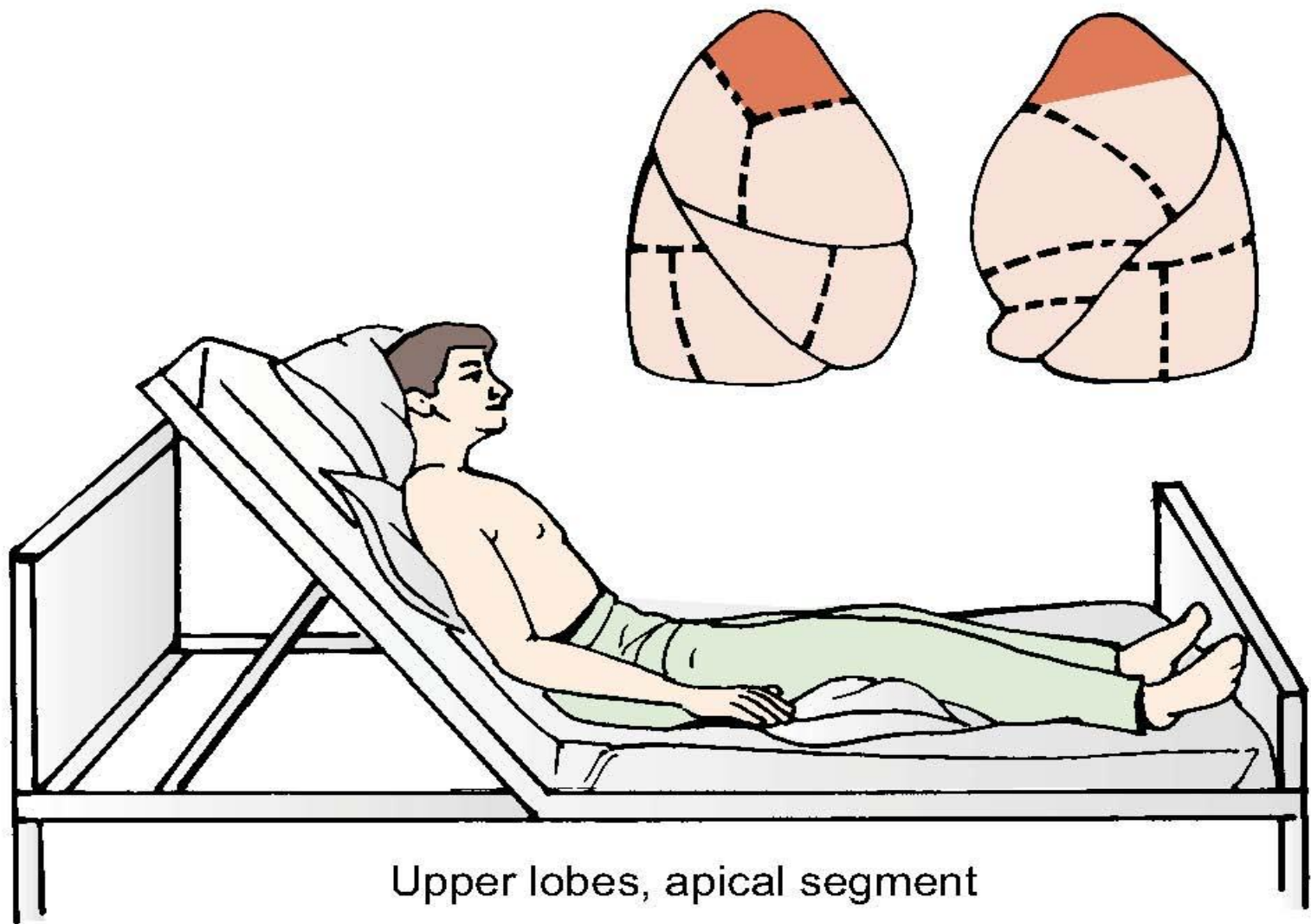


Lower lobes, superior segments





Upper lobes, anterior segment



Upper lobes, apical segment

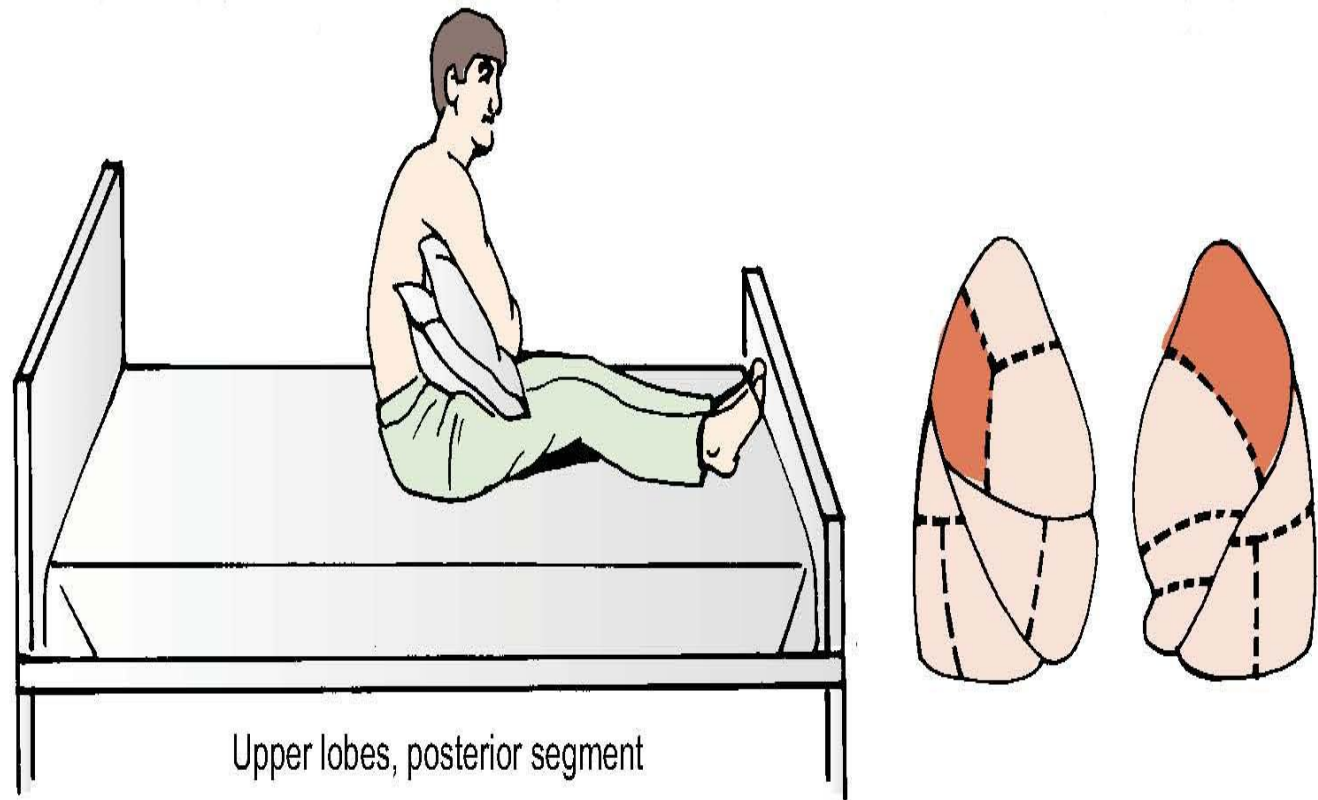


FIGURE 1 Postural drainage positions and the areas of lung drained by each position.

Nursing Management

The nurse should be aware of the patient's diagnosis as well as the lung lobes or segments involved, then cardiac status, and any structural deformities of the chest wall and spine. Auscultating the chest before and after the procedure helps to identify the areas needing drainage and to assess the effectiveness of treatment.

The nurse teaches family members who will be assisting the patient at home to evaluate breath sounds before and after treatment.

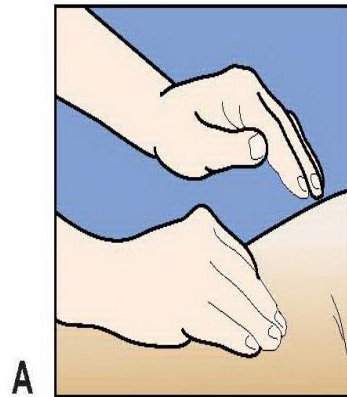
The nurse explores strategies that will enable the patient to assume the indicated positions at home. This may require the creative use of objects readily available at home, such as pillows, cushions, or cardboard boxes.

Postural drainage is usually performed two to four times daily, before meals (to prevent nausea, vomiting, and aspiration) and at bedtime. Prescribed bronchodilators, water, or saline may be nebulized and inhaled before postural drainage to dilate the bronchioles, reduce bronchospasm, decrease the thickness of mucus and sputum, and combat edema of the bronchial walls.

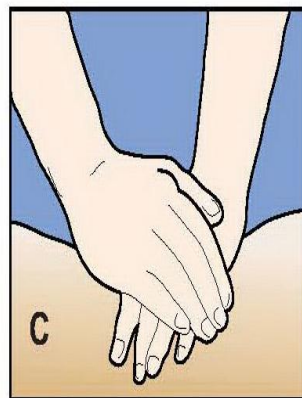
Chest Percussion and Vibration

Thick secretions that are difficult to cough up may be loosened by tapping (percussing) and vibrating the chest. Chest percussion and vibration help to dislodge mucus adhering to the bronchioles and bronchi.

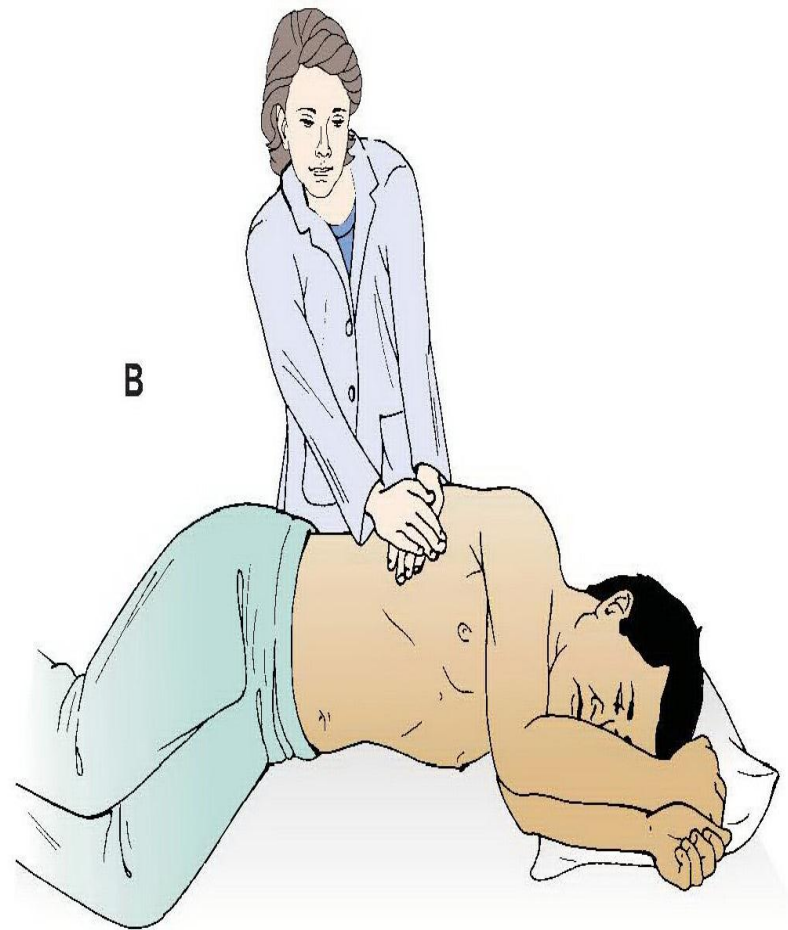
Percussion is carried out by cupping the hands and lightly striking the chest wall in a rhythmic fashion over the lung segment to be drained. The wrists are alternately flexed and extended so that the chest is cupped or clapped in a painless manner (Fig. 2).



A



C



B

FIGURE 2 Percussion and vibration.
 (A) Proper hand position for percussion.
 (B) Proper technique for vibration. The wrists and elbows remain stiff; the vibrating motion is produced by the shoulder muscles.
 (C) Proper hand position for vibration.

A soft cloth or towel may be placed over the segment of the chest that is being cupped to prevent skin irritation and redness from direct contact.

Percussion, alternating with vibration, is performed for 3 to 5 minutes for each position. The patient uses diaphragmatic breathing during this procedure to promote relaxation (see “Breathing Retraining,” below).

As a precaution, percussion over chest drainage tubes, the sternum, spine, liver, kidneys, spleen, or breasts (in women) is avoided.

Percussion is performed cautiously in the elderly because of their increased incidence of osteoporosis and risk of rib fracture.

Nursing Management

The nurse ensures that the patient is comfortable, is not wearing restrictive clothing, and has not just eaten. The uppermost areas of the lung are treated first.

The nurse gives medication for pain, as prescribed, before percussion and vibration and splints any incision and provides pillows for support as needed. The positions are varied, but focus is placed on the affected areas. On completion of the treatment, the nurse assists the patient to assume a comfortable position.

The nurse must stop treatment if any of the following occur:

1. Increased pain.
2. Increased shortness of breath.
3. Weakness, lightheadedness.
4. Hemoptysis.

Therapy is indicated until the patient has normal respirations, can mobilize secretions, and has normal breath sounds, and when the chest x-ray findings are normal.

Breathing Retraining

Breathing retraining consists of :

1- Exercises .

2- Breathing practices.

designed to achieve more efficient and controlled ventilation and to decrease the work of breathing.

Breathing retraining is especially indicated in patients with COPD and dyspnea.

These exercises promote maximal alveolar inflation and muscle relaxation, relieve anxiety, eliminate ineffective, uncoordinated patterns of respiratory muscle activity, slow the respiratory rate, and decrease the work of breathing. Slow, relaxed, and rhythmic breathing also helps to control the anxiety that occurs with dyspnea.

Specific breathing exercises include diaphragmatic and pursed-lip breathing

The goal of diaphragmatic breathing is to use and strengthen the diaphragm during breathing. Diaphragmatic breathing can become automatic with sufficient practice and concentration.

Pursed-lip breathing, which improves oxygen transport, helps to induce a slow, deep breathing pattern and assists the patient to control breathing, even during periods of stress.

This type of breathing helps prevent airway collapse secondary to loss of lung elasticity in emphysema.

The goal of pursed-lip breathing is to train the muscles of expiration to prolong exhalation and increase airway pressure during expiration, thus lessening the amount of airway trapping and resistance

Nursing Instruction during Pursed-Lip Breathing

1. Inhale through the nose while counting to 3—the amount of time needed to say “Smell a rose.”
2. Exhale slowly and evenly against pursed lips while tightening the abdominal muscles. (Pursing the lips increases intratracheal pressure; exhaling through the mouth offers less resistance to expired air.)
3. Count to 7 while prolonging expiration through pursed lips—the length of time to say “Blow out the candle.”
4. While sitting in a chair:
 - Fold arms over the abdomen.
 - Inhale through the nose while counting to 3.
 - Bend forward and exhale slowly through pursed lips while counting to 7.
5. While walking:
 - Inhale while walking two steps.
 - Exhale through pursed lips while walking four or five steps.

THANK FOR ALL