PURPOSE:
To mobilize and eliminate pulmonary secretions, re-expand lung tissue and promote efficient use of respiratory muscles.

CONSIDERATIONS:
1. Chest physical therapy is a term that includes a group of treatments designed to improve respiratory efficiency. Several therapies are included: postural drainage, chest percussion, chest vibration, turning, coughing and deep breathing exercises.
2. Postural drainage is most effective if performed before breakfast to clear the mucus that has accumulated during the night and in the evening, at least an hour before bedtime to facilitate sleeping.
3. Postural drainage is facilitated by preceding treatment with use of nebulizers, vaporizers, Intermittent Positive Pressure Therapy (IPPB) and clapping or vibrating the thoracic rib cage.
4. Hydration requirements are increased in pulmonary disease. Unless contraindicated by the physician, patients with pulmonary disease should be advised to drink One and one half quarts of fluid daily.
5. There are twelve positions in which patients can be placed for postural drainage:
   a. Usually, instructions concerning four to six positions that involve the lower and middle lobes are sufficient.
   b. The degree of slant is determined by the patient's tolerance.
   c. The average range is 10 to 30 degrees (12-18 inches).
   d. The slant should be altered or in some cases eliminated if the patient presents with abdominal obesity, becomes moderately dyspneic or shows other signs of respiratory/cardiac distress.
   e. Duration of bronchial drainage depends on the patient's tolerance and individual needs. Bronchial drainage is usually 5 to 15 minutes; if percussion and vibration are added, there will be an increase of 2 to 3 minutes for each position.
   f. Intensity of percussion/clapping is usually dependent upon the patient's tolerance.
6. Refrain from percussion over the spine, liver, kidneys or spleen to avoid injury to the spine and internal organs. Additional precautions for percussion and vibration include: hemoptysis, coagulation disorders, low platelet count, musculoskeletal fractures, flail chest or degenerative bone disease.
7. Postural drainage is useful in patients with sputum production greater than 30 mL per day, and with the following diagnosis:
   a. Bronchitis.
   b. Chronic bronchitis.
   c. Lung abscesses.
   d. Obstructive lung diseases.
   e. Tuberculosis.
   f. Cystic fibrosis.
   g. Pneumonia with mucopurulent sputum.
   h. Bed bound patients with retained secretions.
8. Postural drainage is usually not indicated for the following diagnoses:
   a. Pleural effusion.
   b. Pulmonary edema.
   c. Heart failure.
   d. Hypertension.
   e. Lung cancer.
   f. Pulmonary fibrosis.
9. Contraindications to postural drainage are:
   a. Unstable cardiovascular system.
   b. Hemorrhagic conditions.
   c. Pulmonary embolism.
   d. Increased intracranial pressure.
   e. Empyema.
   f. Hemoptysis.
   g. Recent chest trauma/rib fracture.
   h. Immediately after meals.
10. Use caution when percussing/clapping over bony prominences, skin lesions, osteoporotic ribs and old thoracotomies.
11. Mechanical percussors are useful for patients who are unable to tolerate manual percussion/clapping or for patients who live alone.

EQUIPMENT:
Stethoscope
Tissues/paper towels
Pillows
Vibrator (optional)
Nebulizer (optional)
Gloves
Personal protective equipment (mask, eye wear) as needed

PROCEDURE:
1. Adhere to Standard Precautions.
2. Review physician's orders for location of affected lung segment(s), prescribed treatment and sequence of procedure, e.g., if orders include use of nebulizer prior to treatment, percussion/clapping and vibration in each position:
   a. Apical segment of the upper lobes (posterior): Percuss over the right and left scapula from midscapula up.
   b. Apical segment of the upper lobes (anterior): Percuss over the area of the right and left clavicles.
   c. Posterior segment of upper lobes: Percuss over the area above the midscapula line in the right and left sides.
   d. Anterior segment of upper lobes: Percuss in the area above the breast to the clavicle.
e. Right middle lobe and lingula of left upper lobe: Percuss above or below breast on the respective side.

f. Lower lobes (anterior): Percuss from the breast to the base of the last rib.

g. Lower lobes (lateral): Percuss from the base of the axilla to the base of the last rib.

h. Lower lobes (posterior): Percuss from the midscapula area to the base of the last rib.

3. Auscultate lungs to determine baseline respiratory status, count the respiratory and pulse rate before and after procedure.

4. Explain procedure to patient.

a. Postural drainage:

   (1) Nebulizer treatment (if ordered) should precede postural drainage for maximal effectiveness.

   (2) Review diaphragmatic pursed lip breathing with patient prior to positioning.

   (3) Loosen or remove patient's tight clothing.

   (4) Position patient in appropriate positions.

   (5) Patient should remain in each position 5 to 15 minutes, depending on the patient's tolerance.

   (6) Remind patient to use the controlled cough after each position. *(See Respiratory-Controlled Cough.)*

b. Percussion/Clapping and Vibration is performed in each position for 2 to 3 minutes.

   (1) Percussion/Clapping is a technique of cupping the hand to allow a cushion of air to come between the hand and the patient. The fingers should be relaxed and straight, with the thumb placed beside the index finger. Properly performed, a popping (hollow) sound will be heard when the patient is percussed/clapped. The hands should be raised alternately 3-4 inches from the patient's body.

   (2) Vibration: Following percussion/clapping, vibrate the chest wall during exhalation:

      (a) Remind patient to purse lip breathe.

      (b) During exhalation, press hands flat against patient's chest wall.

      (c) The percussor vibrates the thoracic cage by isometrically contracting or tensing the muscles of their arms and shoulders. **[Note: The percussor vibrates "into" the patient.]**

      (d) Repeat 3 to 5 times during exhalation in each position.

   (3) Airway Clearance: Removing the secretions for the airways following (1) and (2).

      (a) Request for the patient to cough.

      (b) If unable to cough, patient can use the huffing technique to clear secretions. A huff cough is performed by taking a deep breath and holding it for 1-3 seconds. Then force the air out of the lungs with the mouth open.

5. Discard soiled supplies in appropriate containers.

**AFTER CARE:**

1. Document in patient's record:

   a. Patient's response to procedure.

   b. Positions used for postural drainage.

   c. Length of time maintained for each position.

   d. Use of percussion/clapping and vibration.

   e. Color, amount, odor and viscosity of sputum.

   f. Instructions to patient/caregiver.

   g. Patient/caregiver understanding of instructions.

   h. Communicate with physician when necessary.