
Unit 10

Chest Physiotherapy

GOAL

On completion of this unit, the student should comprehend the procedures necessary to perform chest physiotherapy.

COMPETENCIES

1. Demonstrate breathing exercises:
 - a. diaphragmatic breathing
 - b. bilateral expansion
 - c. pursed-lip breathing
2. Demonstrate pursed lip breathing and coughing techniques.
3. Position a laboratory partner to drain the following lung segments:
 - a. upper lobes
 - 1) apical segment
 - 2) posterior segment
 - 3) anterior segment
 - 4) left lingual
 - b. right middle lobe
 - c. lower lobes
 - 1) anterior basal segment
 - 2) superior basal segment
 - 3) lateral basal segment
 - 4) posterior basal segment
4. Perform manual percussion and vibration properly.
5. Perform mechanical percussion properly.
6. Complete the appropriate procedure in the clinical simulation lab.

EQUIPMENT

1. hospital bed
2. 3-4 pillows
3. sheet
4. stethoscope
5. mechanical percussor

EXERCISE A – BREATHING EXERCISES

1. Pursed-Lip Breathing
 - a. Place your patient in Semi-Fowler's position, if possible, for maximum breathing efficiency.
 - b. Instruct him to inhale deeply through the nose followed by exhalation through the mouth.
 - c. During exhalation, the lips should be held together as if blowing out a match.
 - d. Exhalation should take at least twice as long as inhalation and should make a softly audible "blowing" sound.
2. Diaphragmatic Breathing
 - a. Wash hands.
 - b. Position your patient supine in bed.

- c. Place your hand on the patient's abdomen.
 - d. Instruct him to inhale through his nose and make your hand - NOT his chest - move outward. Inspiration should be long, slow and deep. As the exercise progresses, slight pressure can be applied to the abdomen during inspiration.
 - e. Instruct him then to exhale through pursed lips while your hand - NOT his chest - moves inward.
 - f. The patient's chest should move little during the respiratory cycle.
 - g. Ask the patient to place one of his hands on the abdomen and one on the chest wall. This will increase self-awareness of abdominal and chest movement.
 - h. This exercise should be practiced for 10 minutes twice a day or for 3 - 4 minutes four times a day. The frequency can be increased as the patient's strength permits.
2. Expansion Exercise
- a. Wash hands.
 - b. Patient is best sitting up in bed or on the side of the bed.
 - c. Place your hands on both lateral, lower rib areas or over the affected areas.
 - d. Instruct the patient to inhale slowly and deeply while attempting to move your hands.
 - e. Exhalation should be through pursed-lips.
3. Coughing Exercise
- a. Wash hands.
 - b. Have patient sit up as far as possible or sit on the edge of the bed.
 - c. Instruct patient to take 4 - 6 slow, deep breaths using diaphragmatic breathing.
 - d. Instruct patient to hold a deep breath before initiating cough.
 - e. Instruct patient to lean forward in a flexed position, pushing diaphragm up, and begin cough.
 - f. Patient should direct cough into a tissue or away from you but not to block the cough.
 - g. If the patient has a recent incision or localized area of pain, hold a pillow over that area and apply moderate pressure during the cough.
 - h. Instruct the patient how to dispose of expectorated sputum.
 - i. If a single cough is ineffective, instruct the patient to use the double cough technique, i.e. deep breaths, a cough followed by a second cough, without a breath in between coughs.
 - j. Patient can now refill lungs using diaphragmatic breathing.
 - k. Wash hands.

EXERCISE B - CHEST PHYSIOTHERAPY

1. Postural Drainage
- a. Assemble the appropriate equipment.
 - b. Wash hands.
 - c. Explain the procedure to the patient.
 - d. Perform a patient assessment (breath sounds, heart rate, respiratory rate).
 - e. Instruct the patient in deep cough techniques.
 - f. Administer any special treatment, such as aerosol therapy or IPPB.
 - g. Position bed/patient for drainage of the lower lobes (positions are found in the Appendix):
 - 1) posterior basal segments
 - 2) lateral basal segments
 - 3) anterior basal segments
 - 4) superior basal segments
 - h. Encourage patient to cough in each position.
 - i. Continually assess patient's tolerance of each position.
 - j. Position bed/patient for drainage of the right middle lobe (positions are found in the Appendix):.
 - k. Position bed/patient for drainage of the upper lobes (positions are found in the Appendix):
 - 1) left lingula
 - 2) anterior segments
 - 3) apical segments

- 4) posterior segments
 - l. Return patient and bed to normal position.
 - m. Encourage patient to deep breath and cough.
 - n. Recheck patient assessment.
 - o. Wash hands.
 - p. Chart procedure, noting patient's progress, any adverse reactions, special modifications, sputum color, smell, consistency and volume.
2. Percussion/Vibration
- a. Assemble the appropriate equipment.
 - b. Wash hands.
 - c. Explain the procedure to the patient.
 - d. Perform a patient assessment (breath sounds, heart rate, respiratory rate).
 - e. Instruct the patient in deep cough techniques.
 - f. Administer any special treatment, such as aerosol therapy or IPPB.
 - g. Place patient in the proper postural drainage position for percussion to the affected segment.
 - h. Lay a towel over the area to be clapped.
 - i. Position yourself for maximum accessibility.
 - j. Use proper clapping technique:
 - 1) Form hands into cupped shape.
 - 2) Place hands within 5 inches of chest.
 - 3) Use alternate flexion/extension of wrists to establish clapping motion.
 - 4) Establish desired: rate
rhythm
force of impact
 - k. Perform clapping for 3 minutes over each segment (1 - 2 minutes if using a mechanical percussor).
 - l. Interrupt clapping after 3 minutes and perform vibration on each segment:
 - 1) Extend arms straight.
 - 2) Place one hand on top of the other over segment to be vibrated.
 - 3) Generate gentle vibrations to the segment during pursed-lip exhalation via the hands by causing the arms to shake.
 - m. Encourage patient to deep breath, cough and expectorate secretions using proper technique.
 - n. Reposition patient to drain, percuss and vibrate the next segment.
 - o. Repeat step #14 until all segments have been treated.
 - p. Continually assess patient's tolerance of each position and of the clapping/vibration.
 - q. Recheck patient assessment.
 - r. Wash hands.
 - s. Chart procedure, noting patient's progress, any adverse reactions, special modifications, sputum color, smell, consistency and volume.
3. Complete the Chest Percussion and Postural Drainage procedure in the clinical simulation lab.

WORKSHEET

1. What is the goal of chest physiotherapy?
2. Discuss the importance of asking a patient to cough after percussion and vibration?
3. Pillows may be placed behind the patient's back or between the knees during CPT. Why?
4. How should a patient be positioned for breathing exercises?