

## **CHEST PHYSICAL THERAPY**

### **PURPOSE:**

1. Aid in bronchial hygiene---Prevent accumulation of pulmonary secretions, mobilization of these secretions, and improve the cough mechanism.
2. Improve efficiency and distribution of ventilation
3. Sputum volumes or consistency that requires external manipulation of the thorax.

### **INDICATIONS:**

1. Patient must be physically able to tolerate head down positions for drainage.
2. Malfunctions of normal bronchial hygiene mechanisms that causes retention of secretions is an indication for chest physical therapy. Diseases included, but are not limited to, COPD, cystic fibrosis, acute atelectasis, lung abscess, pneumonia, and illnesses requiring ventilator care.
3. Patients must be able to comprehend for cough instruction and vibration techniques.
4. Patients who have hemorrhagic conditions, lung metastases, brittle and fragile bones, and empyema are relative contraindications for chest percussion and vibration.
5. Modification of procedures for some types of patients must be considered for safe and effective therapy.

### **HAZARDS/COMPLICATIONS/CONTRAINDICATIONS:**

1. Position changes in the critically ill patient may result in cardiovascular stress. If the diseased lung is dependently positioned a VQ mismatch may result.
2. Head-down positions (trendelenberg) may increase intracranial pressure and is not recommended for post-op neurosurgery patients, those with intracranial disease, or hypertension.
3. Patients with skin grafts or spinal fusions will have undue stress placed on areas of repair.
4. Bony metastases, brittle bones, bronchial hemorrhage, and emphysema are contraindications for undue stress to the thoracic area.
5. Verify that patient has not eaten for at least one hour.

### **CRITERIA FOR PHYSICIAN ORDER:**

1. Specify frequency of therapy.
2. Specify if postural drainage and vibration can be safely administered.
3. Specify if only specific areas of lungs are to be treated.
4. Specify other therapy modalities if desired.

### **EVALUATION OF EFFECTIVENESS:**

1. Sputum production, amount, color, quantity, and quality.
2. Cough effort and effectiveness.
3. Improved breath sounds and/or chest film.

### **EQUIPMENT:**

1. Mechanical chest percussor or other device if needed.
2. Stethoscope.
3. Cupped hands.

### **PERSONNEL:**

1. RRT 1 AND RRT 2
2. CRTT 1 AND CRTT 2

### **PROCEDURE:**

1. Verify written Physician order.
2. Review patients' chart for the following:
  - a. Admitting and/or most recent diagnosis.

- b. Progress notes
- c. Nursing notes
- d. Review lab data and x-ray findings
- e. Respiratory progress notes
  1. Time of last therapy
  2. Patient tolerance/performances
  3. Physical assessment
  4. Special needs and considerations
3. Wash hands, apply gloves and utilize personal protective equipment as needed.
4. Approach and inform patient of the purpose of visit
  - a. Identify self and department
  - b. Identify patient by comparing hospital and billing numbers on the armband to those on the physicians' orders for therapy.
  - c. Inform patient/family of procedure/purpose and answer all questions pertinent to therapy
5. Perform patient assessment
  - a. Heart Rate
  - b. Breath sounds
  - c. Respirations
  - d. Cough and/or sputum production
6. Position patient (see attached)
  - a. If no contraindications or restricting orders are present, place patient in trendelenberg and make patient comfortable.
  - b. Start with lower lobes and perform CPT to all lobes, unless orders state otherwise: See attached handout for proper positioning and technique.
  - c. If one lung is more affected than the other, then start with the diseased lung first.
7. Perform CPT with cupped hand, two fingers, and mechanical percussor or hand cup:
  - a. Chest percussion with hands is performed by rhythmically and alternately striking the chest wall with a cupped hand. Trapped air between the cupped hand and chest wall produces a loud clapping noise without hurting or bruising the chest wall. Approximately two minutes per segment.
  - b. The use of two fingers, primarily in neonates and infants, produces a light, non-bruising or harmful vibration of the chest wall.
  - c. Vibration of each segment, usually done only in adults, is done by gently and rapidly vibrating the segment during exhalation. The procedure is repeated 2-3 times for each segment.
8. Percuss, vibrate, drain, and have patient cough for each segment treated.
9. After percussing, vibrating, and/or draining all segments, return patient to a comfortable position. Assist patient with coughing or suction patient if necessary. (Cough instruction is described in Incentive Spirometry Section).
10. Discard personal protective equipment and wash hands after patient contact.
11. Monitor the following during therapy session:
  - a. Heart Rate (s) before, during, and after.
  - b. Breath sounds before and after.
  - c. Respirations
  - d. Cough effectiveness and production.
12. Document procedure as per department guidelines.
13. Age appropriate considerations include assessing the patient's ability to tolerate the procedure. Geriatrics may require adjustment to the aggressiveness of percussion. Pediatrics may require smaller size percussion tools.

REFERENCES:

1. *AARC Clinical Practice Guidelines*, 1993.
2. Burton, Gee, Hodgkin, *Respiratory Care*, 1977.

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Cardiopulmonary Services  
General Procedures  
Proc7.7

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