

Bronchial Hygiene Therapy

RRT Online Prep. Program

Bronchial Hygiene Therapy

- You are asked to evaluate a patient who has retained secretions due to an acute exacerbation. This impairment has lead to a greater quantity and viscosity of secretions. You determine that the patient may benefit from bronchial hygiene therapy (BHT). Which method of BHT would you recommend and why?

Guideline: To provide the uses and effectiveness of BHT

- **Guideline:** Describe the purposes and effectiveness of BHT
- **Guideline:** List the indications and contraindications of BHT
- Explain the techniques of BHT and guidelines for clinical practice
- Recommend appropriate therapy when presented patient data

Outline Slide

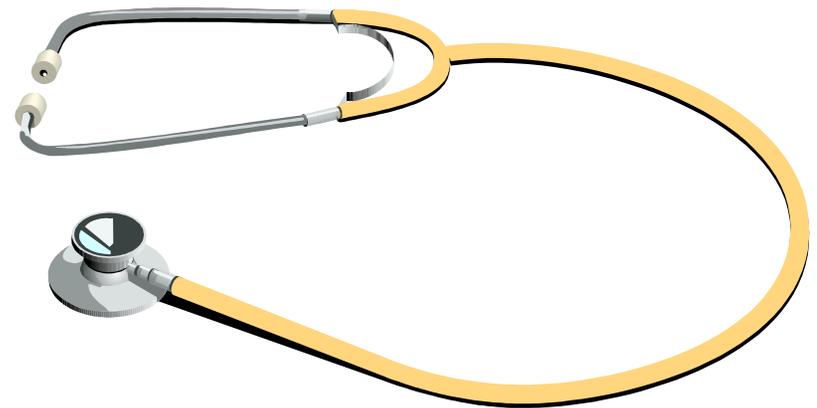
Guideline: Bronchial Hygiene Therapy

- airway clearance techniques
- postural drainage
- chest wall percussion
- vibration
- coughing
- suctioning

Bronchial Hygiene Therapy

Goals of treatment:

- to improve the clearance of airway secretions
- to improve the homogeneity of ventilation and gas exchange



Bronchial Hygiene Therapy



Outcomes:

- knowledge of normal and abnormal physiology
- careful patient evaluation and selection
- a clear definition of therapeutic goals
- rigorous application of the appropriate methods
- ongoing assessment and follow-up.

Percussion

- help jar retained secretions loose from the tracheobronchial tree
- making them easier to remove by coughing or suctioning.



Vibration

- should aid movement of secretions toward the central airways during exhalation

Percussion and vibration can be applied either manually or mechanically.

Vibration

- used in conjunction with percussion but limited to application during exhalation
- To vibrate the chest wall, clinicians lay one hand on the patient's chest over the involved area and place the other hand on top of the first hand
- OR place their hands on either side of the chest.
- After the patient takes a deep breath, clinicians exert slight to moderate pressure on the chest wall, and initiate a rapid vibratory motion of the hands throughout expiration

Mechanical Percussion

- Developed to generate and apply energy waves during percussion and vibration
- Most units provide frequencies up to 20 to 30 hertz (Hz).
- Noise, excess force and mechanical failure are all potential problems.
- potential shock hazard.
- No substitute for a skilled clinician exists, these devices do not tire and can deliver consistent rates, rhythms, and impact forces

Mechanical Percussion

Currently **no firm evidence** that such devices are any more effective than manual techniques. For this reason, the **selection of manual or mechanical methods should be left to the patient.**

Postural Drainage with Percussion and Vibration

Most effective in conditions characterized by excessive sputum production (>25 ml/day).

Mechanism of Airway Clearance - An effective cough

Three components:

- inspiratory gasp
 - compressive phase
 - expulsive phase
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The reflexive inspiratory gasp facilitates an increase in lung volume to total lung capacity.

Sudden closure of the glottis and subsequent active expiratory muscle action allows the patient to generate increased intrathoracic pressure.

Sudden relaxation at the glottis initiates the expulsive phase, with changes in the airway downstream of the equal pressure point (i.e., the point at which airway and pleural pressures are equal).

Abnormal Clearance

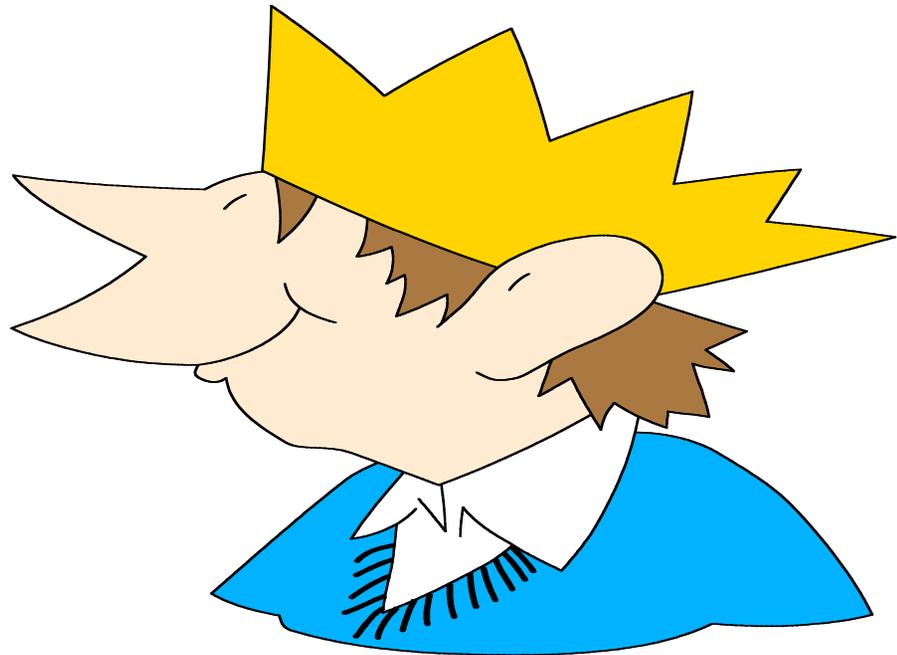
Accumulations of secretions in the airway have immediate effects:

- **full airway obstruction** with impaired gas exchange and subsequent atelectasis
- **partial obstruction** of the airway leading to a ball-valve effect and contributing to air trapping and regional overdistension.



Measurement of Effectiveness

Clinical observation and the patient's subjective response to therapy are the most common methods use to assess effectiveness of CPT



AARC Clinical Practice Guidelines - Measure of effectiveness

- If secretions are the outcome, percussion generally, is found effective in increasing sputum production
- On the other hand, when the outcome measure is not the volume of secretions but actual tracheobronchial clearance, results are less positive



Indications

- **The routine use of PDPV cannot be justified.**
- Percussion and vibration may increase the volume of sputum production in some patients
- Acutely ill patients with copious secretions
- Patients in acute respiratory failure with clinical signs of retained secretions (audible abnormal breath sounds, deteriorating ABGs, chest radiograph changes)
- Patients with acute lobar atelectasis
- Patients with ventilation/perfusion abnormalities due to lung infiltrates or consolidation.

Review

- The purpose of BHT is to:
 - A. increase tracheobronchial secretions.
 - B. reverse respiratory damage
 - C. Decrease the rate of ventilation
 - D. improve gas exchange