



Airway Clearance Indications: Post-Surgical and ICU Patients

Respiratory complications occur in more than 50% of all post-surgical procedures and are a common contributor to illness and death in the intensive care setting. While many cases of minor post-operative atelectasis or transient ventilatory deficits resolve with no intervention, a significant number progress to fulminant pneumonia, respiratory failure and even death. Approximately 35% of all post-surgical deaths can be attributed to respiratory complications.

What Happens in Post-Surgical and ICU Situations?

The respiratory complications experienced in the post-surgical period or while in the intensive care unit setting will depend very much on the procedures performed and the underlying health of the individual. However, even minor surgical procedures present some risk to respiratory function. General anesthesia depresses the activity of the respiratory muscles, leading to shallow inspiration and low lung volumes. This very frequently contributes to the development of atelectasis, a condition characterized by the collapse of areas of the lung with consequent ventilatory deficits. Cough function is also often impaired either due to sedative medications used during and after surgery or to incision/procedure site pain. Ineffective cough leads to the accumulation of respiratory secretions, which can serve as breeding ground for pathogens. Additionally, endotracheal intubation during surgery and mechanical ventilatory support in the post-surgical recovery period or intensive care setting can introduce pathogens directly into the airway.

Limited mobility, coupled with an ineffective cough and secretion retention can lead to a vicious cycle of mucus hypersecretion, infection, inflammation, and airway damage.

How Airway Clearance Therapy Can Help Prevent Respiratory Complications in the Post-Surgical/ICU Setting

Maintaining clear airways is essential to optimal ventilatory function in post-surgical patients or individuals receiving mechanical ventilation in the intensive care setting. Keeping the airways clear of excess secretions and thereby reduce the incidence of inflammation and/or infection and is crucial to maintaining respiratory health. Airway clearance therapy using High Frequency Chest Wall Oscillation (HFCWO) has been demonstrated by clinical study to promote excess mucus clearance and improve bronchial drainage. Shear forces are created by HFCWO treatment that mechanically releases adhered secretions from the walls of the pulmonary tract. HFCWO has also been shown to reduce the viscosity of secretions which significantly improves mobilization of excess mucus. By replicating cough, HFCWO can effectively mobilize pulmonary secretions from smaller airways to larger airways where they can be coughed out, swallowed or suctioned.



Symptoms of Respiratory Complications in the Post- Surgical and Intensive Care Setting

The symptoms of post-surgical or intensive care setting respiratory complications will vary depending on the complication. Early indications that may indicate a change in respiratory status include:

- Changes consistent with atelectasis or pneumonia on x-ray
- Chest pain
- Fever
- Increased mucus production
- Decreased level of oxygen in the blood
- Cyanosis
- Presence of unusual pathogens in the sputum

For More Information on Respiratory Complications in the Post-Surgical and Intensive Care Setting:

1. Fact sheet from the Annals of Internal Medicine:

<http://www.annals.org/cgi/content/full/135/10/S54>

2. Fact sheet from the Merck Manual: <http://www.merck.com/mmhe/sec04/ch048/ch048a.html>

3. Fact sheet from the Society of Critical Care Medicine:

<http://www.mycucare.org/Pages/default.aspx?gclid=CMmlwczuzpgCFSIgDQod42tL1w>

4. Fact sheet ventilator-associated pneumonia (VAP) from the British Society for Anti-Microbial Chemotherapy:

<http://www.bsac.org.uk/pyxis/RTI/Ventilator%20associated%20pneumonia/Ventilator%20associated%20pneumonia.htm>