Airway Clearance Indications: Obstructive Pulmonary Conditions

Asthma

Asthma is a condition in which the airways are excessively sensitive and hyper-reactive to external and/or internal stimuli. The most common symptoms of asthma are acute bronchospasm (tightening of the muscles surrounding the airways) and chronic inflammation. While most asthma is thought to be episodic and occur in isolated reversible “attacks,” it is now known that the airways of people with asthma are chronically inflamed, even in the absence of typical symptoms.

The term asthma is applied broadly, with a consequent large range of disease severity from mild and well-controlled to debilitating, refractory disease that is resistant to standard therapies. Asthma affects 22.2 million people in the United States and is the most common chronic disease of children, affecting 6.8 million U.S. children.

What Happens in Asthma?

Asthmatic airways are on “high-alert,” responding to perceived threats from either external irritants or internal factors with an exaggerated inflammatory reaction and bronchospasm. The classic “wheezing” sound associated with asthma is created when trapped air is forced through constricted airways on exhalation (breathing out). In response to inflammation, special cells found in the lining of the airway called goblet cells flood the already constricted airway with mucus, causing sudden obstruction. For most people with asthma, this process happens repeatedly. Over time, the changes to the airway wall from chronic inflammation (called airway remodeling) can permanently alter the airway making it rigid, thick and narrow and contributing to chronic mucus hyper-secretion. Narrow, rigid airways that are plugged with mucus become even more sensitive and a vicious cycle of inflammation, increased mucus production and respiratory infection overwhelms the mucociliary clearance system.

How Airway Clearance Therapy Can Help Asthma

There is currently no known cure for asthma. The goal of treatment is to maximize function and maintain or improve quality of life. 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.

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Symptoms of Asthma

- Wheezing
- Coughing
- Excess mucus
- Shortness of breath
- Tightness in the chest

For More Information on Asthma:

1. The American Lung Association Asthma Fact Sheet:
http://www.lungusa.org/site/c.dvLUK9O0E/b.36383/k.878/Fact_Sheets.htm

2. Centers for Disease Control Asthma Fact Sheet: http://www.cdc.gov/asthma/faqs.htm

3. World Health Organization Asthma Fact Sheet:
http://www.who.int/mediacentre/factsheets/fs307/en/index.html

4. National Jewish Medical and Research Center Asthma Fact Sheet:
http://www.nationaljewish.org/disease-info/diseases/asthma/about/index.aspx

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