

Airway Clearance Indications: Neuromuscular/Neuromotor Disorders

Amyotrophic Lateral Sclerosis (ALS)

Amyotrophic lateral sclerosis (aka “Lou Gehrig’s Disease”) is a devastating degenerative disorder affecting motor neurons, specialized nerve cells that control muscle movement. Amyotrophic lateral sclerosis affects as many as 30,000 people in the United States, with approximately 5,000 new cases diagnosed each year. Amyotrophic lateral sclerosis can occur in both genders and is reported in all ethnic groups. It may develop at any age, but most commonly presents between the ages of 40 and 70. The underlying causes of amyotrophic lateral sclerosis are not well understood, but heredity may be a factor in 5-10% of all cases. Most cases occur spontaneously and strike previously healthy adults with no known risk factors.

What Happens in Amyotrophic Lateral Sclerosis?

Gradual destruction of both upper (found in the brain) and lower (found in the brain stem and spinal cord) motor neurons results in progressive weakness, spasticity and paralysis of the muscles, including those that control speech, swallowing, facial expressions, voluntary movement of the extremities and respiration. As paralysis progresses, respiratory status is compromised and the majority of affected individuals succumb to death by respiratory failure within three to five years of diagnosis.

Ineffective cough due to weakened respiratory muscles and the inability to manage oral secretions due to inadequate bulbar (swallow) function can contribute to impaired airway clearance. Oral secretions that can’t be swallowed may be aspirated into the airways overwhelming the mucociliary clearance system. Ineffective cough compounds the problem and a vicious cycle of secretion retention, infection, inflammation and airway damage may set in. Additionally, in advanced disease, individuals with amyotrophic lateral sclerosis require ventilatory support. Ventilator-associated pneumonia and other respiratory infections are well-documented complications of prolonged ventilator dependence and create additional risk factors for compromised airway health in amyotrophic lateral sclerosis.

How Airway Clearance Therapy Can Help Amyotrophic Lateral Sclerosis

There is currently no known cure for amyotrophic lateral sclerosis so therapy is targeted at improving quality of life and maximizing function. 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 Amyotrophic Lateral Sclerosis

- Twitching and cramping of muscles, especially those in the hands and feet
- Weakness and/or loss of motor control in the hands and arms
- General weakness and fatigue
- Tripping and falling
- Dropping things
- Uncontrollable periods of laughing or crying
- Slurred or thick speech and difficulty in projecting the voice
- Shortness of breath
- Difficulty breathing
- Difficulty swallowing
- Paralysis

For More Information on Amyotrophic Lateral Sclerosis:

1. The ALS Association: <http://www.alsa.org/als/what.cfm>
2. Fact Sheet on ALS from the National Institute of Neurological Disorders and Stroke (NINDS): http://www.ninds.nih.gov/disorders/amyotrophiclateralsclerosis/detail_amyotrophiclateralsclerosis.htm
3. The Muscular Dystrophy Association, ALS Division: <http://www.als-mda.org/>
4. ALS Therapy Development Institute (ATDI): <http://www.als.net/>