

AeroSelf is a non-invasive handheld, inhalation device intended to provide lung expansion through PEP (Positive Expiratory Pressure) as well as to provide secretion clearance. The device is indicated as a lung expansion device and effective aerosolised drug delivery into the small airway of the lungs. The device applies a combination of oscillated air pressure and acoustic sounds pulses, superimposed over the normal respiratory waveforms and travel throughout the lungs via conducting airway system. The device intends to treat COPD, Cystic Fibrosis and lung diseases patients. The patient on a daily use, at home and hospital setting uses the device 2-3 times a day, each treatment duration is up to 20-25 min.

## The need

Chronic Obstructive Pulmonary Disease (COPD) is characterised by persistent airflow limitation caused by a combination of small airways disease, alveolar septa destruction and impaired secretions clearance. COPD patients are in need of airway clearance treatments multiple times daily, both at home and with increased frequency when they require care in a hospital setting. Techniques such as percussive and vibration techniques often do not improve respiratory status significantly based on data that shows limited or no improvement in indices related to lung function, admission duration, antibiotic usage, and requirement for ventilation. To date there is no effective therapeutic modality that directly or indirectly treats the small airways.

## Market Opportunity

Acute and chronic respiratory diseases place an extraordinary cost burden on the healthcare system, notably among these, COPD and bronchiolitis. In the US alone, there were 13.8 million diagnosed cases of COPD and an additional unrecognised 20 million. In 8 major markets (US, 5 EU, Japan, Australia), there were 24.5 million diagnosed cases of COPD. Annual health care expenditures for COPD are estimated at \$13 billion.


Patient Population: Cystic fibrosis, COPD, asthma, bronchiolitis and lung diseases with secretory problems, patients with neuromuscular disease affecting the ability to effectively cough.

**AeroSelf is affordable, hand-held, non-invasive inhalation, lung expansion and airways clearance device for effective and personalised drug delivery into the small airway on a daily basis treatment at patient home setting and hospital**

AeroSelf device administers a combination of acoustic and air pressure oscillations into the chest cavity using air as carrier medium to travel throughout the lungs via conducting airway system. The device includes a preprogrammed protocol for 3 preset modes representing patient conditions (Mild, Moderate, Severe). The device applies a combination of low frequency flow oscillations and high frequency acoustic waves to facilitate removal of mucus by breaking down or agglomerating mucus chunks, detaching them from the wall, and facilitating transport. The reflected sound waves amplify the secretion removal and pushing it out from the obstructed airway. The ineffective cilia, in the collapsed airway, now have a time to resume coordinated motion. This coordinated motion takes time to get into Metachronal Wave that is necessary to generate the mobilisation of the mucus layer that results in sputum clearance which helps to reduce secretion, decreases flow disturbance and tendency to re-close and/or trap particles -therefore increase the chance of the small airways to remain open longer.

AeroSelf applies oscillating Positive Expiratory Pressure (PEP) via a combination of breathing against a positive pressure source as well as breathing through a regulated exhalation port. Airway reopening and improved respiratory pattern allow drug penetration deeper into the small airways. The combined oscillations enhance the peripheral aerosol distribution.

## AeroSelf Key Benefits:

-  Effective mucus cleaning
-  Effective drug delivery
-  Personalised treatment
-  For paediatric and adults use
-  Improve gas exchange
-  Increase lung volume
-  Improve quality of life
-  Home use device

Patent status: pending

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