

**Technology**

Cough restoration in patients with neurological conditions

Inventor

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Key Features

- Minimally invasive procedure for generating expiratory function
- Microstimulators are capable of remote activation
- Could be used in patients with contraindications to external positive pressure

Stage of Development

Reduced to practice with successful demonstration in animal models

Keywords

- Medical Device
- Respiratory
 - Implantable Device
 - Microstimulator

Patent Status

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Method of Restoring Cough using Microstimulators in Patients with Neurological Conditions (VA Reference No. 06-074)

Novel method that could potentially reduce respiratory complications by inducing forced expiration in patients with neurological conditions

Technology

The Department of Veterans Affairs has developed a technology that could potentially reduce respiratory complications by inducing forced expiration in patients suffering from spinal cord injury or other neurological conditions.

Description

The technology developed includes a method for percutaneously placing of an injectable microstimulator adjacent to at least one thoracic spinal nerve that innervates an intercostal muscle. By applying a stimulating electric current from the microstimulator to the thoracic spinal nerve at a sufficient intensity and duration, a forced contraction of the intercostal muscle is induced resulting in forced expiration. Particularly effective is the placement of two microstimulators on the first and second contralateral nerves for at least three vertebrae from T8 through L1.

Competitive Advantage

Currently, there are limited methods of effectively producing a normal cough in spinal cord injuries. The “quad cough” is typically the most common technique but cannot be used in patients with contraindications such as unstable spine in traction, internal abdominal complications, and chest trauma such as fractured ribs.

This invention:

- Does not require application of external positive pressure like many competitive devices.
- Minimize risks of infection, hemorrhage, and device failure when compared to invasive procedures.
- Is capable of being remotely activated without lead lines connected to a power source.

Status

The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA).

Field Code Changed