Clinical Policy Title: Mechanical airway clearance devices

Clinical Policy Number: 07.02.06

**Effective Date:** April 1, 2015
**Initial Review Date:** November 19, 2014
**Most Recent Review Date:** January 18, 2017
**Next Review Date:** January 2018

**Policy contains:**
- Mechanical insufflation-exsufflation therapy.
- High-frequency chest wall oscillation.

**Related policies:**
None.

**ABOUT THIS POLICY:** Prestige Health Choice has developed clinical policies to assist with making coverage determinations. Prestige Health Choice’s clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of “medically necessary,” and the specific facts of the particular situation are considered by Prestige Health Choice when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. Prestige Health Choice’s clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. Prestige Health Choice’s clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, Prestige Health Choice will update its clinical policies as necessary. Prestige Health Choice’s clinical policies are not guarantees of payment.

**Coverage policy**

Prestige Health Choice considers the use of mechanical insufflation-exsufflation (MIE) therapy to be clinically proven and, therefore, medically necessary durable medical equipment when all of the following criteria are met:

- For persons with medical conditions for whom stimulation of cough is medically necessary to mobilize secretions, such as:
  - A neuromuscular disease (e.g., amyotrophic lateral sclerosis and high spinal cord injury with quadriplegia) that is causing a significant impairment of chest wall and/or diaphragmatic movement.
  - Disease restricting chest wall movement.
  - Ventilator dependence.
- Other manual or mechanical treatments (e.g., chest percussion and postural drainage) have not been successful in adequately mobilizing retained secretions.
- No contraindications to mechanical positive-pressure devices (e.g., recent barotrauma, a
history of bullous emphysema or known susceptibility to pneumo-mediastinum or pneumothorax).

For Medicare members only:

- Mechanical in-exsufflation devices (E0482) are covered for beneficiaries who meet all of the following criteria:
  - Beneficiaries who have a neuromuscular disease.
  - Beneficiaries with a condition causing a significant impairment of the chest wall and/or diaphragmatic movement, resulting in an inability to clear retained secretions.
  - Statutory payment policy requirements stipulated in the Patient Protection and Affordable Care Act (ACA) 6407 (A52510).
- If all of these criteria are not met, the claim will be denied as not reasonable and necessary.

For Medicare members only:

Prestige Health Choice considers the use of high-frequency chest wall oscillation (HFCWO) to be clinically proven and, therefore, medically necessary durable medical equipment when all of the following criteria are met:

- For treatment or prevention of pulmonary complications in patients diagnosed with cystic fibrosis, or stable bronchiectasis.
  - Bronchiectasis must be documented by computed tomography (CT) scan and characterized by either daily productive cough for at least six continuous months or by frequent (i.e., more than two times per year) exacerbations requiring antibiotic therapy.
- Patient is cooperative, clinically stable, and able to cough spontaneously.
- There is a demonstrated need for airway clearance with chest physiotherapy, but standard chest physiotherapy has failed, is not tolerated, is unavailable, or cannot be performed.
  - HFCWO must be performed in lieu of chest physiotherapy.
- No contraindications to HFCWO (see Limitations section).

For Medicare members only:

HFCWO devices (E0483) are covered for beneficiaries who meet criterion 1, 2, or 3, and criterion 4:

1. There is a diagnosis of cystic fibrosis (see diagnostic codes section).
2. There is a diagnosis of bronchiectasis (see diagnostic codes section), which has been confirmed by a high resolution, spiral, or standard CT scan and is characterized by:
   a. Daily productive cough for at least six continuous months.
   b. Frequent (i.e., more than two times a year) exacerbations requiring antibiotic therapy.
   c. Chronic bronchitis and chronic obstructive pulmonary disease (COPD), in the absence of a confirmed diagnosis of bronchiectasis, do not meet this criterion.
3. The beneficiary has one of the following neuromuscular disease diagnoses (see diagnostic codes section):
   a. Postpolio.
   b. Acid maltase deficiency.
c. Anterior horn cell diseases.
d. Multiple sclerosis.
e. Quadriplegia.
f. Hereditary muscular dystrophy.
g. Myotonic disorders.
h. Other myopathies.
i. Paralysis of the diaphragm.

4. There must be well-documented failure of standard treatments to adequately mobilize retained secretions.

- If all the criteria are not met, the claim will be denied as not reasonable and necessary.
- It is not reasonable and necessary for a beneficiary to use both an HFCWO device and an MIE device (E0482).

**Limitations:**

Coverage determinations are subject to benefit limitations and exclusions as delineated by the state Medicaid authority. The Florida Medicaid website can be accessed at http://ahca.myflorida.com/Medicaid/.

All other uses of MIE therapy are not medically necessary.

All other uses of HFCWO are not medically necessary.

Use of both an HFCWO device and a MIE device is not medically necessary.

Use of HFCWO in persons with chronic bronchitis or COPD in the absence of a confirmed diagnosis of bronchiectasis is not medically necessary.

Absolute contraindications to HFCWO treatment include head and neck injury until stabilized and active hemorrhage with hemodynamic instability.

Relative contraindications to HFCWO treatment include:
- Intracranial pressure (ICP) > 20 mm Hg.
- Uncontrolled hypertension.
- Hemodynamic instability.
- Recent spinal surgery or acute spinal injury.
- Active or recent gross hemoptysis.
- Empyema.
- Bronchopleural fistula.
- Pulmonary edema associated with congestive heart failure.
- Large pleural effusions.
- Pulmonary embolism.
- Uncontrolled airway at risk for aspiration, such as tube feeding or recent meal.
- Distended abdomen.
- Bronchospasm.
- Rib fracture, with or without flail chest.
- Subcutaneous emphysema.
- Recent esophageal surgery.
- Recent epidural spinal infusion or spinal anesthesia.
- Burns, open wounds, and skin infections of the thorax.
- Recently placed transvenous pacemaker or subcutaneous pacemaker.
- Suspected pulmonary tuberculosis.
- Lung contusion.
- Osteomyelitis of the ribs.
- Osteoporosis.
- Coagulopathy.
- Complaint of chest wall pain.

**Alternative covered services:**

- Chest physiotherapy (chest percussion or vibration alone or combined with positioning and postural drainage).
- Manually assisted coughing.
- Endotracheal suctioning.
- Forced expiration technique (FET).
- Autogenic drainage.
- Continuous positive airway pressure.

**Background**

A number of conditions are associated with poor airway clearance of respiratory secretions, including asthma, COPD, cystic fibrosis (CF), neuromuscular disease, and metabolic disorders. For successful airway clearance, both secretion mobilization and an effective cough are needed. An impaired cough reflex with or without abnormal secretions can cause retained secretions, leading to atelectasis, secondary chest infections, respiratory deterioration and, in some cases, death (Gauld, 2009).

Manual and mechanical assisted cough techniques in these populations are used to enhance airway clearance and maintain range of motion of the thoracic cage to avoid progressive respiratory disability (Homnick, 2007). The available techniques may be used alone or in various combinations to obtain effective clearance for an individual. Choice of technique(s) will depend on the severity of airway clearance impairment, patient preference, ease of use, and effectiveness of the available techniques. Physical therapists and respiratory therapists generally employ these techniques and teach patients and their families how to use them (Gauld, 2009).
Mechanical cough assist devices — MIE and HFCWO:

MIE consists of insufflation of the lungs with positive pressure, followed by an active negative-pressure exsufflation that creates a peak and sustained flow high enough to provide adequate shear and velocity to loosen and move secretions toward the mouth for suctioning or expectoration (Homnick, 2007).

Several cough-assist devices are marketed as Class II intermittent positive pressure breathing devices for use in the United States (21CFR868.5905). They are intended for use on adult or pediatric patients who are unable to cough or clear secretions effectively due to reduced peak cough expiratory flow (PCEF) resulting from high spinal cord injuries, neuromuscular deficits, or severe fatigue associated with intrinsic lung disease. They may be used either with a face mask, a mouthpiece, or an adapter to a patient’s endotracheal tube or tracheostomy tube in a hospital, institutional, or home setting, with adequate training.

The positive insufflation and negative exsufflation pressures, duration, and inspiratory flow rate can be titrated, and the device can operate in either a manual or automatic mode, depending on the model. One treatment typically consists of three to five cycles of MIE (with or without an abdominal thrust during exsufflation), followed by approximately 30 seconds of rest. This is repeated several times or until secretions have been sufficiently expelled (Homnick, 2007).

Vibration of the air column in the conducting airways is thought to lower mucus viscosity, making the mucus easier to remove. HFCWO is an inflatable, vest-like device connected to a small air-pulse generator that rapidly inflates and deflates the vest. The vest fits over the patient’s chest and back, compressing and releasing the chest wall up to 25 times per second. The vest was developed to improve consistency of care and treatment adherence and reduce the need for a respiratory therapist or trained caregiver, with the goal of helping patients attain adequate, independent pulmonary care. Other devices such as ventilators and cuirass devices can provide HFCWO, but they are generally designed to be used in a hospital setting.

Several HFCWO devices are marketed for use in the United States as Class II percussor devices (21CFR868.5665). Powered by electricity or compressed gas, HFCWO may be indicated when external chest manipulation is the physician’s treatment of choice to enhance mucus transport.

Searches

Prestige Health Choice searched PubMed and the databases of:
- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality’s National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services (CMS).

We conducted searches on November 9, 2016. Search terms were: “cough assist,” “mechanical insufflation,” “vital cough system,” and “high frequency chest wall oscillation.”
We included:

- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.

- **Guidelines based on systematic reviews.**

- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

**Findings**

**MIE:**

For this policy, we identified three systematic reviews (Winfield, 2014; Morrow, 2013; and Hayes, 2006), three evidence-based guidelines (Strickland, 2013; Hull, 2012; and Miller, 2009) and no economic analyses. The evidence of safety and efficacy of MIE therapy is limited to low-quality studies using only the CoughAssist™ In-Exsufflator device (JH Emerson, Cambridge, Massachusetts, later bought by Respironics, Murrysville, Pennsylvania) primarily in adult patients with respiratory impairment caused by neuromuscular disease and traumatic central nervous system injury. Studies of pediatric populations generally enrolled children older than 10 years of age. PCEF was the primary outcome used as a surrogate measure of clinical benefit. Effects of MIE on hospitalization, mortality, morbidity, quality of life, serious adverse events, or other prespecified outcomes were not reported. Long-term results are lacking.

There is sufficient evidence to support the safety and efficacy of MIE using the CoughAssist™ device for cough augmentation in patients who have difficulty clearing secretions due to neuromuscular disorders that significantly impair diaphragmatic and/or chest wall movement, when other methods of cough augmentation are ineffective. There is insufficient evidence to support the safety and efficacy of MIE in persons with COPD.

The included studies reported no serious adverse events, but systematic reporting of adverse events was inconsistent. MIE appears to be well-tolerated. Searches of the U.S. Food and Drug Administration (FDA) Manufacturer and User Facility Device Experience (MAUDE) database revealed two reported adverse events using the CoughAssist™ involving user error and infection control (FDA, 2014a). While optimum pressures, frequency of use, and insufflation-exsufflation times are not currently known, most studies relied on “maximally tolerated pressures.” All methods of airway clearance in this population, including MIE, appear to be equally efficacious and well tolerated. There is no convincing evidence that patients have better outcomes with MIE therapy than with standard methods for airway clearance.

Optimal patient selection criteria for MIE have not been defined clearly, but as with any mechanical positive-pressure device, potential complications of in-exsufflation include abdominal distention, aggravation of gastroesophageal reflux, hemoptysis, chest and abdominal discomfort, acute cardiovascular effects, and pneumothorax. There may be a greater risk of baro- or volu-trauma in young children with the
use of such high pressures, and more so in infants with neuromuscular diseases in whom chest wall compliance is further increased relative to lung compliance (Hayes, 2006; Morrow, 2013). Therefore, MIE may be contraindicated in patients who have had recent barotrauma, a history of bullous emphysema, or known susceptibility to pneumo-mediastinum or pneumothorax. In patients who have cardiac instability, pulse and oxygen saturation must be monitored.

The American Association for Respiratory Care (AARC) recommends using cough assist techniques in patients with neuromuscular disease, particularly when PCEF is < 270 L/min (Strickland, 2013). The British Thoracic Society (BTS) supports consideration of MIE in very weak children, those with loss of bulbar function, and those who cannot cooperate with manual cough assist or air-stacking or in whom these methods are not effective (Hull, 2012). According to the American Academy of Neurology (AAN), MIE is possibly effective for clearing upper airway secretions in patients with amyotrophic lateral sclerosis (ALS) who have reduced PCEF (< 270 L/min), although the clinically meaningful difference is unknown (Miller, 2009).

**HFCWO:**

We identified four systematic reviews (Winfield, 2014; Morrow, 2013; Lee, 2013; Hayes, 2006), four evidence-based guidelines (Strickland, 2013; Hull, 2012; Flume, 2009; Miller, 2009) and no economic analyses. The evidence of safety and efficacy of HFCWO therapy comprises a larger body of evidence than MIE. The overall quality ranged from low to moderate in adult and pediatric patients with respiratory impairment due to CF and stable bronchiectasis in the hospital setting; the overall quality and quantity of evidence was low for other clinical indications. The forced expiratory volume in one second (FEV₁) was the most commonly reported outcome. The effects of HFCWO on the frequency of exacerbations, hospitalizations, patient preference, adherence to therapy, and general satisfaction with treatment were not reported. Long-term results are lacking.

There is sufficient evidence to support the safety and efficacy of HFCWO in patients with CF or stable bronchiectasis, who have difficulty clearing secretions when other methods of conventional chest physical therapy (CPT) are ineffective. In these populations the evidence suggests that HFCWO appears to be as effective as other forms of CPT, and no single HFCWO device is superior to another. Additional patient selection criteria have not been clearly defined, but the patient’s cooperation and ability to cough should be considered, as these criteria are also necessary for most other types of CPT.

HFCWO is generally safe and well-tolerated. However, a search of the FDA MAUDE database identified 85 events related to the use of HFCWO since January 1, 2000 (FDA, 2014b). The events appear to be related to injury caused by the vest and not device malfunction. Therefore, the optimal patient for whom the clinical benefits would outweigh the risk of injury must be considered. Absolute contraindications to HFCWO treatment include unstable head and/or neck injury and active hemorrhage with hemodynamic instability.

Relative contraindications to HFCWO treatment are (Hayes, 2014):

- Intracranial pressure (ICP) > 20 mm Hg.
Uncontrolled hypertension.
- Hemodynamic instability.
- Recent spinal surgery or acute spinal injury.
- Active or recent gross hemoptysis.
- Empyema.
- Bronchopleural fistula.
- Pulmonary edema associated with congestive heart failure.
- Large pleural effusions.
- Pulmonary embolism.
- Uncontrolled airway at risk for aspiration, such as tube feeding or a recent meal.
- Distended abdomen.
- Bronchospasm.
- Rib fracture, with or without flail chest.
- Subcutaneous emphysema.
- Recent esophageal surgery.
- Recent epidural spinal infusion or spinal anesthesia.
- Burns, open wounds, and skin infections of the thorax.
- Recently placed transvenous pacemaker or subcutaneous pacemaker.
- Suspected pulmonary tuberculosis.
- Lung contusion.
- Osteomyelitis of the ribs.
- Osteoporosis.
- Coagulopathy.
- Complaint of chest wall pain.

There is sufficient evidence the safety and efficacy of HFCWO for primary pulmonary dyskinesia (PPD). PPD (also referred to as primary ciliary dyskinesia and immotile cilia syndrome) is a rare genetic disease characterized by abnormal ciliary structure and function leading to impaired mucociliary clearance and chronic progressive sinopulmonary disease (Sagel, 2011). The progression of impaired mucociliary clearance with age is similar to CF, but slower. Little evidence exists to support treatment recommendations for PPD. Clinical management is extrapolated largely from knowledge of CF and other conditions with impaired mucociliary clearance. It includes interventions that enhance airway clearance, such as daily airway clearance techniques and drug therapies that address airway infection, inflammation, and impaired mucociliary clearance (Sagel, 2011). In one recent study of 24 children with PPD, HFCWO, and CPT had comparable effects on pulmonary function, but HFCWO was more comfortable than CPT ($P = 0.04$) (Gokdemir, 2013). The evidence is insufficient to support the use of HFCWO for other clinical indications.

Evidence-based guidelines generally concur with these findings. The AARC does not recommend HFCWO for adult and pediatric patients with neuromuscular disease, respiratory muscle weakness or impaired cough due to insufficient evidence (Strickland, 2013). The AAN found insufficient data to support or refute HFCWO for clearing airway secretions in patients with ALS (Miller, 2009). The BTS recommends consideration of oscillatory techniques, such as HFCWO and intrapulmonary percussive ventilation, in children who have
difficulty mobilizing secretions or who have persistent atelectasis, despite use of other airway clearance techniques (Hull, 2012). The Cystic Fibrosis Pulmonary Therapies Committee recommends an individualized approach using airway clearing techniques, including HFCWO, be performed regularly in patients with CF (Flume, 2009).

Therefore, it is reasonable to consider HFCWO as a form of CPT to be used when standard CPT approaches (i.e., postural drainage, percussion and vibration, and assisted breathing) are ineffective or not tolerated. Providers should consider the preferences, financial burden, age appropriateness, partner availability, and insurance coverage of the patient when deciding on the best therapeutic approach to care.

**Policy update:**

We identified one new systematic review that updated an earlier review previously included in this policy (Lee, 2013; updated 2015). One cross-over study was added to their review, but the new information does not change their previous conclusions, or the conclusions of our original policy. Therefore, no changes to the policy are warranted.

In 2016, we added one systematic review of the CoughAssist MIE device (Hayes, 2016), which replaced an earlier 2006 Hayes report on the same topic. Low-quality evidence provided conflicting results of clinical benefit in patients with respiratory insufficiency primarily due to neuromuscular disease. MIE may be beneficial when mechanical airway clearance alone is not efficacious or in the home setting. The new information does not change previous conclusions. Therefore, no policy changes are warranted.

**Summary of clinical evidence:**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
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<tbody>
<tr>
<td><strong>MIE</strong></td>
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<tr>
<td>Hayes (2015, updated 2016)</td>
<td><strong>Key points:</strong></td>
</tr>
</tbody>
</table>
| CoughAssist MIE for respiratory insufficiency | • Systematic review of eight randomized controlled trials (RCTs) of adults and children with respiratory insufficiency mainly due to neuromuscular disease (eight to 75 patients per study).  
• Overall quality: low with high risk of bias due to small sizes, lack of blinding, or blind assessment of results, heterogeneous patient populations and protocols, and insufficient follow-up or study details.  
• Conflicting results for improved airway clearance with MIE for some respiratory indices, particularly over the long term.  
• MIE may be beneficial, particularly when mechanical airway clearance alone is not efficacious or in the home setting.  
• Additional, long-term RCTs are needed with sufficiently large populations that test the effects of MIE alone and in combination with standard techniques using clinically relevant outcome measures.  
• 2016 update: added one RCT, one retrospective study, and two survey studies. No changes to previous conclusions. |
<p>| Winfield (2014)            | <strong>Key points:</strong>                                                                                   |</p>
<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
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| Cochrane review Children with severe global developmental delay | - Systematic review of four RCTs and 11 controlled trials and cohort studies.  
- Overall quality: low; small size, incomplete reporting, and high risk of bias.  
- Results suggest that use of non-invasive ventilation, mechanically assisted coughing, HFCWO, positive expiratory pressure, and supportive seating may confer potential benefits.  
- No serious adverse effects were reported for airway clearance interventions other than one incident in a clinically unstable child following mechanically assisted coughing. Incident not described.  
- Inconclusive evidence of safety or efficacy. |
| Morrow (2013) Cochrane review Neuromuscular disease | **Key points:**  
- Systematic review of five RCTs (n = 105 total participants), quasi-RCTs, and randomized cross-over trials.  
- Overall quality: low; insufficient study detail, high risk of bias.  
- PCEF was the most common outcome measure. No reporting on mortality, morbidity, quality of life, serious adverse events, or any other pre-specified outcome.  
- All interventions increased PCEF to the critical level necessary for mucus clearance.  
- MIE appeared to be as well tolerated as other cough augmentation techniques.  
- Insufficient evidence for or against the use of MIE in this population. |
| HFCWO Lee (2013; updated 2015) Cochrane review Airway clearance techniques (including HFCWO) for stable bronchiectasis | **Key points:**  
- Systematic review of six cross-over studies (105 total participants); five studies on adults, one study on children.  
- Overall quality: moderate with low or unclear risk of bias due to insufficient reporting, short-term results.  
- Airway clearance techniques had no effect on gas exchange, and no studies reported effects of antibiotic usage.  
- HFCWO appears safe with short-term improvements in sputum expectoration, selected measures of lung function, and health-related quality of life.  
- The role of these techniques for acute exacerbation of bronchiectasis is unknown. |
| Hayes (2014) HFCWO for diseases other than CF | **Key points:**  
- Systematic review of nine RCTs, three randomized crossover studies, one prospective before-after study.  
- Overall quality: low; small sample size and/or lack of statistical power, short duration of treatment and follow-up, insufficient study detail, high risk of bias.  
- Insufficient evidence to establish definitive patient selection criteria for HFCWO in non-CF populations, but the patient’s cooperation and ability to cough should be considered (criteria that are also necessary for most other types of CPT).  
- Absolute contraindications to HFCWO treatment include unstable head and/or neck injury and active hemorrhage with hemodynamic instability, plus 25 relative contraindications to HFCWO treatment.  
- Where reported, limited number of adverse events. Nausea and pain or discomfort reported in a small number of patients (6.7%) in one study.  
- Limited, insufficient evidence suggests HFCWO therapy is at least comparable with CPT and usual care in patients with impaired airway clearance not due to CF (e.g., neuromuscular disease). |
Citation | Content, Methods, Recommendations
---|---
Morrison (2014) | **Key points:**
Cochrane review Oscillatory devices in CF | - Systematic review and meta-analysis of 35 RCTs and controlled clinical trials (1,050 total participants).
- Overall quality: low to moderate; moderate to high risk of bias, insufficient reporting of details, inadequately powered, short-term results.
- FEV₁ was the most frequently measured outcome.
- No clear evidence that oscillation was more or less effective than other forms of physiotherapy or the superiority of one device over another.
- Additional evidence is needed to evaluate relative efficacy of forms of airway clearance in people with CF. Measures of adherence, frequency of exacerbations, and patient preference should be included.

**References**

**Professional society guidelines/other:**


Erratum in:


**Peer-reviewed references:**


Winfield NR, Barker NJ, Turner ER, Quin GL. Non-pharmaceutical management of respiratory morbidity in children with severe global developmental delay. *The Cochrane Database of Systematic Reviews*. 2014; 10:
CMS National Coverage Determinations (NCDs):

No NCDs identified as of the writing of this policy.

Local Coverage Determinations (LCDs):


Commonly submitted codes

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill accordingly.

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comment</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>ICD-10 Code</th>
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<tr>
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<td>Cystic fibrosis with pulmonary manifestations</td>
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<td>Quadriplegia, C5-C7 complete</td>
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<tr>
<td>J47.9</td>
<td>Bronchiectasis, uncomplicated</td>
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<th>HCPCS Level II</th>
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<tr>
<td>A7020</td>
<td>Interface for cough stimulating device, includes all components, replacement only</td>
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<tr>
<td>E0482</td>
<td>Cough stimulating device, alternating positive and negative airway pressure</td>
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