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 11, 2018
Next Review Date: January 2019

Related policies:

CP# 07.02.01 Pulmonary rehabilitation

ABOUT THIS POLICY: AmeriHealth Caritas has developed clinical policies to assist with making coverage determinations. AmeriHealth Caritas’ 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 AmeriHealth Caritas 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. AmeriHealth Caritas’ 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. AmeriHealth Caritas’ clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, AmeriHealth Caritas will update its clinical policies as necessary. AmeriHealth Caritas’ clinical policies are not guarantees of payment.

Coverage policy

AmeriHealth Caritas considers the use of mechanical insufflation-exsufflation therapy to be clinically proven and, therefore, medically necessary durable medical equipment when all of the following criteria are met (Hayes, 2017a; Winfield, 2014; Morrow, 2013; Strickland, 2013; Hull, 2012; Miller, 2009):

- Stimulation of cough is medically necessary to mobilize secretions in members with medical conditions, 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) are present.
AmeriHealth Caritas considers the use of high-frequency chest wall oscillation (E0483) to be clinically proven and, therefore, medically necessary durable medical equipment for members with both well-documented failure of standard treatments to adequately mobilize retained secretions and any of the following confirmed diagnoses (Hayes, 2017a; Hayes, 2017b; Medicare Local Coverage Determination [LCD] L33785; Morrison, 2017; Hull, 2012; Flume, 2009):

- Cystic fibrosis (see diagnostic codes section).
- Bronchiectasis (see diagnostic codes section), which has been confirmed by a high resolution, spiral, or standard computed tomography (CT) scan and is characterized by:
  - Daily productive cough for at least six continuous months.
  - Frequent (i.e., more than two times per year) exacerbations requiring antibiotic therapy.
  - Chronic bronchitis and chronic obstructive pulmonary disease in the absence of a confirmed diagnosis of bronchiectasis do not meet this criterion.
- Postpolio.
- Acid maltase deficiency.
- Anterior horn cell diseases.
- Multiple sclerosis.
- Quadriplegia.
- Hereditary muscular dystrophy.
- Myotonic disorders.
- Other myopathies.
- Paralysis of the diaphragm.
- Primary pulmonary dyskinesia (Sagel, 2011).

For Medicare members only:

AmeriHealth Caritas considers the use of mechanical insufflation-exsufflation devices (E0482) to be clinically proven and, therefore, medically necessary durable medical equipment when all of the following criteria are met (L33795):

- Member has a neuromuscular disease.
- Member has 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 are followed as stipulated in the Patient Protection and Affordable Care Act 6407 (A52510).

AmeriHealth Caritas considers the use of high-frequency chest wall oscillation to be clinically proven and, therefore, medically necessary durable medical equipment when all of the following criteria are met (A52494; L33785):

- For treatment or prevention of pulmonary complications in patients diagnosed with cystic fibrosis or stable bronchiectasis.
Bronchiectasis must be documented by 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.
  - High-frequency chest wall oscillation must be performed in lieu of chest physiotherapy.
- No contraindications to high-frequency chest wall oscillation (see Limitations section).

**Limitations:**

All other uses of mechanical insufflation-exsufflation therapy are not medically necessary.

All other uses of high-frequency chest wall oscillation are not medically necessary, including persons with chronic bronchitis or chronic obstructive pulmonary disease in the absence of a confirmed diagnosis of bronchiectasis.

Use of both high-frequency chest wall oscillation and mechanical insufflation-exsufflation is not medically necessary.

Absolute contraindications to high-frequency chest wall oscillation include head and neck injury until stabilized and active hemorrhage with hemodynamic instability (Hayes, 2014).

Relative contraindications to high-frequency chest wall oscillation treatment include (Hayes, 2014):

- Intracranial pressure > 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.
- Autogenic drainage.
- Continuous positive airway pressure.

Background

A number of conditions are associated with poor airway clearance of respiratory secretions, including asthma, chronic obstructive pulmonary disease, cystic fibrosis, 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 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:

Mechanical insufflation-exsufflation 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 loosen and move secretions toward the mouth for suctioning or expectoration (Homnick, 2007). These 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 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 (Homnick, 2007).

High-frequency chest wall oscillation 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 high-frequency chest wall oscillation, but they are generally designed to be used in a hospital setting. Several high-frequency chest wall oscillation devices are marketed for use in the United States as Class II percussor devices (21CFR868.5665).

**Searches**

AmeriHealth Caritas 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 17, 2017. 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**

**Mechanical insufflation-exsufflation:**

For this policy, we identified three systematic reviews (Hayes, 2006 {updated 2017}; Winfield, 2014; Morrow, 2013) and three evidence-based guidelines (Strickland, 2013; Hull, 2012; Miller, 2009); no economic analyses were identified. The evidence of safety and efficacy 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. Peak cough expiratory flow was the primary outcome used as a surrogate measure of clinical benefit. Effects of mechanical insufflation-exsufflation on hospitalization, mortality, morbidity, quality of life, serious adverse events, or other pre-specified outcomes were not reported. Long-term results are lacking.

There is sufficient evidence to support the safety and efficacy of 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 its safety and efficacy in persons with chronic obstructive pulmonary disease.

The included studies reported no serious adverse events, but systematic reporting of adverse events was inconsistent. Mechanical insufflation-exsufflation 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, 2017a). 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 mechanical insufflation-exsufflation, appear to be equally efficacious and well tolerated. There is no convincing evidence that patients have better outcomes with mechanical insufflation-exsufflation therapy than with standard methods for airway clearance.

Optimal patient selection criteria for mechanical insufflation-exsufflation 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 volutrauma 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, mechanical insufflation-exsufflation may be contraindicated in patients who have had recent barotrauma, a history of bullous emphysema, or known susceptibility to pneumomediastinum or pneumothorax. In patients who have cardiac instability, pulse and oxygen saturation must be monitored.

The American Association for Respiratory Care recommends using cough assist techniques in patients with neuromuscular disease, particularly when peak cough expiratory flow is less than 270 L/min (Strickland, 2013). The British Thoracic Society supports consideration of mechanical insufflation-exsufflation 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, mechanical insufflation-exsufflation is possibly effective for clearing upper airway secretions in patients with amyotrophic lateral sclerosis who have reduced peak cough expiratory flow (< 270 L/min), although the clinically meaningful difference is unknown (Miller, 2009).

**High-frequency chest wall oscillation:**
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 comprises a larger body of evidence than mechanical insufflation-exsufflation. The overall quality ranged from low to moderate in adult and pediatric patients with respiratory impairment due to cystic fibrosis and stable bronchiectasis in the hospital setting; the overall quality and quantity of evidence were low for other clinical indications. The forced expiratory volume in one second (FEV₁) was the most commonly reported outcome. The effects of high-frequency chest wall oscillation 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 high-frequency chest wall oscillation in patients with cystic fibrosis or stable bronchiectasis, who have difficulty clearing secretions when other methods of conventional chest physical therapy are ineffective. In these populations the device appears to be as effective as other forms of chest physical therapy, and no 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 chest physical therapy.

High-frequency chest wall oscillation is generally safe and well-tolerated. However, a search of the FDA MAUDE database identified 85 events related to device use since January 1, 2000 (FDA, 2017b). 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 high-frequency chest wall oscillation include unstable head and/or neck injury and active hemorrhage with hemodynamic instability. Relative contraindications are (Hayes, 2014):

- Intracranial pressure greater than 20 mmHg.
- 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 of the safety and efficacy of high-frequency chest wall oscillation for primary pulmonary dyskinesia. Primary pulmonary dyskinesia (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 cystic fibrosis, but slower. Little evidence exists to support treatment recommendations for primary pulmonary dyskinesia.

Clinical management is extrapolated largely from knowledge of cystic fibrosis 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 primary pulmonary dyskinesia, high-frequency chest wall oscillation and chest physical therapy had comparable effects on pulmonary function, but the former treatment was more comfortable ($P = 0.04$) (Gokdemir, 2013). The evidence is insufficient to support its use for other clinical indications.

Evidence-based guidelines generally concur with these findings. The American Association for Respiratory Care does not recommend high-frequency chest wall oscillation for adult and pediatric patients with neuromuscular disease, respiratory muscle weakness, or impaired cough due to insufficient evidence (Strickland, 2013). The American Academy of Neurology found insufficient data to support or refute high-frequency chest wall oscillation for clearing airway secretions in patients with amyotrophic lateral sclerosis (Miller, 2009). The British Thoracic Society recommends considering oscillatory techniques, such as high-frequency chest wall oscillation 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 high-frequency chest wall oscillation, be performed regularly in patients with cystic fibrosis (Flume, 2009).

Therefore, it is reasonable to consider high-frequency chest wall oscillation as a form of chest physical therapy to be used when standard chest physical therapy 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 updates:**
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 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. Mechanical insufflation-exsufflation 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.

In 2018, we added two Hayes review updates (Hayes, 2017a and 2017b) and one Cochrane review update (Morrison, 2017). The new information does not change previous findings. No policy changes are warranted.

**Summary of clinical evidence:**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hayes (2015 [updated 2017a])</td>
<td><strong>Key points:</strong></td>
</tr>
<tr>
<td>CoughAssist mechanical insufflation-exsufflation for respiratory insufficiency</td>
<td>- 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).</td>
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<tr>
<td></td>
<td>- 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.</td>
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<tr>
<td></td>
<td>- Conflicting results for improved airway clearance for some respiratory indices, particularly over the long term.</td>
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<tr>
<td></td>
<td>- Mechanical insufflation-exsufflation may benefit some, particularly when mechanical airway clearance alone is not efficacious or in the home setting.</td>
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<td>- Additional, long-term RCTs are needed with sufficiently large populations that test the effects of mechanical insufflation-exsufflation alone and in combination with standard techniques using clinically relevant outcome measures.</td>
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<tr>
<td></td>
<td>- 2016 update: added one RCT, one retrospective study, and two survey studies. No changes to previous conclusions.</td>
</tr>
<tr>
<td></td>
<td>- 2017 update: added one RCT, one randomized cross-over study, one clinical study, one Cochrane review and two systematic reviews. No changes to previous conclusions.</td>
</tr>
<tr>
<td>Hayes (2014 [updated 2017b])</td>
<td><strong>Key points:</strong></td>
</tr>
<tr>
<td>High-frequency chest wall oscillation for diseases other than cystic fibrosis</td>
<td>- Systematic review of nine RCTs, three randomized crossover studies, one prospective before-after study.</td>
</tr>
<tr>
<td></td>
<td>- 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.</td>
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</table>
| | - Insufficient evidence to establish definitive patient selection criteria for high-frequency chest wall oscillation in non-cystic fibrosis populations, but the patient’s cooperation and ability to
<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
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| **Morrison (2014 [updated 2017])** Cochrane review Oscillatory devices in cystic fibrosis | Cough should be considered (criteria necessary for most other types of chest physical therapy).  
- Absolute contraindications include unstable head and/or neck injury and active hemorrhage with hemodynamic instability, plus 25 relative contraindications.  
- 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 high-frequency chest wall oscillation therapy is at least comparable with chest physical therapy and usual care in patients with impaired airway clearance not due to cystic fibrosis (e.g., neuromuscular diseases, chronic obstructive pulmonary disease, non-cystic fibrosis bronchiectasis, post-thoracotomy).  
- 2017 update: added two RCTs, two Cochrane reviews, and one systematic review. No changes to conclusions. |
| **Lee (2013 [updated 2015])** Cochrane review Airway clearance techniques (including high-frequency chest wall oscillation) for stable bronchiectasis | Key points:  
- Systematic review and meta-analysis of 35 RCTs and controlled clinical trials (1,138 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 of the superiority of one device over another.  
- Additional evidence is needed to evaluate relative efficacy of forms of airway clearance in people with cystic fibrosis. Measures of adherence, frequency of exacerbations, and patient preference should be included. |
| **Winfield (2014)** Cochrane review Children with severe global developmental delay | Key points:  
- 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, high-frequency chest wall oscillation, 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.
Citation | Content, Methods, Recommendations
--- | ---
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.
- Peak cough expiratory flow 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 peak cough expiratory flow to the critical level necessary for mucus clearance.
- Mechanical insufflation-exsufflation appeared to be as well tolerated as other cough augmentation techniques.
- Insufficient evidence for or against the device in this population.

**References**

**Professional society guidelines/other:**


Erratum in:


**Peer-reviewed references:**


**CMS National Coverage Determinations (NCDs):**


**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.

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<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>
<th>Description</th>
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<tbody>
<tr>
<td>B91</td>
<td>Sequelae of poliomyelitis</td>
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<td>E74.00-E74.09</td>
<td>Glycogen storage disease</td>
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<td>E74.4</td>
<td>Disorders of pyruvate metabolism and gluconeogenesis</td>
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<tr>
<td>E84.0</td>
<td>Cystic fibrosis with pulmonary manifestations</td>
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<td>G12.0-G12.1</td>
<td>Spinal muscular atrophy and related syndromes</td>
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<td>G12.20-G12.9</td>
<td>Motor neuron disease</td>
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<td>G14</td>
<td>Postpolio syndrome</td>
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<tr>
<td>G35</td>
<td>Multiple sclerosis</td>
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<tr>
<td>ICD-10 Code</td>
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<td>G70.0-G70.9</td>
<td>Myasthenia gravis and other myoneural disorders</td>
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<td>G71.0</td>
<td>Muscular dystrophy</td>
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<td>Congenital myopathies</td>
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<td>Mitochondrial myopathy, not elsewhere classified</td>
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<td>G71.8</td>
<td>Other primary disorders of muscles</td>
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<td>Primary disorder of muscle, unspecified</td>
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<td>G82.53</td>
<td>Quadriplegia, C5-C7 complete</td>
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<td>G82.54</td>
<td>Quadriplegia, C5-C7 incomplete</td>
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<tr>
<td>J47.1</td>
<td>Bronchiectasis with (acute) exacerbation</td>
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<tr>
<td>J47.9</td>
<td>Bronchiectasis, uncomplicated</td>
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<thead>
<tr>
<th>HCPCS Level II Code</th>
<th>Description</th>
<th>Comment</th>
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<tbody>
<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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