Clinical Policy Title: Electrical stimulation for oropharyngeal dysphagia

Clinical Policy Number: 09.01.03

Effective Date: September 1, 2013
Initial Review Date: May 15, 2013
Most Recent Review Date: May 1, 2018
Next Review Date: May 2019

Related policies:
CP# 09.01.04 Electrodiagnostic studies — electromyography and nerve conduction studies

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 electrical stimulation for treatment of oropharyngeal dysphagia to be investigational and, therefore, not medically necessary.

Limitations:

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

All other uses of electrical stimulation for oropharyngeal dysphagia are not medically necessary.

This policy applies to all lines of business with no limitations. Exceptions would be applied only when specific contracts allow coverage.
Alternative covered services:

Standard treatments for management of dysphagia are covered (unless there are specific benefit considerations), including:

- Speech, occupational, and physical therapy maneuvers as part of a plan of rehabilitation.
- Placement of percutaneous feed tube.
- Rehydration if required.

Typically the use of a dysphagia diet is not a covered benefit. Such a diet may consist of selection of thin or thickened food products to aid in swallowing.

Background

Dysphagia, or deglutination disorder, refers to difficulty or discomfort swallowing a liquid or solid bolus from the mouth to the stomach (Rofes, 2011). It is common in persons with stroke, Alzheimer’s disease, Parkinson’s disease, and advanced age. Dysphagia may result from oropharyngeal or esophageal dysfunction. Oropharyngeal dysphagia is a clinical symptom that may be secondary to etiologies ranging from drug side effects to structural issues to other neurologic pathologies (Cook, 2009; Appendix A).

Diagnosis and evaluation of oropharyngeal dysphagia is made through history and physical exam, including bedside screening methods such as the swallow test and diagnostic tools to confirm the presence, location, and severity of a swallowing impairment (Wirth, 2016). The Videofluoroscopy Swallowing Study is the traditional gold standard for diagnosis of oropharyngeal dysphagia. Other modalities include endoscopy and esophageal manometry. The American College of Radiology (2013) recommends the use of imaging studies (e.g., barium swallow; dynamic and static imaging of pharynx; and biphasic esophagram, both double and single contrast) and Technetium (Tc)-99m esophageal-transit scintigraphy.

Treatment of oropharyngeal dysphagia is directed initially to the underlying condition. If the dysphagia persists, then treatment is focused on maintenance of hydration, nutrition, and prevention of aspiration — the latter acknowledged as the single greatest cause of mortality (i.e., from aspiration pneumonia) (Wirth, 2016).

Treatment aimed at the oropharyngeal dysphagia itself is a rehabilitation regimen that includes behavioral therapy, physical and speech therapy, and appropriately thinning or thickening of liquids and foods to assist in swallowing (Wirth, 2016). Therapies may include repositioning (e.g., side lying, chin tuck and head rotation) and four swallowing maneuvers (i.e., effortful swallow, the Mendelsohn maneuver, supraglottic swallow and super supraglottic swallow). Surgical therapies are indicated in cases where there are anatomic causes of the dysphagia, such as diverticula or strictures. Thermal, magnetic, and electrical stimulation technologies are showing promise as adjunctive treatment strategies.
The purpose of electrical stimulation (e.g., VitalStim® [DJO Global, LLC, Vista, California], eSWALLOW® USA [eSWALLOW USA LLC, Scottsboro, Alabama) is to stimulate oropharyngeal muscles while the patient practices swallowing to assist the patient in relearning to swallow and preventing muscular atrophy.

**Searches**

Prestige Health Choice searched PubMed and the databases of:
- UK National Health Services Center 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 March 21, 2018. Search terms were: “Deglutition Disorders” (MeSH), “Electric Stimulation Therapy” (MeSH), and "oropharyngeal dysphagia."

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**

A systematic review (Scutt, 2015) evaluated three small studies including 73 patients undergoing pharyngeal electrical stimulation within three months of stroke. The authors found that, compared with no stimulation or sham stimulation, electrical stimulation was associated with lower aspiration scores and lower dysphagia rating scores after stroke. Length of stay in the hospital tended to be shorter as well, while functional outcome and death did not differ between treatment groups. The authors concluded that the three small studies constituting the cumulative experience suggest benefit of electrical stimulation for post-stroke rehabilitation of swallowing.

A randomized controlled trial (RCT) including 59 patients (Park, 2014) evaluated a neuromuscular electrical stimulator (VitalStim) in stroke patients with dysphagia. Forty-two patients improved while 17 did not improve with respect to residual solid, soft, and liquid foods retained in the pharynx before and after electrical stimulation treatment. The authors concluded that less pharyngeal residue before treatment serves as a factor for predicting greater improvement after VitalStim treatment.

An RCT of 57 patients (Lee, 2014) compared electrical stimulation to traditional dysphagia therapy in acute and subacute ischemic stroke patients with moderate to severe dysphagia. Patients were randomly
assigned into two treatment groups within 10 days of stroke. Thirty-one patients received electrical stimulation combined with traditional dysphagia therapy and 26 patients received traditional dysphagia therapy only. More improvement (based on a symptom score) was noted at three and six weeks after electrical stimulation ($p < 0.05$) than in the group treated with traditional dysphagia treatment. The authors concluded that early application of electrical stimulation combined with traditional dysphagia therapy showed a positive effect in acute and subacute ischemic stroke patients with dysphagia.

A small trial of 26 patients (Toyama, 2014) compared the effects of electrical stimulation to the effects of conventional treatment in patients with dysphagia after brain injury. Patients were divided into an experimental group ($n = 12$) and a control group ($n = 14$) in which the experimental group received electrical stimulation intervention followed by conventional treatment and the control group received conventional treatment alone. The duration of conventional therapy in the two groups was the same: 40-minute rehabilitative treatments once a day, five days per week, for eight weeks. Objective response was recorded by videofluoroscopy, and was improved in both groups. The electrical stimulation group exhibited more improvement in the displacement of the hyoid bone and larynx and symptom score than controls. The authors concluded that electrical stimulation combined with conventional treatment is superior to conventional treatment alone in patients with dysphagia following treatment for brain injury.

Shaw (2007) conducted a retrospective review of 18 patients with dysphagia who received VitalStim therapy. Eleven of the 18 patients (61 percent) demonstrated some improvement in their swallowing; six of the 18 patients (33 percent) were improved enough to no longer require a feeding tube. However, of the five patients categorized as severely dysphagic before therapy, only two showed any improvement, and these patients still required a feeding tube for adequate nutrition. The authors concluded that VitalStim therapy seems to help those with mild-to-moderate dysphagia. However, the patients with the most severe dysphagia did not gain independence from their feeding tubes.

Hayes (2006) found insufficient medical evidence to cite electrical stimulation as efficacious for oropharyngeal dysphagia, and that the use of electrical stimulation of the peri-thyroid and peri-digastric muscles is a promising technology yet to be fully validated clinically.

**Policy updates:**

A systematic review (McKenna, 2017) summarized isometric lingual strength training on lingual strength and swallow function in adult populations. Specific parameters evaluated included isometric-exercise intervention protocols, pre- and post-intervention lingual-pressure data (maximum peak pressures and lingual-palatal pressures during swallowing), and oropharyngeal swallowing measures such as penetration-aspiration scales, oropharyngeal residue and duration, lingual volumes, and quality-of-life assessments. The authors found gains in maximum peak lingual pressures following isometric lingual strength training for both healthy adults and select groups of individuals with dysphagia. However, due to the variability in study designs, it was unclear whether strength gains generalize to swallow function, and the results were too variable to confidently report specific therapeutic benefits.

In 2018, we added one new systematic review (Chen, 2016). Their results are consistent with previous
findings of insufficient evidence to support the effectiveness of electrical stimulation either as an adjunct or stand-alone therapy. There remains considerable heterogeneity with respect to study design elements to determine therapeutic benefit. 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>McKenna (2017)</td>
<td>Key points:</td>
</tr>
</tbody>
</table>
| A Systematic Review of Isometric Lingual Strength-Training Programs in Adults With and Without Dysphagia | • Systematic review of isometric lingual strength training on lingual strength and swallow function  
• Isolated isometric-exercise intervention protocols; pre- and post-intervention lingual-pressure data (maximum peak pressures and lingual-palatal pressures during swallowing); and oropharyngeal swallowing measures such as penetration-aspiration scales, oropharyngeal residue and duration, lingual volumes, and quality-of-life assessments.  
• The authors found gains in maximum peak lingual pressures following isometric lingual strength training for both healthy adults and select groups of individuals with dysphagia.  
• Authors also concluded it is unclear whether strength gains generalize to swallow function, and the results were too variable to confidently report specific therapeutic benefits. |
| Chen (2016)                      | Key points:                       |
| The effects of surface neuromuscular electrical stimulation on post-stroke dysphagia | • Systemic review and meta-analysis of eight RCTs or quasi-RCTs  
• Overall quality: based on a 5-point Jadad scale, low-to-moderate. Limited number of studies with significant heterogeneity.  
• Limited evidence suggests swallow treatment with neuromuscular electrical stimulation was significantly more effective than swallow treatment alone for post-stroke dysphagia in the short term considering the limited number of studies available.  
• Evidence was insufficient to indicate that neuromuscular electrical stimulation alone was superior to swallow therapy. |
| Scutt (2015)                     | Key points:                       |
| Pharyngeal electrical stimulation for treatment of post-stroke dysphagia | • Systematic review and individual patient data meta-analysis of RCTs including 73 patients undergoing pharyngeal electrical stimulation within three months of stroke.  
• Compared with no stimulation or sham stimulation, electrical stimulation was associated with lower aspiration score and lower dysphagia rating scores.  
• Length of stay in hospital tended to be shorter, while functional outcome and death did not differ between treatment groups. |
| Carnaby-Mann (2007)              | Key points:                       |
| Examining the evidence on neuromuscular electrical stimulation for swallowing. | • A meta-analysis of seven studies of various designs.  
• Overall quality: low.  
• Results show a small but significant summary effect size for transcutaneous neuromuscular electrical stimulation for swallowing (Hedges g, 0.66; P<.001).  
• Interpret results with caution because of low quality and quantity of evidence.  
• More rigorous research is needed in this area. |

References
Professional society guidelines/other:


Peer-reviewed references:


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

170.3 Speech-Language Pathology Services for the Treatment of Dysphagia. CMS Medicare Coverage Database website. [https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=192&ncdver=2&CoverageSelection=Both&ArticleType=All&PolicyType=Final&s=All&KeyWord=dysphagia&KeyWordLookUp=Title&KeyWordSearchType=And&list_type=ncd&bc=gAAACAAAAAA%40%3d%3d&](https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=192&ncdver=2&CoverageSelection=Both&ArticleType=All&PolicyType=Final&s=All&KeyWord=dysphagia&KeyWordLookUp=Title&KeyWordSearchType=And&list_type=ncd&bc=gAAACAAAAAA%40%3d%3d&). Accessed March 21, 2018.

**Local Coverage Determinations (LCDs):**

L33449 Swallowing Studies for Dysphagia Palmetto GBA.
L34043 Dysphagia/Swallowing Diagnosis and Therapy First Coast Service Options.
L34565 Home Health-Surface ELECTRICAL STIMULATION in the Treatment of Dysphagia Palmetto GBA.
L34578 Surface ELECTRICAL STIMULATION in the Treatment of Dysphagia Palmetto GBA.
L34891 Speech-Language Pathology (SLP) Services: Dysphagia; Includes VitalStim Therapy.

**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>
</tr>
</thead>
<tbody>
<tr>
<td>92526</td>
<td>Dysphagia treatment session.</td>
<td></td>
</tr>
<tr>
<td>97032</td>
<td>Electrical stimulation-manual-each 15 minutes.</td>
<td></td>
</tr>
<tr>
<td>97014</td>
<td>Electrical stimulation (unattended).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I69.091</td>
<td>Dysphagia following subarachnoid hemorrhage</td>
<td></td>
</tr>
<tr>
<td>I69.191</td>
<td>Dysphagia following nontraumatic intracerebral hemorrhage</td>
<td></td>
</tr>
<tr>
<td>I69.291</td>
<td>Dysphagia following nontraumatic intracranial hemorrhage</td>
<td></td>
</tr>
<tr>
<td>I69.391</td>
<td>Dysphagia following cerebral infarction</td>
<td></td>
</tr>
<tr>
<td>I69.891</td>
<td>Dysphagia following other cerebrovascular disease</td>
<td></td>
</tr>
<tr>
<td>I69.991</td>
<td>Dysphagia following unspecified cerebrovascular disease</td>
<td></td>
</tr>
<tr>
<td>R13.12</td>
<td>Oropharyngeal dysphagia</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix A

<table>
<thead>
<tr>
<th>Causes of oropharyngeal dysphagia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central nervous system</td>
</tr>
<tr>
<td>Stroke</td>
</tr>
<tr>
<td>Extrapyramidal syndromes (Parkinson, Huntington, Wilson's)</td>
</tr>
<tr>
<td>Brainstem tumors</td>
</tr>
<tr>
<td>Alzheimer's</td>
</tr>
<tr>
<td>Motor neuron disease</td>
</tr>
<tr>
<td>Peripheral nervous system</td>
</tr>
<tr>
<td>Spinal muscular atrophy</td>
</tr>
<tr>
<td>Guillain-Barre</td>
</tr>
<tr>
<td>Post-polio syndrome</td>
</tr>
<tr>
<td>Myogenic</td>
</tr>
<tr>
<td>Myasthenia gravis</td>
</tr>
</tbody>
</table>

- Central nervous system: Drugs
- Stroke: Centrally acting
- Extrapyramidal syndromes (Parkinson, Huntington, Wilson's): Phenothiazines
- Brainstem tumors: Metoclopramide
- Alzheimer's: Benzodiazepines
- Motor neuron disease: Antihistamines
- Peripheral nervous system: Drugs acting at neuromuscular junction
- Spinal muscular atrophy: Botulinum toxin
- Guillain-Barre: Procainamide
- Post-polio syndrome: Penicillamine
- Myogenic: Erythromycin
- Myasthenia gravis: Aminoglycosides

Source: Cook (2009).