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 19, 2017
Next Review Date: May 2018

Policy contains:
- Oropharyngeal dysphagia.
- Electrical stimulation.

Related policies:
None.

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

Coverage policy

AmeriHealth Caritas Pennsylvania considers the use of electrical stimulation (ES) for oropharyngeal dysphagia (OD) either directly to oral structures or by transcutaneous stimulation of muscles of the throat to be investigational and, therefore, not medically necessary.

Limitations:

All other uses of ES for OD 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, is extremely common following stroke, with reported incidence ranging from 19 percent – 81 percent of all stroke patients. The variation relates to the sensitivity of the measurement of the swallowing function following stroke, involving cerebral, cerebellar, or brainstem levels. Each of these areas provides different neurologic support to swallowing, so strokes in each area have somewhat different impacts. Advanced age and nursing home residence are risk factors for higher mortality after development of OD.

In this condition, the individual has diminished propulsion of a food bolus from neuromuscular weakness along one or more of the normal physiologic functions for gustation. The weakness may be at the level of tongue sarcopenia, or prolonged and delayed laryngeal vestibule closure and slow hyoid movement. Dysphagia may also be esophageal in origin, with a different set of therapies required.

OD may be secondary to a number of etiologies ranging from drug side effects to structural issues to other neurologic pathologies (Appendix A).

Diagnosis and evaluation of OD is made through history and physical exam. The American College of Radiology 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. Other modalities include endoscopy and esophageal manometry.

Treatment of OD 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).

Treatment aimed at the OD 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. These 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 important in cases where there are anatomic causes of the dysphagia, such as diverticula or strictures.
The purpose of ES (e.g., VitalStim®, eSwallow® USA) is to stimulate oropharyngeal muscles while the patient practices swallowing to assist the patient in relearning to swallow. ES is commonly used in rehabilitation to stimulate muscles and prevent muscular atrophy. However, studies are not conclusive in demonstrating positive impact in swallowing.

**Searches**

AmeriHealth Caritas Pennsylvania 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 30, 2017. Search terms were: “electrical stimulation” (MeSH), "oropharyngeal dysfunction” (MeSH), and "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 narrative review from an international meeting on OD (Wirth, 2016) cites the consequences of untreated OD (i.e., aspiration, dehydration, and malnutrition) and affirms that videofluoroscopy is the gold standard of diagnosing OD. Therapeutic maneuvers appropriate for OD include swallowing training, nutritional interventions, and newer rehabilitation approaches. Of these, thermal, magnetic, and electrical technologies are showing promise and may in time become adjunctive treatment strategies.

A systematic review (Stupp, 2015) evaluated three small studies including 73 patients undergoing pharyngeal ES within three months of stroke. The authors found that, compared with no stimulation or sham stimulation, ES 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 ES 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 ES 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 ES 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 ES 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 ES ($p < 0.05$) than in the group treated with traditional dysphagia treatment. The authors concluded that early application of ES 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 ES 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 ES 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 ES group exhibited more improvement in the displacement of the hyoid bone and larynx and symptom score than controls. The authors concluded that ES 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 says there is insufficient medical evidence to cite ES as efficacious for OD, and that the use of ES 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 postintervention 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.

Summary of clinical evidence:

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
<th>Key points:</th>
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<tbody>
<tr>
<td>McKenna (2017)</td>
<td>A Systematic Review of Isometric Lingual Strength-Training Programs in Adults With and Without Dysphagia</td>
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<td>Wirth (2016)</td>
<td>Oropharyngeal dysphagia in older persons — from pathophysiology to adequate intervention</td>
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<td>Narrative review from an international meeting on OD.</td>
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<td>Consequences of OD (i.e., aspiration, dehydration, and malnutrition) are regularly not attributed to dysphagia.</td>
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<td>Videofluoroscopy is the gold standard of diagnosing OD.</td>
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<td>Swallowing training, nutritional interventions and newer rehabilitation approaches (thermal, magnetic, and electrical) are showing promise and may significantly impact future treatment strategies.</td>
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<td>Park (2014)</td>
<td>Cutoff Value of Pharyngeal Residue</td>
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| in Prognosis Prediction After Neuromuscular Electrical Stimulation Therapy for Dysphagia in Subacute Stroke Patients. | - 42 patients improved while 17 did not improve with respect to residual solid, soft, and liquid foods retained in the pharynx.  
- The authors concluded that less pharyngeal residue before treatment serves as a factor for predicting greater improvement after VitalStim treatment. |
| Lee (2014) The Effect of Early Neuromuscular Electrical Stimulation Therapy in Acute/Subacute Ischemic Stroke Patients With Dysphagia. | **Key points:**  
- An RCT of 57 patients compared ES to traditional dysphagia therapy in acute/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 ES 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 ES ($p < 0.05$).  
- The authors concluded that early application of ES combined with traditional dysphagia therapy showed a positive effect in acute and subacute ischemic stroke patients with dysphagia. |
| Toyama (2014) Novel Neuromuscular Electrical Stimulation System for Treatment of Dysphagia after Brain Injury. | **Key points:**  
- Prospective trial of 26 patients compared the effects of ES 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 ($n = 14$).  
- The experimental group received ES intervention followed by conventional treatment, including thermal-tactile stimulation.  
- The two groups received 40-minute treatments once a day, five days per week, for eight weeks.  
- Objective response was recorded by videofluoroscopy, which was improved in both groups.  
- The ES group exhibited more improvement in the displacement of the hyoid bone and larynx and symptom score than controls.  
- The authors concluded that ES combined with conventional treatment is superior to conventional treatment alone in patients with dysphagia following treatment for brain injury. |
| Shaw (2007) Transcutaneous neuromuscular electrical stimulation (VitalStim) curative therapy for severe dysphagia: myth or reality? | **Key points:**  
- A retrospective analysis of 18 patients with dysphagia who received VitalStim therapy.  
- All subjects underwent pre-therapy evaluation by speech-language pathologists, including modified barium swallow and/or functional endoscopic evaluation of swallowing and clinical evaluation of swallowing that included assessment of laryngeal elevation, diet tolerance, and swallowing delay, and were then assigned an overall dysphagia severity score.  
- After therapy, all patients underwent the same assessments. Twelve of the 18 subjects also underwent a functional swallowing telephone survey months (range of one to 21 months) after their therapy to evaluate if the improvement was worthwhile and sustained. 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 having “severe dysphagia” before therapy, only... |
two showed any improvement, and these patients still required a feeding tube for adequate nutrition. Telephone surveys did confirm that those who improved with their therapy seemed to maintain their progress and that most patients were satisfied with their therapy. 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.

**References**

**Professional society guidelines/other:**


**Peer-reviewed references:**


Shune S, Moon JB. Neuromuscular electrical stimulation in dysphagia management: Clinical use and


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


**Local Coverage Determinations (LCDs):**

L33449 Swallowing Studies for Dysphagia Palmetto GBA
L34043 Dysphagia/Swallowing Diagnosis and Therapy First Coast Service Options
L34307 Medicine: Dysphagia/Swallowing Therapy Cahaba Government Benefit Administrators
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.

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<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comment</th>
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<tr>
<td>92526</td>
<td>Dysphagia treatment session.</td>
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<td>ICD-10 Code</td>
<td>Description</td>
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<tr>
<td>I69.091</td>
<td>Dysphagia following subarachnoid hemorrhage</td>
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<td>I69.191</td>
<td>Dysphagia following nontraumatic intracerebral hemorrhage</td>
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<td>I69.291</td>
<td>Dysphagia following nontraumatic intracranial hemorrhage</td>
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<td>I69.391</td>
<td>Dysphagia following cerebral infarction</td>
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<tr>
<td>I69.891</td>
<td>Dysphagia following other cerebrovascular disease</td>
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<tr>
<td>I69.991</td>
<td>Dysphagia following unspecified cerebrovascular disease</td>
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<td>R13.12</td>
<td>Oropharyngeal dysphagia</td>
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### Causes of oropharyngeal dysphagia. *(Cook 2009)*

<table>
<thead>
<tr>
<th>Central nervous system</th>
<th>Drugs</th>
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<tr>
<td>Stroke</td>
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<td>Extrapyramidal syndromes (Parkinson, Huntington, Wilson's)</td>
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<td>Peripheral nervous system</td>
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<td>Myogenic</td>
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<td>Myasthenia gravis</td>
<td>Aminoglycosides</td>
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