Clinical Policy Title: Electrical stimulation modality for ages < 21 years old

Clinical Policy Number: 11.02.05

Effective Date: October 1, 2016
Initial Review Date: August 17, 2016
Most Recent Review Date: August 17, 2016
Next Review Date: August 2017

Policy contains:
- Electrical stimulation treatment.
- Early and Periodic Screening, Diagnostic and Treatment (EPSDT).

Related policies:

CP# 03.02.04 Transcutaneous electrical nerve stimulator (TENS)

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 modality for children to be clinically proven and, therefore, medically necessary when the following criteria are met:

- Member is <21 years of age.
- Member is enrolled in Medicaid and eligible for Early and Periodic Screening, Diagnostic and Treatment (EPSDT) services.
- Member is medically stable with medical or surgical comorbidities manageable and not requiring acute medical attention.

EPSDT Coverage Guide statement

The Medicaid program’s benefit for children and adolescents is known as Early and Periodic Screening, Diagnostic and Treatment services, or EPSDT. EPSDT provides a comprehensive array of prevention, diagnostic, and treatment services for low-income infants, children, and adolescents under age 21, as specified in Section 1905(r) of the Social Security Act (the Act). The EPSDT benefit is more robust than the Medicaid benefit for adults and is designed
to assure that children receive early detection and care, so that health problems are averted or diagnosed and treated as early as possible. The goal of EPSDT is to assure that individual children get the health care they need when they need it – the right care to the right child at the right time in the right setting.


Note: Physical therapy (PT) assistants must be licensed by the Board of Physical Therapy. Supervision of licensed PT assistants must include one-to-one on-site supervision at least every sixth visit. Each supervisory visit must be documented and signed by the PT.

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 electrical stimulation for children not meeting the aforementioned criteria are not medically necessary.

- Functional electrical stimulation (FES) is specifically contraindicated for the following indications:
  - Autonomic dysreflexia; OR
  - Individuals with cardiac pacemakers; OR
  - Presence of irreversible contracture; OR
  - Presence of skin disease or cancer at area of stimulation; OR
  - Severe osteoporosis; OR
  - Severe scoliosis.
- The member has a skin problem or other medical conditions that precludes the application of conventional electrodes, adhesive tapes, and lead wires.
- More than two hours of neuromuscular electrical stimulators (NMES) per day is considered not medically necessary; protocols reported in the literature recommend no more than two hours of NMES treatment within a 24-hour period.

Alternative covered services:

Physical therapy modalities as prescribed by participating treating provider.

Background

Electrical stimulation uses an electrical current to cause a single muscle or a group of muscles to contract. By placing electrodes on the skin in various locations, the provider can recruit the appropriate muscle fibers to contract and strengthen the affected muscle. The current setting can be changed to
allow for a forceful or gentle muscle contraction. Along with increasing muscle strength, the contraction of the muscle also promotes blood supply to the area that assists in healing.

Electric stimulation therapy is also therapeutic treatment that applies electrical stimulation in treating muscle spasms and pain. It can help prevent atrophy and build strength in patients with injuries. It is also helpful in keeping muscles active especially after any type of spinal cord injury or stroke.

Physical therapists and other medical practitioners attach electrodes on the patient’s skin, causing the target muscles to contract. With electrical stimulation, the patient can maintain muscle tone and strength that would otherwise waste away due to lack of usage.

Electrical stimulation works by mimicking the natural way by which the body exercises its muscles. The electrodes attached to the skin deliver impulses that make the muscles contract. It is beneficial in increasing the patient’s range of motion and improves the circulation of the body. It is used in treating conditions like sprains, arthritis, back pain scoliosis, and sciatica.

Electrical stimulation can be muscular, general, and transcutaneous electrical nerve stimulation (TENS). The muscular type of electrical stimulation seeks to strengthen the muscles by reducing muscle spasms. Also known as EMS, this stimulates the skeletal muscle using electric impulses to cause muscle contraction.

TENS is commonly used to help with chronic pain. The general type of electrical stimulation is used for healing wounds and alleviating pain. For the convenience of the patient, a portable TENS unit can be prescribed by the doctor or a physical therapist for the patient to use at home.

Interferential current (IFC), another form of TENS, is often used by physical therapists to decrease pain, decrease muscular spasm, or improve localized blood flow to various muscles or tissues. It is often used to decrease low back pain and muscular spasm. Interferential current typically uses four electrodes in a crisscross pattern. This causes the currents running between the electrodes to "interfere" with one another, and allows the physical therapist to use a higher intensity current while still maintaining maximum comfort for the patient.

Galvanic stimulation is also another application of electrical stimulation. This involves applying pulsed electric current on affected body tissues in stimulating muscle contraction. It differs from TENS and IFC in its use of direct current rather than alternating current. The positive pad acts to decrease circulation of the target area and reduce swelling. The negative pad increases the distribution of oxygen, blood, and nutrients to the injured area, thus increasing the speed of the healing process.

Electrical stimulation, or e-stim, has many benefits that support it in being an effective way to manage pain and re-train muscles after injury or disease. E-stim is nonaddictive. The machines are often compact and user-friendly. They are cost-effective and provide many with an alternative to taking pain medications. There are few risks associated with the use of e-stim. The main shortcoming of e-stim
usage is that it will not solve the underlying condition when it comes to pain. For muscle re-education, the main shortcoming is that even though it can cause a muscle to contract, function may not return if the neurological damage is severe. E-stim also will not lead to significant strength gains, despite some advertisement claims.

A functional electrical stimulator (FES), considered to be a specialized type of neuromuscular stimulator, is designed to enhance the ability to stand and/or walk for individuals with a spinal cord injury (SCI) by emitting electrical impulses to stimulate paralyzed or weak muscles in a specific order. Functional electrical stimulation attempts to prevent or reverse muscle atrophy and bone demineralization by stimulating paralyzed lower limbs (legs) to perform stationary exercise or assist with standing and walking. Functional electrical stimulation has also been investigated as a way to improve gait disorders of individuals with hemiplegia. An FES may use surface electrodes or be an implanted system.

Examples of FES devices to assist with ambulation in individuals with an SCI include, but may not be limited to, the Parastep I System. Currently, the Parastep I is the only device with U.S. Food and Drug Administration (FDA) approval for restoring ambulation for individuals with an SCI.

Examples of other types of FES for the lower extremities include, but may not be limited to, ERGYS, NESS L300 Foot Drop System, NESS L300 Plus System, ODFS Dropped Foot Stimulator, RT 200 FES Elliptical, RT300 FES cycle ergometer, RT600 FES Step and Stand Rehabilitation Therapy system, and the Walkaide stimulator.

Functional electrical stimulation has also been proposed for individuals with upper extremity paralysis due to injury or disease of the central nervous system such as cervical spinal cord injuries or stroke. It is suggested as a treatment option for exercising the hand and/or conditioning selected muscles of the forearm and hand. Examples of FES for paralyzed upper extremities include, but may not be limited to, the NESS H200 Handmaster NMS1, RT200 Elliptical, and RT300 FES cycle ergometer.

Neuromuscular electrical stimulators (NMES) are small electronic devices that are affixed externally to the individual’s skin by way of electrodes to provide direct stimulation of affected muscles. NMES stimulates muscle to maintain its tone during temporary extremity immobilization. The goal of NMES for an immobilized extremity following a documented injury or surgical intervention is to control edema, increase local blood circulation, maintain muscle tone or retard the development of disease atrophy. NMES has also been proposed for other indications including treatment for muscle atrophy characteristic in conditions such as cerebral palsy, congestive heart failure, and upper extremity hemiplegia (such as present with a stroke).

Physical medicine and rehabilitation: Supervised modalities

Consistent with the Centers for Medicare & Medicaid Services (CMS), physicians and other health care professionals reporting services for unattended electrical stimulation should submit the appropriate HCPCS code (G0281, G0282, or G0283) which best describes the service being rendered. Consistent with
CMS, 97014 will not be considered for reimbursement.

The expectation must exist that the therapy will result in a practical improvement in the level of functioning within a reasonable period of time. Physical therapy including treatment by physical means, hydrotherapy, heat, or similar modalities, physical agents, and biomechanical and neurophysiological principles and devices. Such therapy is given to relieve pain, restore function, and to prevent disability following illness, injury, or loss of a body part. Non-Covered Services include but are not limited to: maintenance therapy to delay or minimize muscular deterioration in patients suffering from a chronic disease or illness; repetitive exercise to improve movement, maintain strength, and increase endurance (including assistance with walking for weak or unstable patients); range of motion and passive exercises that are not related to restoration of a specific loss of function, but are for maintaining a range of motion in paralyzed extremities; general exercise programs; diathermy, ultrasound, and heat treatments for pulmonary conditions; diapulse; and work hardening.

**Early and Periodic Screening, Diagnostic and Treatment (EPSDT)**

EPSDT entitles enrolled infants, children, and adolescents to any treatment or procedure that fits within any of the categories of Medicaid-covered services listed in Section 1905(a) of the Act if that treatment or service is necessary to “correct or ameliorate” defects and physical and mental illnesses or conditions. This includes physician, nurse practitioner, and hospital services; physical, speech/language, and occupational therapies; home health services, including medical equipment, supplies, and appliances; treatment for mental health and substance use disorders; treatment for vision, hearing, and dental diseases and disorders; and much more. This broad coverage requirement results in a comprehensive, high-quality health benefit for children under age 21 enrolled in Medicaid.

Unlimited coverage is provided for medically necessary health care, diagnostic, treatment, and/or other measures that are necessary to correct or ameliorate defects, physical and mental illnesses, and conditions discovered during or as a result of an EPSDT screening, whether or not such services exceed benefit limits stated in the state plan. The following services are covered under the state plan if provided as a result of an EPSDT referral: chiropractic, Christian Science, occupational therapy, physical therapy, podiatry, private duty nursing, psychology, speech-language-hearing therapy, transplants (heart-lung, pancreas-kidney and lung), air ambulance, and personal care services.

Depending on the interventions that the individual child needs, services that can be covered as rehabilitative services include:

- Community-based crisis services, such as mobile crisis teams, and intensive outpatient services.
- Individualized mental health and substance use treatment services, including in nontraditional settings such as a school, a workplace, or at home.
- Medication management.
- Counseling and therapy, including to eliminate psychological barriers that would impede
development of community living skills.

- Rehabilitative equipment, such as daily living aids.

With respect to the provision of rehabilitative services, including those noted above, CMS requires more specificity of providers and services due to the wide spectrum of rehabilitative services coverable under the broad definition.

**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 July 19 and 20, 2016. Search terms were: “children,” “electrical stimulation,” and “physical therapy modalities.”

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**

As defined in Current Procedural Terminology (CPT®), Centers for Medicare & Medicaid Services (CMS) or other coding guidelines: Code 97014, “Electrical stimulation, unattended, one or more areas (historically the standard code for EMS).” This code is also known as G0283. Medicare has updated its guidelines to show G0283 as the allowed billing code for this procedure per their billing guidelines, and much other commercial insurances have done the same. While some insurances will accept either code at a different or the same fee schedule, some will only accept G0283, and some have not updated and will only accept 97014 for billing. This varies per carrier and can vary per state.

To add another layer of complexity to codes 97014/G0283, we introduce code 97032, defined in the code book as, “Electrical stimulation, manual, attended, 15 minutes, one or more areas.” This is the same therapy as the 97014/G0283; however, it is attended — meaning someone is physically present
with the patient during the entire duration of the therapy. Because it must be attended, this code is not interchangeable with the 97014/G0283 codes. As with all therapies, one unit is equal to 8–15 minutes in time and less than 8 minutes would be considered a reduced service and should be billed using the -52 modifier. Because this is an attended therapy, providers may want to take into consideration the billing requirements when determining the duration of the therapy.

Unattended electrical stimulation will remain a reimbursable service; however, providers utilizing this modality will not be reimbursed for CPT code 97014. In accordance with CMS National Coding Policy, providers should submit the appropriate HCPCS G-code, which more accurately represents the service rendered.

G-code series for unattended electrical stimulation (G-codes more accurately describe electrical stimulation application):

- G0281 - Electrical stimulation, (unattended), to one or more areas, for chronic stage III and stage IV pressure ulcers, arterial ulcers, diabetic ulcers, and venous stasis ulcers not demonstrating measurable signs of healing after 30 days of conventional care, as part of a therapy plan of care.
- G0282 - Electrical stimulation, (unattended), to one or more areas, for wound care other than described in G0281.
- G0283 - Electrical stimulation unattended to one or more areas for indication(s) other than wound care, as part of a therapy plan of care.

G0283 is the code that most accurately describes unattended electrical stimulation when wound care is not part of the plan of care.

Policy updates:

2016- New policy.

Summary of clinical evidence:

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
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<tbody>
<tr>
<td>Stevens, P. (2013)</td>
<td>Key points:</td>
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</table>
| Pediatric applications of functional electrical stimulation | - While the emphasis in modern functional electrical stimulation (FES) applications has generally been toward adult treatment populations, the modality appears to hold additional promise for pediatric applications in patients with cerebral palsy (CP).  
  - While various FES concepts have been investigated over the last 40 years, FES devices are now commercially available. Early reports not only suggest high acceptance rates among children and adolescents at Gross Motor Function Classification System (GMFCS) levels I and II, but they also provide some indication of the stimulation characteristics that may be better tolerated in this population.  
  - The benefits of FES, including dorsiflexion motion during swing phase and the strength |
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<thead>
<tr>
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| Scott, O.M., et al. (1992) | **Key points:**  
- To evaluate the therapeutic possibilities of chronic electrical stimulation, muscle function studies and quantitative tests of physical assessment were used to monitor the response of quadriceps femoris to prolonged low-frequency stimulation.  
- Comparative studies of the maximum voluntary and electrically elicited responses of muscles of young ambulant children with Duchenne muscular dystrophy, when compared to those of normal children's muscles, revealed lower values of maximum voluntary contraction, significant slowing ($P < 0.001$) of mean relaxation times, and a higher resistance to fatigue testing.  
- Intermittent chronic low-frequency stimulation resulted in a significant ($P < 0.01$) increase in mean maximum voluntary contraction of the stimulated muscles compared with the mean force exerted by the unstimulated control muscles.  
- There are clear therapeutic possibilities for the use of chronic low-frequency stimulation in these children. |
| Wright, P.A. (2012) | **Key points:**  
- Although most NMES research has been directed at adults with neurological conditions, there is a growing body of evidence supporting its use in children with CP. In line with a recent meta-analysis, the use of electrical stimulation to minimize impairment and activity limitations during gait is cautiously advocated.  
- A detailed commentary on one of the most common lower limb NMES applications, tibialis anterior stimulation (either with or without gastrocnemius stimulation) is given. |
| Department of Health & Human Services (DHHS) Centers for Medicare & Medicaid Services (CMS) June 27, 2003 Program Memorandum Intermediaries/Carriers Coverage and billing requirements for electrical stimulation for the treatment of wounds | **Key points:**  
- For services performed on or after April 1, 2003, Medicare will cover electrical stimulation for the treatment of wounds only for chronic stage III or stage IV pressure ulcers, arterial ulcers, diabetic ulcers, and venous stasis ulcers. All other uses of electrical stimulation for the treatment of wounds are not covered by Medicare. Electrical stimulation will not be covered as an initial treatment modality.  
- The use of electrical stimulation will only be covered after appropriate standard wound care has been tried for at least 30 days and there are no measurable signs of healing. If electrical stimulation is being used, wounds must be evaluated periodically by the treating physician, but no less than every 30 days by a physician. Continued treatment with electrical stimulation is not covered if measurable signs of healing have not been demonstrated within any 30-day period of treatment. Additionally, electrical stimulation must be discontinued when the wound demonstrates a 100% epithelialized wound bed.  
| Citation | Content, Methods, Recommendations |
| Scott, O.M., et al. (1992) Therapeutic possibilities of chronic low frequency electrical stimulation in children with Duchenne muscular dystrophy | and stamina of the anterior tibialis muscle, appear to be more pronounced with greater exposure to FES.  
- In addition, the combination of FES and Botox injections has shown some promise as a viable treatment. While the studies to date are limited and preliminary, they suggest that when properly applied to the right patient types, FES may constitute an appropriate method of care. |
| Wright, P.A. (2012) Application of neuromuscular electrical stimulation (NMES) to improve gait or upper limb function in children with cerebral palsy (CP) | Key points: |
Although there is a lack of randomized controlled trials and a predominance of mainly small studies, this review further concludes that the balance of available evidence is in favor of upper limb exercise NMES offering benefits such as increased muscle strength, range of motion, and function in children with CP.

- The use of dynamic splinting with NMES has been shown to be more effective than either treatment on its own in improving function and posture.
- There is at present little published work to support the application of botulinum toxin type A to temporarily reduce muscle tone as an adjunct intervention to NMES in this population, although the presence of parallel applications to manage similar symptoms in other muscular disorders is noted.

### Key points:
- Functional electrical stimulation (FES) of the upper limb has been used for patients with a variety of neurological conditions, although few studies have been conducted on its use on the upper limb of children with cerebral palsy (CP).
- The aim of this study was to investigate the effect of cyclic FES on the wrist extensor muscles of a group of eight children (five boys, three girls) with hemiplegic CP (mean age: 10 years).
- The study design involved a baseline (three weeks), treatment (six weeks), and follow-up (six weeks). FES was applied for 30 minutes daily during the treatment period of the study. Improvements in hand function ($p \leq 0.039$) and active wrist extension ($p = 0.031$) were observed at the end of the treatment period.
- These improvements were largely maintained until the end of the follow-up period. No significant change was observed in the measurements of wrist extension moment during the treatment period ($p = 0.274$). Hand function in this group of children improved after they were exposed to FES of wrist extensor muscles.
- This suggests that FES could become a useful adjunct therapy to complement existing management strategies available for this patient population.

### Key points:
- This case report describes a program for a child with spastic hemiparesis who had previously received physical therapy with neuromuscular electrical stimulation (NMES).
- After a year without physical therapy, he returned to continue to receive NMES to strengthen muscles, increase sensory awareness, and improve hand function. The child quickly regained his previous level of functioning and made additional progress.
- After 38 sessions, he still lacked adequate wrist stability for independent hand function. A dorsal wrist splint was used to stabilize the wrist while NMES facilitated muscle activity of the hand and wrist.
- While wearing the splint, the child could use his hand independently without adult interference or "assistance," thus allowing motor learning to occur. After 24 additional sessions (i.e., nine months of using the splint), the child could use the hand for activities such as tying his shoelaces without the splint.
- No increase in spasticity was seen in spite of strengthening the spastic finger flexors.

### Glossary
Electric stimulation therapy — A therapeutic treatment that applies electrical stimulation in treating muscle spasms and pain. It can help prevent atrophy and build strength in patients with injuries. It is also helpful in keeping muscles active especially after any type of spinal cord injury or stroke.

References

Professional society guidelines/other:


Peer-reviewed references:


**Clinical trials:**

Searched clinicaltrials.gov on July 17, 2016, using terms “children,” “electrical stimulation,” and “physical therapy modalities.” Open Studies | 52 studies found, two relevant.


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

Local Coverage Determinations (LCDs):

No LCDs identified as of the writing of this policy.

**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>Comments</th>
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<tbody>
<tr>
<td>97014</td>
<td>Application of a modality to 1 or more areas; electrical stimulation; unattended</td>
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<tr>
<td>97032</td>
<td>Application of a modality to 1 or more areas; electrical stimulation (manual) each 15 minutes</td>
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<th>Description</th>
<th>Comments</th>
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<tbody>
<tr>
<td></td>
<td>Numerous conditions; not specified in policy</td>
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<tr>
<th>HCPCS Level II Code</th>
<th>Description</th>
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