MEDICAL POLICY – 2.01.40

Extracorporeal Shock Wave Treatment for Plantar Fasciitis and Other Musculoskeletal Conditions

BCBSA Ref. Policy: 2.01.40
Effective Date: Sept. 1, 2017
Last Revised: Jan. 1, 2018
Replaces: 2.01.109

RELATED MEDICAL POLICIES:
1.01.05 Ultrasound Accelerated Fracture Healing Device

Select a hyperlink below to be directed to that section.

POLICY CRITERIA | CODING | RELATED INFORMATION
EVIDENCE REVIEW | REFERENCES | HISTORY

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Introduction

Extracorporeal is a term that means outside of the body. Extracorporeal shockwave therapy uses shock waves to try to treat conditions affecting bone and tissues. There are two forms of this treatment, low-energy and high-energy. It’s believed that the shock waves create small amounts of damage to the tissues being treated. The body then responds by creating new blood vessels and sending more nutrients to the area. The body’s natural healing response is thought to affect the condition being treated. The low-energy treatments might need no or only mild anesthesia. The high-energy shock wave treatments often require general anesthesia or a block to stop the pain in a particular area. The effectiveness of this treatment is in question. More medical studies are needed to determine if shock wave therapy is effective.

Note: The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.
**Therapy** | **Investigational**
---|---
**Extracorporeal shock wave therapy (ESWT)** | Extracorporeal shock wave therapy (ESWT), using either a high- or low-dose protocol or radial ESWT, is considered investigational as a treatment of musculoskeletal conditions, including but not limited to:
- Achilles tendinitis
- Avascular necrosis of the femoral head
- Delayed union and non-union of fractures
- Patellar tendinitis
- Plantar fasciitis
- Spasticity
- Stress fractures
- Tendinitis of the elbow (lateral epicondylitis)
- Tendinopathies including tendinitis of the shoulder

**Coding**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0101T</td>
<td>Extracorporeal shock wave therapy; involving musculoskeletal system, not otherwise specified; high energy</td>
</tr>
<tr>
<td>0102T</td>
<td>Extracorporeal shock wave therapy; high energy, performed by a physician, requiring anesthesia other than local, involving lateral humeral epicondyle</td>
</tr>
<tr>
<td>20999</td>
<td>Unlisted procedure, musculoskeletal system, general</td>
</tr>
<tr>
<td>28890</td>
<td>Extracorporeal shock wave, high energy, performed by a physician, requiring anesthesia other than local, including ultrasound guidance, involving the plantar fascia</td>
</tr>
</tbody>
</table>

**Note:** CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). HCPCS codes, descriptions and materials are copyrighted by Centers for Medicare Services (CMS).

**Note:** High-energy ESWT requires the use of anesthesia and is performed in a hospital or ambulatory surgery center. Low-energy ESWT is usually used in the office without anesthesia.
Related Information

Benefit Application

Extracorporeal shock wave treatment for plantar fasciitis may be performed by podiatrists, orthopedic surgeons, and primary care physicians.

Evidence Review

Description

Extracorporeal shock wave therapy (ESWT) is a noninvasive method used to treat pain with shock or sound waves directed from outside the body onto the area to be treated, (eg, the heel in the case of plantar fasciitis). Shock waves are generated at high- or low-energy intensity, and treatment protocols can include more than one treatment. ESWT has been investigated for use in a variety of musculoskeletal conditions.

Background

*Extracorporeal Shock Wave Therapy*

Also known as orthotripsy, ESWT has been available since the early 1980s for the treatment of renal stones and has been widely investigated for the treatment of biliary stones. ESWT uses externally applied shock waves to create a transient pressure disturbance which disrupts solid structures and breaks them into smaller fragments, allowing spontaneous passage and/or removal of the stones. The mechanism by which ESWT might have an effect on musculoskeletal conditions is not well-defined. Chronic musculoskeletal conditions (eg, tendinitis) can be associated with a substantial degree of scarring and calcium deposition. Calcium deposits may restrict motion and encroach on other structures, such as nerves and blood vessels, causing pain and decreased function. One hypothesis is that disruption of these calcific deposits by shock waves may loosen adjacent structures and promote resorption of calcium, thereby decreasing pain and improving function.
Other mechanisms are also thought to be involved in the mechanism of ESWT. Physical stimuli are known to activate endogenous pain control systems, and activation by shock waves may “reset” the endogenous pain receptors. Damage to endothelial tissue from ESWT may result in increased vessel wall permeability, causing increased diffusion of cytokines, which may, in turn, promote healing. Microtrauma induced by ESWT may promote angiogenesis and thus aid healing. Finally, shock waves have been shown to stimulate osteogenesis and promote callous formation in animals, which is the basis for trials of ESWT in delayed union or nonunion of bone fractures.

There are two types of ESWT: focused and radial. Focused ESWT sends medium- to high-energy shockwaves of single pressure pulses lasting microseconds, directed on a specific target using ultrasound or radiographic guidance. Radial ESWT (RSW) transmits low- to medium-energy shockwaves radially over a larger surface area. Food and Drug Administration (FDA) approval was first granted in 2002 for focused ESWT devices and in 2007 for RSW devices.

**Plantar Fasciitis**

Plantar fasciitis is a common ailment characterized by deep pain in the plantar aspect of the heel, particularly on arising from bed. While the pain may subside with activity, in some patients the pain persists, interrupting activities of daily living. On physical examination, firm pressure will elicit a tender spot over the medial tubercle of the calcaneus. The exact etiology of plantar fasciitis is unclear, although repetitive injury is suspected. Heel spurs are often an associated finding, although it is unproven that heel spurs actually cause the pain. Asymptomatic heel spurs can be found in up to 10% of the population. Most cases of plantar fasciitis are treated with conservative therapy, including rest or minimization of running and jumping, heel cups, and nonsteroidal-anti-inflammatory drugs. Local steroid injection may also be used. Improvement may take up to 1 year in some cases.

**Tendinitis and Tendinopathies**

ESWT has been investigated for a variety of tendinitis/tendinopathy syndromes. Some of the more common tendinitis syndromes are summarized in Table 1. Many tendinitis/tendinopathy syndromes are related to overuse injury. Conservative treatment often involves rest, activity modifications, physical therapy, and anti-inflammatory medications.
Table 1: Tendinitis/Tendinopathy Syndromes

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Location</th>
<th>Symptoms</th>
<th>Conservative Therapy</th>
<th>Other Therapies</th>
</tr>
</thead>
</table>
| Lateral epicondylitis (elbow tendinitis/“tennis elbow”) | Lateral elbow (insertion of wrist extensors) | Tenderness over lateral epicondyle and proximal wrist extensor muscle mass; pain with resisted wrist extension with the elbow in full extension; pain with passive terminal wrist flexion with the elbow in full extension | • Rest  
• Activity modification  
• NSAIDs  
• Physical therapy  
• Orthotic devices | Corticosteroid injections; joint débridement (open or laparoscopic) |
| Shoulder tendinopathy           | Rotator cuff muscle tendons, most commonly supraspinatus | Pain with overhead activity | • Rest  
• Ice  
• NSAIDs  
• Physical therapy | Corticosteroid injections |
| Achilles tendinopathy           | Achilles tendon                               | Pain or stiffness 2-6 cm above the posterior calcaneus                     | • Avoidance of aggravating activities  
• Ice when symptomatic  
• NSAIDs  
• Heel lift | Surgical repair for tendon rupture |
| Patellar tendinopathy ("jumper’s knee") | Proximal tendon at lower pole of the patella   | Pain over anterior knee and patellar tendon; may progress to tendon calcification and/or tear | • Ice  
• Supportive taping  
• Patellar tendon straps  
• NSAIDs | |

NSAIDs: nonsteroidal anti-inflammatory drugs.

Fracture Nonunion and Delayed Union

The definition of what constitutes a fracture nonunion has remained controversial. One proposed definition is failure of progression of fracture-healing for at least 3 consecutive months (and at least 6 months following the fracture) accompanied by clinical symptoms of delayed/nonunion (pain, difficulty weight bearing). For purposes of policy development, the following criteria have been used to define nonunion:

- At least 3 months have passed since the date of fracture;
- Serial radiographs have confirmed that no progressive signs of healing have occurred;
• The fracture gap is 1 cm or less; and

• The patient can be adequately immobilized and is of an age likely to comply with non-weight bearing.

Delayed union is when a fracture takes longer than normal to heal as shown by clinical evidence and serial radiographs. (In contrast, nonunion serial radiographs show no evidence of healing.) By definition, delayed union only exists if it has been at least 3 months from the index injury or the most recent intervention.

**Other Musculoskeletal and Neurologic Conditions**

ESWT has been investigated for a variety of other musculoskeletal conditions, including medial tibial stress syndrome, osteonecrosis (avascular necrosis) of the femoral head, coccydynia, painful stump neuromas, and spasticity.

**Summary of Evidence**

For individuals who have plantar fasciitis who receive extracorporeal shock wave therapy (ESWT), the evidence includes 2 recent systematic reviews, each containing 9 randomized controlled trials (RCTs). Eight of the RCTs were overlapping. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. While most of the same trials are included in both meta-analyses, pooled results were inconsistent. One meta-analysis reported that ESWT was beneficial in improving pain reduction, while the other reported nonsignificant findings in pain reduction. Reasons for the differing results include lack of uniformity in the definitions of outcomes, and heterogeneity in ESWT protocols (focused vs radial, number and duration of shocks per treatment, the number of treatments). The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have lateral epicondylitis who receive ESWT, the evidence includes small RCTs. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. Overall, although some RCTs have demonstrated benefits in pain and functional outcomes associated with ESWT, the limited amount of high-quality RCT evidence precludes conclusions about the efficacy of ESWT for lateral epicondylitis. The evidence is insufficient to determine the effects of the technology on health outcomes.
For individuals who have shoulder tendinopathy who receive ESWT, the evidence includes 2 recent network meta-analyses as well as several systematic reviews and meta-analyses of RCTs. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. The network meta-analyses focused on 3 outcomes: pain reduction, functional assessment, and change in calcific deposits. One network meta-analysis separated trials using high-energy focused ESWT (H-FSW), low-energy ESWT, and radial ESWT (RSW). This analysis reported the most effective treatment for pain reduction was ultrasound-guided needling, followed by RSW and H-FSW. The only treatment showing a benefit in functional outcomes was H-FSW. For the largest change in calcific deposits, the most effective treatment was ultrasound-guided needling, followed by RSW, then H-FSW. Many of the RCTs are considered poor quality. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have Achilles tendinopathy who receive ESWT, the evidence includes systematic reviews of RCTs and nonrandomized studies. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. In the most recent systematic review, a pooled analysis reported that ESWT reduced both short- and long-term pain compared with nonoperative treatments, although the authors warned that results were inconsistent across the RCTs and that there was heterogeneity across studies in patient populations and treatment protocols. An RCT published after the systematic review compared ESWT with hyaluronan injections and reported improvements in both treatment groups, although the improvements were significantly higher in the injection group. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have patellar tendinopathy who receive ESWT, the evidence includes systematic reviews of small studies, plus an RCT published after the systematic review. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. The studies reported inconsistent results. Many had methodologic deficiencies such as small numbers, short follow-up periods, and heterogeneous treatment protocols. Results from a nonrandomized study suggested that the location of the patellar tendinopathy might impact the response to ESWT (patients with retropatella fat extension did not respond to RSW compared with patients with tendon involvement). The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have medial tibial stress syndrome who receive ESWT, the evidence includes a small RCT and a small nonrandomized cohort study. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. The RCT reported no difference in self-reported pain between study groups. The cohort study reported improvements with ESWT, although selection bias impacts the strength of the conclusions. The
available evidence is limited and inconsistent; it does not permit conclusions about the benefits of ESWT for medial tibial stress syndrome. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have osteonecrosis of the femoral head who receive ESWT, the evidence includes 2 systematic reviews of small, mostly nonrandomized studies. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. While many of the studies have suggested that ESWT might be effective in improving motor function and pain, particularly in patients with early-stage osteonecrosis, the studies were low quality based on lack of blinding, lack of comparators, small ample sizes, and short follow-up. Treatment protocols also differed between studies. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have nonunion or delayed union who receive ESWT, the evidence includes a systematic review of a RCT and several case series, as well as 2 RCTs published after the systematic review. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. The review concluded that the evidence was inconsistent and of poor quality. Data pooling was not possible due to the heterogeneity of outcome definitions and treatment protocols. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have spasticity who receive ESWT, the evidence includes RCTs and systematic reviews. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. As a treatment for spasticity, several small studies have demonstrated ESWT provides short-term improvements in Modified Ashworth Scale scores, but direct evidence on the effect of ESWT on more clinically meaningful measures (eg, pain, function) are lacking. Differences in treatment parameters among studies, including energy dosage, method of generating and directing shock waves, and use or absence of anesthesia, limit generalizations about the evidence base. The evidence is insufficient to determine the effects of the technology on health outcomes.

Ongoing and Unpublished Clinical Trials

Some currently unpublished trials that might influence this review are listed in Table 2.
Table 2. Summary of Key Trials

<table>
<thead>
<tr>
<th>NCT No.</th>
<th>Trial Name</th>
<th>Planned Enrollment</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ongoing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCT02613455</td>
<td>Prospective Randomized Trial Comparing Corticosteroid Injection to High Energy Extracorporeal Shock Wave Therapy for Lateral Epicondylitis</td>
<td>80</td>
<td>Dec 2016 (ongoing)</td>
</tr>
<tr>
<td>NCT02218229</td>
<td>The Effect of Extracorporeal Shock Wave Therapy on Carpal Tunnel Syndrome</td>
<td>50</td>
<td>May 2017 (ongoing)</td>
</tr>
<tr>
<td>NCT02424084</td>
<td>Effects of Extracorporeal Shock Wave Therapy in Bone Microcirculation</td>
<td>80</td>
<td>Dec 2017</td>
</tr>
<tr>
<td>NCT02668510</td>
<td>A Randomized Controlled Trial Comparing Extracorporeal Shock Wave Therapy with Platelet Rich Plasma versus Extracorporeal Shock Wave Therapy in a High Demand Cohort with Resistant Plantar Fasciitis</td>
<td>30</td>
<td>Mar 2018</td>
</tr>
<tr>
<td>NCT02546128</td>
<td>LEICSTES=LEICeSter Tendon Extracorporeal Shock Wave Studies Assessing the Benefits of the Addition of Extracorporeal Shock Wave Treatment to a Home-Rehabilitation Programme for Patients with Tendinopathy</td>
<td>300</td>
<td>Jun 2020</td>
</tr>
<tr>
<td><strong>Unpublished</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCT02596659</td>
<td>Effectiveness of Radial Extracorporeal Shock Wave Therapy on Tennis Elbow</td>
<td>30</td>
<td>May 2015 (completed)</td>
</tr>
<tr>
<td>NCT02221011</td>
<td>The Effect of Extracorporeal Shock Wave Therapy on Spasticity</td>
<td>60</td>
<td>Jun 2015 (completed)</td>
</tr>
<tr>
<td>NCT02203994</td>
<td>The Effect of Extracorporeal Shock Wave Therapy on Lower Limb Spasticity in Persons with an Incomplete Spinal Cord Injury</td>
<td>20</td>
<td>Dec 2016 (completed)</td>
</tr>
<tr>
<td>NCT02400619</td>
<td>Efficacy of Radial Extracorporeal Shock Waves Compared with Botulinum Toxin Type A in the Treatment of Spasticity of the Lower Extremities in Patients with Cerebral Palsy: a Crossover Randomized Clinical Trial</td>
<td>70</td>
<td>Dec 2016 (completed)</td>
</tr>
<tr>
<td>NCT02930304</td>
<td>Non-surgical Treatment Approaches in Patients with Newly Diagnosed Lateral Epicondylitis: A Randomized Clinical Trial</td>
<td>45</td>
<td>Dec 2016 (completed)</td>
</tr>
</tbody>
</table>

NCT: national clinical trial. Denotes industry-sponsored or cosponsored trial.
Practice Guidelines and Position Statements

**American College of Foot and Ankle Surgeons**

Thomas et al (2010) revised its guidelines on the treatment of heel pain on behalf of the American College of Foot and Ankle Surgeons. The guidelines identified extracorporeal shock wave therapy (ESWT) as a third tier treatment modality in patients who have failed other interventions, including steroid injection. The guidelines recommended ESWT as a reasonable alternative to surgery.

**National Institute for Health and Care Excellence**

The National Institute for Clinical Excellence has published guidance on ESWT for a number of applications.

- A guidance issued in 2003 stated that current evidence on safety and efficacy for treatment of calcific tendonitis of the shoulder “appears adequate to support the use of the procedure.”

- The guidance issued in 2009 stated that current evidence on the efficacy of ESWT for refractory tennis elbow and plantar fasciitis “is inconsistent and the procedure should only be used with special arrangements for clinical governance, consent and audit or research.”

- A guidance issued in 2011 stated that evidence on the efficacy and safety of ESWT for refractory greater trochanteric pain syndrome “is limited in quality and quantity. Therefore this procedure should only be used with special arrangements for clinical governance, consent, and audit or research.”

A guidance issued in 2016 stated that current evidence on the efficacy of ESWT for Achilles tendinopathy “is inconsistent and limited in quality and quantity.” The guidance also indicated that patients should understand the uncertainty about the procedure’s efficacy.

**Canadian Agency for Drugs and Technologies in Health**

A 2007 summary by the Canadian Agency for Drugs and Technologies in Health (CADTH) noted that results from randomized trials of ESWT for plantar fasciitis have been conflicting. The report noted that the “lack of convergent findings from randomized trials of ESWT for chronic
plantar fasciitis suggests uncertainty about its effectiveness. The evidence reviewed ... does not support the use of this technology for this condition."

Similarly, a 2007 report by CADTH on ESWT for chronic lateral epicondylitis (CLE) noted conflicting results from randomized trials (RCTs), with half showing no benefit over placebo for any outcome measures. The report noted that “the lack of convincing evidence regarding its effectiveness does not support the use of ESWT for CLE.”

A third 2007 summary by CADTH concluded that “the current evidence supports the use of high-energy ESWT for chronic calcific rotator cuff tendonitis that is recalcitrant to conventional conservative treatment, although more high-quality RCTs with larger sample sizes are required to provide more convincing evidence.”

A 2016 update from CADTH addressed the use of shockwave therapy for pain associated with upper-extremity orthopedic disorders. Based on results from 7 systematic reviews (with overlapping RCTs), the Agency concluded the following (see Table 3).

**Table 3. Conclusions from CADTH on the Use of ESWT for Upper-Extremity Pain**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Evidence</th>
<th>Comparator</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shoulder</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcific tendonitis</td>
<td>Systematic reviews</td>
<td>Placebo</td>
<td>Effective in reducing pain</td>
</tr>
<tr>
<td>Noncalcific tendonitis</td>
<td>Systematic reviews</td>
<td>Placebo or other treatments</td>
<td>No significant benefit</td>
</tr>
<tr>
<td>Tendonitis</td>
<td>Single RCTs</td>
<td>Exercise or radiotherapy</td>
<td>No significant benefit</td>
</tr>
<tr>
<td>Tendonitis</td>
<td>1 RCT</td>
<td>TENS</td>
<td>Effective in reducing pain</td>
</tr>
<tr>
<td><strong>Elbow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral epicondylitis</td>
<td>Systematic reviews</td>
<td>Placebo</td>
<td>Inconclusive</td>
</tr>
<tr>
<td>Lateral epicondylitis</td>
<td>Single RCTs</td>
<td>Physical therapy or percutaneous tenotomy</td>
<td>No significant benefit</td>
</tr>
<tr>
<td>Lateral epicondylitis</td>
<td>Single RCTs</td>
<td>Corticosteroid injections</td>
<td>Inconclusive</td>
</tr>
</tbody>
</table>

CADTH: Canadian Agency for Drugs and Technologies in Health; ESWT: extracorporeal shockwave treatment; RCT: randomized controlled trial; TENS: transcutaneous electric nerve stimulation
Medicare National Coverage

There is no national coverage determination (NCD). In the absence of an NCD, coverage decisions are left to the discretion of local Medicare carriers.

Regulatory Status

Currently, 6 focused ESWT devices have been approved by the U.S. Food and Drug Administration (FDA) through the premarket approval process for orthopedic use and are summarized in Table 4.

FDA product code: NBN.

Table 4: FDA-Approved Extracorporeal Shock Wave Therapy Devices

<table>
<thead>
<tr>
<th>Device Name</th>
<th>Approval Date</th>
<th>Delivery System Type</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>OssaTron® device (HealthTronics, Marietta, GA)</td>
<td>2000</td>
<td>Electrohydraulic delivery system</td>
<td>Chronic proximal plantar fasciitis, ie, pain persisting &gt;6 mo and not responding to conservative management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lateral epicondylitis</td>
</tr>
<tr>
<td>Epos™ Ultra (Dornier, Germering, Germany)</td>
<td>2002</td>
<td>Electromagnetic delivery system</td>
<td>Plantar fasciitis</td>
</tr>
<tr>
<td>SONOCUR® Basic (Siemens, Erlangen, Germany)</td>
<td>2002</td>
<td>Electromagnetic delivery system</td>
<td>Chronic lateral epicondylitis (unresponsive to conservative therapy for &gt;6 mo)</td>
</tr>
<tr>
<td>Orthospec™ Orthopedic ESWT (Medispec Ltd., Germantown, MD)</td>
<td>2005</td>
<td>Electrohydraulic spark-gap system</td>
<td>Chronic proximal plantar fasciitis in patients ≥18 y</td>
</tr>
<tr>
<td>Orbasone™ Pain Relief System (Orthometrix, White Plains, NY)</td>
<td>2005</td>
<td>High-energy sonic wave system</td>
<td>Chronic proximal plantar fasciitis in patients ≥18 y</td>
</tr>
<tr>
<td>Duolith® SDI Shock Wave Therapy Device (Storz Medical AG, Switzerland)</td>
<td>2016</td>
<td>Electromagnetic delivery system</td>
<td>Chronic proximal plantar fasciitis in patients ≥18 y with a history of failed alternative conservative therapies &gt;6 mo</td>
</tr>
</tbody>
</table>

FDA: Food and Drug Administration.
Both high-dose and low-dose protocols have been investigated. A high-dose protocol consists of a single treatment of high-energy shock waves (1300 mJ/mm²). This painful procedure requires anesthesia. A low-dose protocol consists of multiple treatments, spaced 1 week to 1 month apart, in which a lower dose of shock waves is applied. This protocol does not require anesthesia. The FDA-labeled indication for the OssaTron® and Epos™ Ultra device specifically describes a high-dose protocol, while the labeled indication for the SONOCUR® device describes a low-dose protocol.

In May 2007, Dolorclast® (EMS Electro Medical Systems; Nyon, Switzerland), a radial ESWT, was approved by FDA through the premarket approval process. Radial ESWT is generated ballistically by accelerating a bullet to hit an applicator, which transforms the kinetic energy into radially expanding shock waves. Radial ESWT is described as an alternative to focused ESWT and is said to address larger treatment areas, thus providing potential advantages in superficial applications like tendinopathies. The FDA-approved indication is for the treatment of patients 18 years and older with chronic proximal plantar fasciitis and a history of unsuccessful conservative therapy.

FDA product code: NBN.

References


<table>
<thead>
<tr>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/19/01</td>
<td>Add to Medicine Section - New Policy</td>
</tr>
<tr>
<td>01/08/02</td>
<td>Replace policy - Patient criteria updated to include patient criteria, Policy statement changed to &quot;may be considered medically necessary.&quot; Name changed to include &quot;and Other Musculoskeletal Conditions&quot;. Policy replaces CP.MP.BC.2.01.40.</td>
</tr>
<tr>
<td>03/12/02</td>
<td>Replace policy - Policy updated with TEC assessments. Policy replaces CP.MP.BC.2.01.109.</td>
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<tr>
<td>08/12/03</td>
<td>Replace Policy - Policy replaces CP.MP.BC.2.01.40. No change to policy statement.</td>
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<tr>
<td>02/10/04</td>
<td>Replace Policy - Policy replaces CP.MP.PR.2.01.109. Policy updated with additional references for treatment of plantar fasciitis; policy statement is changed to investigational. Effective July 15, 2004 due to notification process.</td>
</tr>
<tr>
<td>01/11/05</td>
<td>Replace Policy - Policy updated with October 2004 TEC Assessments; endonitis of the elbow added to investigational status in the policy statement.</td>
</tr>
<tr>
<td>07/12/05</td>
<td>Replace Policy - Policy updated with CPT codes effective 7/1/05.</td>
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<tr>
<td>02/06/06</td>
<td>Codes updated - No other changes.</td>
</tr>
<tr>
<td>03/14/06</td>
<td>Replace Policy - Policy updated with additional references and information on newly approved ESWT devices; no change to policy statement.</td>
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<tr>
<td>06/16/06</td>
<td>Update Scope and Disclaimer - No other changes.</td>
</tr>
<tr>
<td>03/19/07</td>
<td>Cross Reference Update - No other changes.</td>
</tr>
<tr>
<td>10/9/07</td>
<td>Replace Policy - Policy updated with literature search through April 2007; no change in policy statement. References added.</td>
</tr>
<tr>
<td>02/10/09</td>
<td>Replace Policy - Policy updated with literature search. Policy statement updated to include radial ESWT to the investigational criteria. References added.</td>
</tr>
<tr>
<td>11/10/09</td>
<td>Cross Reference Update - No other changes.</td>
</tr>
<tr>
<td>02/09/10</td>
<td>Replace policy - Policy updated with literature search; no change to the policy statement. References added.</td>
</tr>
<tr>
<td>05/10/11</td>
<td>Replace Policy - Policy updated with literature search; reference numbers 37-44 added; references 13,14,16,17 and 45-48 updated. No change in policy statement. ICD-10 codes added.</td>
</tr>
<tr>
<td>04/25/12</td>
<td>Replace policy. Policy updated with literature search through December 2011; references 25 and 36 added and references reordered; some references removed. No change in policy statement.</td>
</tr>
<tr>
<td>08/27/12</td>
<td>Update Coding Section – ICD-10 codes are now effective 10/01/2014.</td>
</tr>
<tr>
<td>04/16/13</td>
<td>Replace policy. Policy updated with literature review, references 11, 19, 20, 21, 24 added. No change to policy statements.</td>
</tr>
<tr>
<td>Date</td>
<td>Comments</td>
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<tr>
<td>05/05/14</td>
<td>Annual Review. Policy updated with literature review through January 20, 2014. Moved details of high/low intensity therapy from the Regulatory section to the Description section. References 5-7, 24-25, 30, 34 added; others renumbered/removed. Policy statements unchanged. ICD-9 and ICD-10 diagnosis and procedure codes removed; they are not utilized in policy adjudication.</td>
</tr>
<tr>
<td>04/24/15</td>
<td>Annual Review. Policy updated with literature review through January 12, 2015. References 8, 15, 17, 28, 31, 34, 40, 45, 47-48, and 54-55 added. Editorial changes made for clarity to policy statements; intent of policy statements unchanged.</td>
</tr>
<tr>
<td>09/01/16</td>
<td>Annual Review, approved August 9, 2016. Policy updated with literature review through May 2, 2016; references 9, 28-29, and 31 added. Policy statements unchanged.</td>
</tr>
<tr>
<td>01/01/18</td>
<td>Coding update, removed CPT code 0019T as it was terminated 1/1/17, replaced with CPT 20999.</td>
</tr>
</tbody>
</table>

**Disclaimer:** This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2018 Premera All Rights Reserved.

**Scope:** Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.
Discrimination is Against the Law

Premera Blue Cross complies with applicable Federal civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, or sex. Premera does not exclude people or treat them differently because of race, color, national origin, age, disability or sex.

Premera:

- Provides free aids and services to people with disabilities to communicate effectively with us, such as:
  - Qualified sign language interpreters
  - Written information in other formats (large print, audio, accessible electronic formats, other formats)
- Provides free language services to people whose primary language is not English, such as:
  - Qualified interpreters
  - Information written in other languages

If you need these services, contact the Civil Rights Coordinator.

If you believe that Premera has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, or sex, you can file a grievance:

Civil Rights Coordinator - Complaints and Appeals
PO Box 91102, Seattle, WA 98111
Toll free 855-332-4535, Fax 425-918-5592, TTY 800-842-5357
Email AppealsDepartmentinquines@Premera.com

You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, the Civil Rights Coordinator is available to help you.

Getting Help in Other Languages

This Notice has Important Information. This notice may have important information about your application or coverage through Premera Blue Cross. There may be key dates in this notice. You may need to take action by certain deadlines to keep your health coverage or help with costs. You have the right to get this information and help in your language at no cost. Call 800-722-1471 (TTY: 800-842-5357).

Oromo (Cushite):

Français (French):

Kreyol ayisyen (Creole):
Avi sila a gen Enfomasyon Enpòtan ladan. Avi sila a kapab genyen enfomasyon enpòtan konsènan aplikasyon w lan oswa konvèn kouvèti asirans lan atravé Premera Blue Cross. Kapab genyen dat ki enpòtan nan avi sila a. Ou ka gen pou pran kék aksyon avan sèten dat limit pou ka renbe kouvèti asirants sante w la oswa pou yo ka ede w avèk depans yo. Se dwa w pou rewewa enfomasyon sa a ak asisants nan lang ou pale a, san ou pa gen pou pèye pou sa. Rate nan 800-722-1471 (TTY: 800-842-5357).

Deutsche (German):

Hmoob (Hmong):
Tsal ntaww tshaj xo no muaj cov ntshiab lus tseem ceeb. Tej zaum tsad ntwaw tshaj xo no muaj cov ntsiab lus tseem ceb xog kog daim ntwaw thov kev pab los yog kog chov kev pab cuam los ntaww Premera Blue Cross. Tej zaum muaj cov hnuv tseem ceeb uas rau hauv daim ntaww no. Tej zaum kog koy yuav tau ua qee yam uas peb kom kog ua tis pub dhuu cov caij nyoy uas teev tseg rau hauv daim ntaww no mas kog tshaj yuav tau baai kev pab cuam kho mob los yog kev pab them tej nji kho mob ntwaw. Kog muaj cai kom laww muab cov ntshiab lus no uas taw muab sau ua kog hom lus pub daww rau kog. Hu rau 800-722-1471 (TTY: 800-842-5357).

Ilokano (Ilocano):
Daytoy a Pakdaar ket naglaon iti Napateg nga Impormasion. Daytoy a pakdaar mabalini nga adda ket naglaon iti napateg nga impormasion maipanggpe iti aplikasyon yyocoverage babena iti Premera Blue Cross. Daytoy ket mabalini dagiti importante a pelta iti daytoy a pakdaar. Mabalini nga adda rumbeng nga aramidenyo nga addang saskay dagiti partikular a naituding nga aldaw tapno mapagtalainadio ti coverage ti salun-atyo wenno tulong kadagiti gastos. Adda karbenganyo a mangala iti daytoy nga impormasion ken tulong ti bukodyo a pagasasao nga awan ti bayadanyo. Tumawag ti numero nga 800-722-1471 (TTY: 800-842-5357).

Italiano (Italian):