Medical Policy

Title: Dry Needling of Myofascial Trigger Points

<table>
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<th>Professional</th>
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<tr>
<td>Original Effective Date: July 8, 2016</td>
<td>Original Effective Date: July 8, 2016</td>
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<td>Revision Date(s): July 8, 2016; January 1, 2017; June 9, 2017; July 1, 2019; January 1, 2020; August 21, 2020</td>
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<tr>
<td>Current Effective Date: January 1, 2017</td>
<td>Current Effective Date: January 1, 2017</td>
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<tr>
<td>Individuals: • With myofascial trigger points associated with neck and/or shoulder pain</td>
<td>Interventions of interest are: • Dry needling of trigger points</td>
<td>Comparators of interest are: • Standard physical therapy</td>
<td>Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life • Treatment-related morbidity</td>
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<td>Individuals: • With myofascial trigger points associated with plantar heel pain</td>
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<td>Individuals: • With myofascial trigger points associated with temporomandibular myofascial pain</td>
<td>Interventions of interest are: • Dry needling of trigger points</td>
<td>Comparators of interest are: • Standard physical therapy</td>
<td>Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life • Treatment-related morbidity</td>
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**DESCRIPTION**
Trigger points are discrete, focal, hyperirritable spots within a taut band of skeletal muscle fibers that produce local and/or referred pain when stimulated. Dry needling refers to a procedure whereby a fine needle is inserted into the trigger point to induce a twitch response and relieve the pain.

**Objective**
The objective of this evidence review is to evaluate whether dry needling of myofascial trigger points improves the net health outcome in patients with myofascial pain.

**Background**
Dry needling refers to a procedure in which a fine needle is inserted into the skin and muscle at a site of myofascial pain. The needle may be moved in an up-and-down motion, rotated, and/or left in place for as long as 30 minutes. The intent is to stimulate underlying myofascial trigger points, muscles, and connective tissues to manage myofascial pain. Dry needling may be performed with acupuncture needles or standard hypodermic needles, but is performed without the injection of medications (eg, anesthetics, corticosteroids). Dry needling is proposed to treat dysfunctions in skeletal muscle, fascia, and connective tissue; diminish persistent peripheral pain; and reduce impairments of body structure and function.

The physiological basis for dry needling depends on the targeted tissue and treatment objectives. The most studied targets are trigger points. Trigger points are discrete, focal, hyperirritable spots within a taut band of skeletal muscle fibers that produce local and/or referred pain when stimulated. Trigger points are associated with local ischemia and hypoxia, a significantly lowered pH, local and referred pain, and altered muscle activation patterns.\(^1\) Trigger points can be visualized by magnetic resonance imaging and elastography. The reliability of manual identification of trigger points has not been established.

Deep dry needling is believed to inactivate trigger points by eliciting contraction and subsequent relaxation of the taut band via a spinal cord reflex. This local twitch response is defined as a transient visible or palpable contraction or dimpling of the muscle, and has been associated with alleviation of spontaneous electrical activity; reduction of numerous nociceptive, inflammatory, and immune system related chemicals; and relaxation of the taut band.\(^1\) Deep dry needling of trigger points is believed to reduce local and referred pain, improve range of motion, and decrease trigger point irritability.

Superficial dry needling is thought to activate mechanoreceptors and have an indirect effect on pain by inhibiting C-fiber pain impulses. The physiological basis for dry needling treatment of excessive muscle tension, scar tissue, fascia, and connective tissues is not as well described in the literature.\(^1\)
Regulatory Status
Dry needling is considered a procedure and, as such, is not subject to regulation by the U.S. Food and Drug Administration.

POLICY
Dry needling of trigger points for the treatment of myofascial pain is considered non-covered or experimental / investigational depending on individual member benefits.

Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

RATIONALE
This evidence review has been updated with searches of the PubMed database. The most recent literature update was performed through February 24, 2020.

Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life, and ability to function, including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, 2 domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. RCTs are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

Dry Needling of Trigger Points for Myofascial Pain
Clinical Context and Therapy Purpose
The purpose of dry needling in patients who have myofascial pain is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The question addressed in this evidence review is: Does dry needling improve the net health outcome in patients with myofascial pain?
The following PICO was used to select literature to inform this review.

**Patients**
The relevant population of interest is individuals with myofascial trigger points associated with neck, shoulder, plantar heel, or temporomandibular myofascial pain. Trigger points are discrete, focal, hyperirritable spots within a taut band of skeletal muscle fibers that produce local and/or referred pain when stimulated.

**Interventions**
The therapy being considered is dry needling.

Dry needling refers to a procedure whereby a fine needle is inserted into the trigger point to induce a twitch response and relieve the pain. The needle may be moved in an up-and-down motion, rotated, and/or left in place for as long as 30 minutes. The physiologic basis for dry needling depends on the targeted tissue and treatment objectives. Deep dry needling is believed to inactivate trigger points by eliciting contraction and subsequent relaxation of the taut band via a spinal cord reflex. Superficial dry needling is thought to activate mechanoreceptors and have an indirect effect on pain by inhibiting C-fiber pain impulses.

**Comparators**
Alternative nonpharmacologic treatment modalities for trigger point pain include manual techniques, massage, acupressure, ultrasonography, application of heat or ice, diathermy, transcutaneous electrical nerve stimulation, and spray cooling with manual stretch.2

**Outcomes**
The outcomes of interest are symptoms, functional outcomes, quality of life, and treatment-related morbidity.

**Neck and/or Shoulder Pain**

**Review of Evidence**

**Systematic Reviews**
A qualitative systematic review by Cagnie et al (2015) included 8 studies published through 2013 that met selection criteria for deep dry needling of trigger points of the upper trapezius in patients with neck pain.3 Only studies rated as moderate or good quality were included. Outcomes for the short- and medium-term were assessed for pain, range of motion, functionality, and quality of life. Control treatments included lidocaine injection plus self-stretching, non-trigger point deep needling, mini-scalpel needling, sham acupuncture, and superficial dry needling. All studies showed a decrease in pain with dry needling but only one study found a greater reduction in pain with dry needling than with other treatments. Reviewers found moderate evidence that dry needling, range of motion exercises, and lidocaine injections increased range of motion. One study found an improvement in quality of life comparable to that of nonsteroidal anti-inflammatory medications and, of 3 studies that assessed depression, which was used as a proxy for quality of life, only 1 found significant improvement after treatment with deep dry needling.

More recently, Charles et al (2019) conducted a systematic review of different techniques for treatment of myofascial pain.4 A total of 23 studies of dry needling were included. Of these, 15 assessed the technique for neck or shoulder pain. The quality of evidence for dry needling in the
management of myofascial pain and trigger points ranged from very low to moderate compared with control groups, sham interventions, or other treatments for changes in pain, pressure point threshold, and functional outcomes. Multiple limitations in the body of the evidence were identified, including high risk of bias, small sample sizes, unclear randomization and concealment procedures, inappropriate blinding, imbalanced baseline characteristics, lack of standardized methodologies, unreliable outcome measures, high attrition rates, unknown long-term treatment effects, lack of effective sham methods, and lack of standardized guidelines in the location of trigger points. The reviewers concluded that the evidence for dry needling was not greater than placebo.

**Randomized Controlled Trials**
Several RCTs have been published since the Cagnie et al (2015) review. As noted above, the review focused on trials comparing dry needling with sham or manual therapy. None of the new RCTs was sham-controlled; 2 compared dry needling with manual therapy and are described next.

An RCT by Llamas-Ramos et al (2014) compared trigger point dry needling with trigger point manual therapy in 94 patients. Patients had mechanical neck pain, defined as “neck and shoulder pain with symptoms provoked by neck postures, neck movement, or palpation of the cervical muscles.” Strengths of this trial included allocation concealment, blinding, intention-to-treat analysis, and adequate power. Multivariate analyses did not find statistically significant differences between groups in neck pain or disability scores. However, patients in both groups had similar decreases in pain intensity and disability. For example, pain intensity was 6.2 at baseline for both groups; it decreased to near 2 points immediately postintervention and near 1 at 2-week follow-up. Cervical range of motion was also improved to a similar extent in both groups, while pain pressure threshold was significantly better for the dry needling group. Temporary muscle soreness or fatigue was reported by 55% of the dry needling group and by 23% of the manual therapy group.

In another RCT, De Meulemeester et al (2017) assessed 42 patients with myofascial neck and/or shoulder pain. Patients were assigned to 4 sessions of dry needling (n=20) or manual pressure (n=22). The primary outcome was disability assessed using a 50-point Neck Disability Index. Baseline Neck Disability Index score was at least 10 in all patients. Patients were evaluated at the end of the intervention period and again after 3 months. There were no significant differences in Neck Disability Index scores between the dry needling group and the manual pressure group at either follow-up point (p>0.05). Also, findings were not significantly better in the dry needling group than with the manual pressure group for secondary outcomes, including the pressure pain threshold and pain intensity (measured on a numeric rating scale).

**Section Summary: Neck and/or Shoulder Pain**
A number of RCTs have evaluated dry needling of myofascial trigger points for neck and/or shoulder pain, and there are systematic reviews of RCTs published through 2017. In a systematic review of studies published through 2013, only 1 of 8 studies found significantly greater reductions in pain with dry needling than with other treatments. Two more recent RCTs comparing dry needling with manual therapy did not find significantly better outcomes after dry needling. A second systematic review of techniques for myofascial pain included 15 studies of dry needling for neck or shoulder pain published through 2017. Studies had multiple methodological
limitations, and the reviewers concluded that the evidence for dry needling was not greater than placebo.

**Plantar Heel Pain**

**Review of Evidence**

**Systematic Review**

Cotchett et al (2010) reported on a systematic review of dry needling and injections of myofascial trigger points associated with plantar heel pain. Three quasi-experimental trials were identified: 2 evaluated dry needling plus acupuncture and a third evaluated lidocaine injections plus physical therapy. The methodologic quality of the trials was rated as poor and meta-analysis was not conducted due to heterogeneity among trials.

**Randomized Controlled Trials**

Two RCTs, both published after the systematic review, are described next. Cotchett et al (2014) reported on a double-blind, sham-controlled randomized trial of trigger point dry needling for plantar heel pain. Patients (n=84) with plantar heel pain for at least 1 month in duration were assigned to 6 weekly active or sham treatments. The primary outcomes (first step heel pain and Foot Health Status Questionnaire scores at 6 weeks) were measured in 81 (96.4%) patients. The group given dry needling had statistically significant greater reduction in first-step pain and foot pain (adjusted mean difference, 14.4 mm on a 100-mm visual analog scale and 10.0 points on the Foot Health Status Questionnaire) but the magnitude of change did not meet the prespecified minimally important difference for the scales used. Seventy (32% of treatments) minor adverse events were reported in the active dry needling group compared with only 1 (<1%) in the sham group. The number needed to harm was 3. Strengths of this trial included allocation concealment, patient and evaluator blinding, sample size calculations for adequate power, and a high rate of follow-up. Limitations included the lack of reporting response rates (ie, the percentage of patients who experienced improvement on the primary outcome measures that were equal to or greater than the prespecified minimally important difference).

Eftekharsadat et al (2016) published a single-blinded RCT evaluating 20 patients with plantar fasciitis in Iran. Patients with plantar heel pain for at least one month in duration were assigned to treatment with dry needling (n=10) or usual care (n=10). The intervention group received 1 dry needling session of myofascial trigger points per week for 4 weeks. Also, all patients were instructed in stretching exercises and were administered anti-inflammatory medication. The primary outcomes - pain on a 100-point visual analog scale, and range of motion of the ankle joint in dorsiflexion and plantar extension - were measured at baseline, at the end of the intervention period, and 4 weeks after the intervention ended. All patients completed the trial. At the end of the intervention, the mean visual analog scale score was significantly lower in the treatment group (2.6) than in the usual care group (6.6; p<0.001). However, 4 weeks after the intervention had ended, there was no statistically significant difference in visual analog scale scores between groups (mean visual analog scale scores, 3.0 vs. 3.5; p=0.36, respectively). Moreover, there was no significant between-group difference in range of motion of the ankle joint in dorsiflexion and plantar extension scores at the end of the intervention or at 4 weeks postintervention. Adverse events were not reported.

**Section Summary: Plantar Heel Pain**

The evidence base consists of a systematic review of quasi-experimental studies and 2 RCTs. The systematic review rated the quality of the studies it assessed as poor. One randomized trial was
double-blind and sham-controlled; it found a statistically significantly greater reduction in pain in the dry needling group compared with sham but the difference was not clinically significant (ie, did not reach the prespecified minimally important difference). The other, a single-blind trial comparing dry needling with usual care, found significantly greater reductions in pain at the end of active treatment but not at the follow-up one month later. Moreover, range of motion outcomes did not differ significantly between groups at either time point. To date, research has not demonstrated a statistical and clinical benefit of dry needling. Additional RCTs, especially those with a sham-control group, would strengthen the evidence base.

**Temporomandibular Myofascial Pain**

**Review of Evidence**

**Randomized Controlled Trials**

A double-blind, sham-controlled trial of dry needling for the treatment of temporomandibular myofascial pain was reported by Diracoglu et al (2012). 13 Patients (N=52) with symptoms for at least 6 weeks with 2 or more myofascial trigger points in the temporomandibular muscles were included in the trial. Trigger points were stimulated once weekly over 3 weeks. The sham condition involved dry needling in areas away from the trigger points. Patients were evaluated one week after the last needling. At follow-up, there was no significant difference between groups in pain scores assessed by a 10-point visual analog scale. Mean visual analog scale scores were 3.88 in the treatment group and 3.80 in the control group (p=0.478). Also, the difference in unassisted jaw opening without pain did not differ significantly between the treatment group (40.1 mm) and the control group (39.6 mm; p=0.411). The mean pain pressure threshold was significantly higher in the treatment group (3.21 kg/cm²) than in the control group (2.75 kg/cm²; p<0.001).

**Section Summary: Temporomandibular Myofascial Pain**

One RCT evaluating dry needling for the treatment of temporomandibular myofascial pain was identified; this trial was double-blind and sham-controlled. One week after completing the intervention, there were no statistically significant differences between groups in pain scores or function (unassisted jaw opening without pain). There was a significantly higher pain pressure threshold in the treatment group. This single RCT does not provide sufficient evidence on which to draw conclusions about the impact of dry needling on health outcomes in patients with temporomandibular myofascial pain.

**Adverse Events**

A prospective survey (2014) of 39 physical therapists, providing 7629 dry needling treatments, reported 1463 (19.18%) mild adverse events (bruising, bleeding, pain) and no serious adverse events. 14

**Summary of Evidence**

For individuals who have myofascial trigger points associated with neck and/or shoulder pain who receive dry needling of trigger points, the evidence includes randomized controlled trials (RCTs) and systematic reviews. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. As reported in a systematic review of literature published through 2013, only 1 of 8 studies found significantly greater reductions in pain with dry needling compared with other treatments. Two more recent RCTs comparing dry needling with manual therapy did not find significantly better outcomes after dry needling. A second systematic review of techniques to treat myofascial pain included 15 studies of dry needling for neck or shoulder
pain published through 2017. Studies had multiple methodological limitations, and the reviewers concluded that the evidence for dry needling was not greater than placebo. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have myofascial trigger points associated with plantar heel pain who receive dry needling of trigger points, the evidence includes RCTs, quasi-experimental studies, and a systematic review. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. The systematic review, which included 3 quasi-experimental studies, rated study quality as poor. One RCT was double-blind and sham-controlled; it found a statistically significant greater reduction in pain in the dry needling group than in the sham group but the difference was not clinically significant (ie, it did not meet the prespecified minimally important difference). The other RCT, a single-blind trial comparing dry needling with usual care, found a significantly greater reduction in pain at the end of active treatment but not at follow-up one month later. Moreover, range of motion outcomes did not differ significantly between groups at either time point. To date, the studies have not demonstrated a statistical or a clinical benefit for dry needling. Additional RCTs, especially those with a sham-control group, would strengthen the evidence base. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have myofascial trigger points associated with temporomandibular myofascial pain who receive dry needling of trigger points, the evidence includes an RCT. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. One double-blind, sham-controlled randomized trial was identified; it found that one week after completing the intervention, there were no statistically significant differences between groups in pain scores or function (unassisted jaw opening without pain). There was a significantly higher pain pressure threshold in the treatment group. Additional RCTs, especially those with a sham-control group, are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Practice Guidelines and Position Statements**

**American Physical Therapy Association**

In 2012, an educational resource paper by the American Physical Therapy Association defined dry needling as “a skilled intervention used by physical therapists (where allowed by state law) that uses a thin filiform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular, and connective tissues for the management of neuromusculoskeletal pain and movement impairments.”

In 2013, the Association issued an educational resource paper that included the following indications for dry needling: radiculopathies, joint dysfunction, disc pathology, tendonitis, craniomandibular dysfunction, carpal tunnel syndrome, whiplash-associated disorders, and complex regional pain syndrome.

**American Academy of Orthopaedic Physical Therapists**

In 2009, the American Academy of Orthopaedic Physical Therapists issued a statement that dry needling fell within the scope of physical therapist practice. In support of this position, the Academy stated that dry needling is a neurophysiological evidence-based treatment technique that requires effective manual assessment of the neuromuscular system.... Research supports that dry needling improves pain control, reduces muscle tension, normalizes biochemical and
electrical dysfunction of motor endplates, and facilitates an accelerated return to active rehabilitation."

**U.S. Preventive Services Task Force Recommendations**
Not applicable.

**Ongoing and Unpublished Clinical Trials**
Some currently unpublished trials that might influence this review are listed in Table 1.

Table 1. Summary of Key Trials

<table>
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<th>NCT No.</th>
<th>Trial Name</th>
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<tr>
<td><strong>Ongoing</strong></td>
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<tr>
<td>NCT03844802</td>
<td>Effectiveness of Real and Placebo Dry Needling in Women With Unilateral Chronic Neck Pain</td>
<td>40</td>
<td>Apr 2020</td>
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<td></td>
<td>Exercise vs Manual Therapy and Exercise For the Management of Achilles Tendinopathy</td>
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<td><strong>Unpublished</strong></td>
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<tr>
<td>NCT02373618</td>
<td>Dry Needling Versus Conventional Physical Therapy in Patients With Plantar Fasciitis: a Multi-center Randomized Clinical Trial</td>
<td>108</td>
<td>May 2017</td>
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<tr>
<td>NCT02532595</td>
<td>Trigger Point Dry Needling, Manual Therapy and Exercise vs. Manual Therapy and Exercise For the Management of Achilles Tendinopathy</td>
<td>66</td>
<td>Dec 2018</td>
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<tr>
<td>NCT02373644</td>
<td>Spinal Manipulation and Dry Needling Versus Conventional Physical Therapy in Patients With Sacroiliac Dysfunction: a Multi-center Randomized Clinical Trial</td>
<td>95</td>
<td>Jan 2020</td>
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NCT: national clinical trial.

**CODING**
The following codes for treatment and procedures applicable to this policy are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement. Please refer to the member’s contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

**CPT/HCPCS**
- 20560 Needle insertion, 1 or 2 muscles without injection
- 20561 Needle insertion, 3 or more muscles
- 20999 Unlisted procedure, musculoskeletal system, general
- 97799 Unlisted physical medicine/rehabilitation service or procedure

**Diagnoses**
Experimental / Investigational for all diagnoses related to this medical policy.

**REVISIONS**
- 07-08-2016 Policy published 06-08-2016. Policy effective 07-08-2016.
  In Policy section
REVISIONS

- Added "non-covered or" and "depending on individual member benefits" to read "Dry needling of trigger points for the treatment of myofascial pain is considered non-covered or experimental / investigational depending on individual member benefits."

06-09-2017

Description section updated
Rationale section updated
In Coding section:
- Coding notations updated
References updated

07-01-2019

Description section updated
Rationale section updated
References updated

01-01-2020

In Coding section:
- Added CPT Codes: 20560, 20561
- Updated Coding Notations

08-21-2020

Description section updated
Rationale section updated
References updated

REFERENCES


