Medical Policy

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Title: Dry Needling of Myofascial Trigger Points

Professional
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Populations	Interventions	Comparators	Outcomes
Individuals: • With myofascial trigger points associated with neck and/or shoulder pain	Interventions of interest are: • Dry needling of trigger points	Comparators of interest are: • Standard physical therapy	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life • Treatment-related morbidity
Individuals: • With myofascial trigger points associated with plantar heel pain	Interventions of interest are: • Dry needling of trigger points	Comparators of interest are: • Standard physical therapy • Heel lift(s)	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life • Treatment-related morbidity
Individuals: • With myofascial trigger points associated with temporomandibular pain	Interventions of interest are: • Dry needling of trigger points	Comparators of interest are: • Standard physical therapy	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life • Treatment-related morbidity

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

Myofascial Trigger Points

Myofascial pain is defined by the presence of trigger points: 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.

Dry Needling

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 (e.g., 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 physiologic basis for dry needling depends on the targeted tissue and treatment objectives. The most studied targets are trigger points.[1,]

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. Deep dry needling of trigger points is believed to reduce local and referred pain, improve range of motion, and decrease trigger point irritability.[1,]

Superficial dry needling is thought to activate mechanoreceptors and have an indirect effect on pain by inhibiting C-fiber pain impulses. The physiologic basis for dry needling treatment of excessive muscle tension, scar tissue, fascia, and connective tissues is not as well described in the literature.

REGULATORY STATUS

Dry needling is considered a procedure and, as such, is not subject to regulation by the U.S. Food and Drug Administration.

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.

POLICY

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

RATIONALE

This evidence review has been updated regularly with searches of the PubMed database. The most recent literature update was performed through February 18, 2021.

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 MYOFASCIAL TRIGGER POINTS ASSOCIATED WITH NECK AND/OR SHOULDER PAIN

Clinical Context and Therapy Purpose

The purpose of dry needling in patients who have myofascial neck and/or shoulder 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 neck and/or shoulder pain?

The following PICO was used to select literature to inform this review.

Populations

The relevant population of interest is individuals with myofascial trigger points associated with myofascial neck and/or shoulder 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.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:
- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

REVIEW OF EVIDENCE
Systematic Reviews
Charles et al (2019) conducted a systematic review of different techniques for treatment of myofascial pain.[3,] A total of 23 RCTs 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.

Navarro-Santana et al (2020) conducted a systematic review and meta-analysis of dry needling of myofascial trigger points associated with neck pain compared to sham needling, no intervention, or other physical interventions.[4,] A total of 28 RCTs were included. Dry needling reduced pain immediately after the intervention (mean difference [MD] in pain score -1.53; 95% confidence interval [CI] -2.29 to -0.76) and at the short-term (up to 1 month) (MD -2.31, 95% CI -3.64 to -0.99) when compared with sham, placebo, waiting list, or other forms of dry needling, and at the short-term compared with manual therapy (MD -0.51, 95% CI -0.95 to -0.06). No differences in comparison with other physical therapy interventions were observed. An effect on pain-related disability at the short-term was found when comparing dry needling with sham, placebo, waiting list, or other form of dry needling, but not with manual therapy or other physical therapy interventions.

Navarro-Santana et al (2020) also conducted a systematic review and meta-analysis of dry needling for shoulder pain.[5,] The meta-analysis found moderate quality evidence for a small effect (MD -0.49 points; 95% CI -0.84 to -0.13; standardized mean difference [SMD] -0.25; 95% CI -0.42 to -0.09) for decreasing shoulder pain intensity, and low quality evidence for a large effect (MD -9.99 points; 95% CI -15.97 to -4.01; SMD -1.14; 95% CI -1.81 to -0.47) for reducing related disability. The effects on pain intensity were found only in the short term (up to 1 month) and did not reach the minimal clinically important difference of 1.1 points for the numerical pain rating scale (0–10) determined for patients with shoulder pain. Confidence intervals of the main effects of dry needling on pain intensity and related disability were wide. Additionally, the trials were heterogeneous with regard to the number and/or frequency of needling sessions and the type of comparator.

Section Summary: Neck and/or Shoulder Pain
A number of RCTs and systematic reviews of these studies have evaluated dry needling of myofascial trigger points for neck and/or shoulder pain... A 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. In more recent systematic reviews and meta-analyses, dry needling was not associated with clinically important reductions in shoulder or neck pain when compared to other physical therapy modalities.

DRY NEEDLING OF MYOFASCIAL TRIGGER POINTS ASSOCIATED WITH PLANTAR HEEL PAIN

Clinical Context and Therapy Purpose

The purpose of dry needling in patients who have plantar heel 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 plantar heel myofascial pain?

The following PICO was used to select literature to inform this review.

Populations

The relevant population of interest is individuals with myofascial trigger points associated with plantar heel 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.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:

- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

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.[6,] 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.[7,] 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 (i.e., 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-blind RCT evaluating 20 patients with plantar fasciitis in Iran.[8,] Patients with plantar heel pain for at least 1 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 (i.e., 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 1 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.

DRY NEEDLING OF MYOFASCIAL TRIGGER POINTS ASSOCIATED WITH TEMPOROMANDIBULAR PAIN

Clinical Context and Therapy Purpose

The purpose of dry needling in patients who have temporomandibular 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 temporomandibular myofascial pain?

The following PICO was used to select literature to inform this review.

Populations
The relevant population of interest is individuals with myofascial trigger points associated with 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.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:
- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

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).[9,] 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 1 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/cm^2) than in the control group (2.75 kg/cm^2; $p<0.001$).

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.[10,]

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.. A 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. In more recent systematic reviews and meta-analyses, dry needling was not associated with clinically important reductions in shoulder or neck pain when compared to other physical therapy modalities. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

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 (i.e., 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 that the technology results in an improvement in the net health outcome.

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 that the technology results in an improvement in the net health outcome.

SUPPLEMENTAL INFORMATION

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the evidence review conclusions.

Practice Guidelines and Position Statements

Guidelines or position statements will be considered for inclusion in 'Supplemental Information' if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

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.[11,] 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."

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."[12,]

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.[1,]

U.S. Preventive Services Task Force Recommendations

Not applicable.

Ongoing and Unpublished Clinical Trials

A search of ClinicalTrials.gov in March 2021 did not identify any ongoing or unpublished trials that would likely influence this review.

CODING

The following codes for treatment and procedures applicable to this policy are included below for informational purposes. This may not be a comprehensive list of procedure codes applicable to this policy.

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.

The code(s) listed below are medically necessary ONLY if the procedure is performed according to the "Policy" section of this document.

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.
01-01-2017	Policy published 12-20-2016. Policy effective 01-01-2017.
	In Policy section ▪ 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
06-16-2021	Description section updated
	Rationale section updated
	References updated

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