Acupuncture for Pain Management, Nausea and Vomiting, and Opioid Dependence

Policy Number: 7.01.157  Last Review: 2/2019
Origination: 2/2017  Next Review: 8/2019

Policy
Blue Cross and Blue Shield of Kansas City (Blue KC) will provide coverage for acupuncture for pain management if the criteria are met and it is a covered benefit.

Note: Please note that acupuncture is considered a benefit exclusion in many health plan contracts.

When Policy Topic is covered
Acupuncture may be considered medically necessary for treatment of episodic migraine and/or tension-type headache.

When Policy Topic is not covered
Acupuncture is considered investigational for the treatment of other pain-related conditions including but not limited to:
- Low back pain
- Shoulder pain
- Lateral elbow pain
- Carpal tunnel syndrome
- Cancer pain in adults
- Chronic pain in patients with spinal cord injury
- Pain in endometriosis
- Pain in rheumatoid arthritis.

Acupuncture is considered investigational for the prevention or treatment of nausea and/or vomiting.

Acupuncture is considered investigational for opioid reduction or cessation in opiate users.
### Description of Procedure or Service

<table>
<thead>
<tr>
<th>Populations</th>
<th>Interventions</th>
<th>Comparators</th>
<th>Outcomes</th>
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</thead>
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<tr>
<td><strong>Individuals:</strong>&lt;br&gt;• With episodic migraine</td>
<td>Interventions of interest are:&lt;br&gt;• Acupuncture</td>
<td>Comparators of interest are:&lt;br&gt;• Medication therapy&lt;br&gt;• Other conservative therapy</td>
<td>Relevant outcomes include:&lt;br&gt;• Symptoms&lt;br&gt;• Functional outcomes&lt;br&gt;• Medication use&lt;br&gt;• Treatment-related morbidity</td>
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<tr>
<td><strong>Individuals:</strong>&lt;br&gt;• With tension-type headache</td>
<td>Interventions of interest are:&lt;br&gt;• Acupuncture</td>
<td>Comparators of interest are:&lt;br&gt;• Medication therapy&lt;br&gt;• Other conservative therapy</td>
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<tr>
<td><strong>Individuals:</strong>&lt;br&gt;• With low back pain</td>
<td>Interventions of interest are:&lt;br&gt;• Acupuncture</td>
<td>Comparators of interest are:&lt;br&gt;• Medication therapy&lt;br&gt;• Physical therapy&lt;br&gt;• Other conservative therapy</td>
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<td><strong>Individuals:</strong>&lt;br&gt;• With other pain-related conditions (eg, musculoskeletal, cancer, spinal cord injury, endometriosis, rheumatoid arthritis)</td>
<td>Interventions of interest are:&lt;br&gt;• Acupuncture</td>
<td>Comparators of interest are:&lt;br&gt;• Medication therapy&lt;br&gt;• Physical therapy&lt;br&gt;• Other conservative therapy</td>
<td>Relevant outcomes include:&lt;br&gt;• Symptoms&lt;br&gt;• Functional outcomes&lt;br&gt;• Medication use&lt;br&gt;• Treatment-related morbidity</td>
</tr>
<tr>
<td><strong>Individuals:</strong>&lt;br&gt;• With nausea or vomiting or at high-risk of nausea or vomiting</td>
<td>Interventions of interest are:&lt;br&gt;• Acupuncture</td>
<td>Comparators of interest are:&lt;br&gt;• Medication therapy&lt;br&gt;• Other conservative therapy</td>
<td>Relevant outcomes include:&lt;br&gt;• Symptoms&lt;br&gt;• Functional outcomes&lt;br&gt;• Medication use&lt;br&gt;• Treatment-related morbidity</td>
</tr>
<tr>
<td><strong>Individuals:</strong>&lt;br&gt;• With opioid dependence</td>
<td>Interventions of interest are:&lt;br&gt;• Acupuncture</td>
<td>Comparators of interest are:&lt;br&gt;• Tapering&lt;br&gt;• Medication therapy&lt;br&gt;• Counseling&lt;br&gt;• Opioid replacement therapy</td>
<td>Relevant outcomes include:&lt;br&gt;• Symptoms&lt;br&gt;• Functional outcomes&lt;br&gt;• Medication use&lt;br&gt;• Treatment-related morbidity</td>
</tr>
</tbody>
</table>

Acupuncture is the practice of piercing the skin with needles at specific body sites to induce anesthesia, to relieve pain, to treat various nonpainful disorders, and to alleviate withdrawal symptoms of opioid dependence. Acupuncture has also been used or proposed for a large variety of indications. This review addressed acupuncture for pain management, nausea and vomiting, and opiate dependence.

**Pain-Related Conditions**
For individuals who have episodic migraines who receive acupuncture, the evidence includes randomized controlled trials (RCTs) and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. Pooled analyses of 15 sham-controlled trials on episodic migraine in a Cochrane review found significantly better outcomes with acupuncture, which were considered to be clinically significant. Pooled analyses of trials on acupuncture vs medication found a significant benefit of acupuncture at
the end of treatment but not at the end of the follow-up period. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have tension-type headaches who receive acupuncture, the evidence includes RCTs and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. Pooled analyses in a Cochrane review on acupuncture for tension-type headaches consistently found statistically significant benefits of acupuncture compared with sham up to 5 to 6 months. The clinical significance of the findings was not assessed. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have low back pain who receive acupuncture, the evidence includes RCTs and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. A Cochrane review identified a single sham-controlled trial on acute low back pain and outcomes were not significantly better with acupuncture. Findings for chronic back pain in the Cochrane review were mixed. Pooled analyses of sham-controlled randomized trials on chronic low back pain in 2 different meta-analyses found improvements in pain up to 3 months. No significant global improvement was observed at up to 3 months in the acupuncture group. Longer term sham-controlled data are not available. Pooled analyses found no clinically meaningful improvement regarding pain or function among the acupuncture recipients compared with the group receiving other treatments (eg, pain immediately postintervention or during 10 to 36 weeks postintervention). The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have other pain-related conditions (eg, shoulder pain, lateral elbow pain, carpal tunnel syndrome, cancer pain in adults, chronic pain in adults with spinal cord injury, pain in endometriosis, pain in rheumatoid arthritis) who receive acupuncture, the evidence includes a few RCTs and systematic reviews of these trials. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. The RCTs were of low quality and/or lacked significantly better outcomes with acupuncture than with control conditions. The evidence is insufficient to determine the effects of the technology on health outcomes.

Nausea and Vomiting
For individuals who have nausea or vomiting or are at high risk of nausea or vomiting who receive acupuncture, the evidence includes RCTs and meta-analyses. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. Two Cochrane reviews addressed acupuncture for treating nausea and vomiting in pregnancy. The few RCTs identified did not find significant differences in outcomes between acupuncture and sham acupuncture. A third Cochrane review addressed chemotherapy-induced nausea and vomiting. Findings were not robust. A pooled analysis of 4 trials (1 on manual acupuncture, 3 on electroacupuncture) found that the acupuncture
intervention was associated with a significantly lower incidence of acute vomiting during the next 24 hours. However, no individual trial had a significant finding for this outcome, and a pooled analysis of the 3 trials on electroacupuncture did not find a significant benefit from electroacupuncture on acute vomiting. Moreover, data from these trials were not available on 3 of the 4 outcomes of interest. A fourth Cochrane review addressed 10 interventions involving stimulation of the wrist acupuncture point PC6. Conclusions about acupuncture could not be drawn from this review because only a small number of studies of assessed acupuncture and review findings were not stratified by intervention. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Opioid Dependence**

For individuals who have opioid dependence who receive acupuncture, the evidence includes RCTs and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. A Cochrane review identified a single RCT, which did not find a significant benefit from acupuncture in reducing opioid consumption in patients with chronic non-cancer-related pain. A narrative systematic review concluded that there is insufficient evidence from high-quality RCTs to draw conclusions about the efficacy of acupuncture in the treatment of opiate addiction. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Background**

Acupuncture is a traditional form of Chinese medical treatment that has been practiced for over 2000 years. It involves piercing the skin with needles at specific body sites. The placement of needles into the skin is dictated by the location of meridians. These meridians, or channels, are thought to mark patterns of energy, called Qi (Chi) that flow through the human body. According to traditional Chinese philosophy, illness occurs when the energy flow is blocked or unbalanced, and acupuncture is a way to influence chi and restore balance. Another tenet of this philosophy is that all disorders are associated with specific points on the body, on or below the skin surface.

Several physiologic explanations of acupuncture’s mechanism of action have been proposed including an analgesic effect from release of endorphins or hormones (eg, cortisol, oxytocin), a biomechanical effect, and/or an electromagnetic effect.

There are 361 classical acupuncture points located along 14 meridians, and different points are stimulated depending on the condition treated. In addition to traditional Chinese acupuncture, there are a number of modern styles of acupuncture, including Korean and Japanese acupuncture. Modern acupuncture techniques can involve stimulation of additional non-meridian acupuncture points. Acupuncture is sometimes used along with manual pressure, heat (moxibustion), or electrical stimulation (electroacupuncture). Acupuncture treatment can vary by style and by practitioner, and is generally personalized to the patient. Thus, patients with the same condition may receive stimulation of different acupuncture points.
Scientific study of acupuncture is challenging due to the multifactorial nature of the intervention, variability in practice, and individualization of treatment. There has been much discussion in the literature on the ideal control condition for studying acupuncture. Ideally, the control condition should be able to help distinguish between specific effects of the treatment and nonspecific placebo effects related to factors such as patient expectations and beliefs and the patient-provider therapeutic relationships. A complicating factor in selection of a control treatment is that it is not clear whether all 4 components (ie, the acupuncture needles, the target location defined by traditional Chinese medicine, the depth of insertion, and the stimulation of the inserted needle) are necessary for efficacy. Sham acupuncture interventions vary; they can involve, eg, superficial insertion of needles or insertion of needles at the “wrong” points. A consensus recommendation on clinical trials of acupuncture, published in 2002 by White et al, recommend distinguishing between a penetrating and a nonpenetrating sham control.

Acupuncture has been used to treat a large variety of conditions. This review addresses acupuncture for treating chronic pain, to ameliorate nausea and vomiting symptoms, and to alleviate withdrawal symptoms of opioid users.

**Rationale**

This evidence was created in November 2016 and has been updated regularly with searches of the MEDLINE database. The most recent literature update was performed through October 4, 2018.

Evidence reviews assess the clinical evidence to determine whether the use of a technology improves the net health outcome. Broadly defined, health outcomes are 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 to 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 a technology, 2 domains are examined: the relevance and the 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.
In addition, pain and other outcomes (e.g., drug cravings, nausea) are subjective outcomes and, thus, may be particularly susceptible to placebo effects. Because of these factors, sham-controlled trials are essential to demonstrate the clinical effectiveness of acupuncture compared with alternatives (e.g., continued medical management).

**Pain-Related Conditions: Episodic Migraine**

**Clinical Context and Test Purpose**
The purpose of acupuncture is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with episodic migraines.

The question addressed in this evidence review is: Does the use of acupuncture improve the net health outcome for individuals with episodic migraines?

The following PICOTS were used to select literature to inform this review.

**Patients**
The relevant population of interest is individuals with episodic migraines.

**Interventions**
The therapy being considered is acupuncture.

**Comparators**
The following therapies are currently being used to treat episodic migraines: medication therapy and other conservative therapies.

**Outcomes**
The general outcomes of interest are symptoms (e.g., migraine frequency, pain reduction), functional outcomes, medication use, and treatment-related morbidity.

**Timing**
Follow-up over months is of interest for relevant outcomes.

**Setting**
Patients with episodic migraines are actively managed by neurologists and primary care providers in an outpatient setting.

**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 longer 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.

**Systematic Reviews**

A Cochrane review by Linde et al (2016) included RCTs at least 8 weeks in duration that compared acupuncture with sham acupuncture, prophylactic medication treatment, and/or no acupuncture in patients with episodic migraines. Trials focusing on chronic migraine were excluded. The primary efficacy outcome was headache frequency, and the secondary outcome was the proportion of responders (at least 50% reduction in migraine frequency).

Twenty-one RCTs met reviewers’ selection criteria; all were parallel-group trials. Fifteen trials included a sham acupuncture control group, five had a prophylactic medication group, and five had a no acupuncture group (several trials had >2 arms). Acupuncture interventions were heterogeneous (eg, number of sessions, length of sessions, standardized vs individualized placement of needles). Risk of bias was assessed in 13 sham-controlled trials; all attempted blinding and the overall risk of bias was considered to be low. None of the 3 trials comparing acupuncture with prophylactic medication were blinded, and dropout rates were high in two; overall, these trials were considered at considerable risk of bias. Key outcomes for the acupuncture vs sham acupuncture and acupuncture vs prophylactic medication analyses are shown in Table 1.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Follow-Up</th>
<th>No. Trials</th>
<th>Results</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acupuncture vs sham</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in headache frequency</td>
<td>End of treatment</td>
<td>12</td>
<td>SMD = -0.18</td>
<td>-0.28 to -0.08</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>End of follow-up</td>
<td>10</td>
<td>SMD = -0.19</td>
<td>-0.30 to -0.09</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td>End of treatment</td>
<td>14</td>
<td>RR=1.24</td>
<td>1.11 to 1.36</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>End of follow-up</td>
<td>11</td>
<td>RR=1.25</td>
<td>1.13 to 1.39</td>
<td>0.004</td>
</tr>
<tr>
<td><strong>Acupuncture vs prophylactic medication</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in headache frequency</td>
<td>End of treatment</td>
<td>3</td>
<td>SMD = -0.25</td>
<td>-0.39 to -0.10</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>End of follow-up</td>
<td>3</td>
<td>SMD = -0.13</td>
<td>-0.28 to 0.01</td>
<td>0.08</td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td>End of treatment</td>
<td>3</td>
<td>RR=1.24</td>
<td>1.08 to 1.44</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>End of follow-up</td>
<td>3</td>
<td>RR=1.11</td>
<td>0.97 to 1.26</td>
<td>0.12</td>
</tr>
</tbody>
</table>

CI: confidence interval; RR: relative risk ratio; SMD: standardized mean difference.

*At least a 50% reduction in headache frequency.

In a pooled analysis comparing acupuncture with sham acupuncture, acupuncture had statistically significant effects on reduction of headache frequency and on response rates at both follow-ups. Reviewers considered the differences between groups to be small but clinically relevant. Fewer trials compared acupuncture with
prophylactic medication. There was a significantly greater effect of acupuncture on reduction in headache frequency and response rates at the end of treatment but not at the end of follow-up.

**Randomized Controlled Trials**

Zhao et al (2017) conducted an RCT in 3 clinical centers in China to investigate the long-term effects of acupuncture for migraine prophylaxis compared with sham acupuncture and being placed in a waiting-list control group. Adults (18-65 years) with migraines without aura (N=245) were recruited from hospital outpatient departments and randomized to acupuncture, sham acupuncture, and waiting-list groups. Participants in the acupuncture and sham acupuncture groups were blinded and received treatment 5 days a week for 4 weeks for a total of 20 sessions. Participants in the waiting-list group did not receive acupuncture but were informed that 20 sessions of acupuncture would be provided free of charge at the end of the trial. The change in the frequency of migraine attacks from baseline to week 16, as recorded inpatient diaries, was the primary outcome. Secondary outcome measures included the number of migraine days, average headache severity, and medication intake every 4 weeks within 24 weeks. The mean change in frequency of migraine attacks differed significantly among the 3 groups at 16 weeks after randomization (p<0.001); the mean (standard deviation) frequency of attacks decreased in the acupuncture group by 3.2 (2.1), in the sham acupuncture group by 2.1 (2.5), and in the waiting-list group by 1.4 (2.5); a greater reduction was observed in the acupuncture than in the sham acupuncture group (difference, 1.1 attacks; 95% confidence interval [CI], 0.4 to 1.9; p=0.002) and in the acupuncture vs waiting-list group (difference, 1.8 attacks; 95% CI, 1.1 to 2.5; p<0.001). Sham acupuncture did not differ statistically from the waiting-list group (difference, 0.7 attacks; 95% CI, -0.1 to 1.4; p=0.07).

**Section Summary: Episodic Migraine**

Pooled analyses of 15 sham-controlled trials on episodic migraine in a Cochrane review found significantly better outcomes with acupuncture. The magnitude of difference between acupuncture and sham acupuncture was small but considered clinically relevant. Similar findings were observed in a more recent RCT. A limitation of the sham-controlled literature is the variability in intervention protocols, which makes it difficult to draw conclusions about any specific approach to acupuncture. Pooled analyses of trials on acupuncture vs mediation found a significant benefit of acupuncture at the end of treatment but not at the end of the follow-up period.

**Pain-Related Conditions: Tension-Type Headache**

**Clinical Context and Test Purpose**

The purpose of acupuncture is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with tension-type headaches.

The question addressed in this evidence review is: Does the use of acupuncture improve the net health outcome for individuals with tension-type headaches?
The following PICOTS were used to select literature to inform this review.

**Patients**
The relevant population of interest is individuals with tension-type headaches.

**Interventions**
The therapy being considered is acupuncture.

**Comparators**
The following therapies are currently being used to treat tension-type headaches: medication therapy and other conservative therapies.

**Outcomes**
The general outcomes of interest are symptoms (e.g., headache frequency, pain reduction), functional outcomes, medication use, and treatment-related morbidity.

**Timing**
Follow-up over months is of interest for relevant outcomes.

**Setting**
Patients with tension-type headaches are actively managed by neurologists and primary care providers in an outpatient clinical setting.

**Study Selection Criteria**
Methodologically credible studies were selected using the principles outlined for indication 1.

**Systematic Reviews**
Another Cochrane review by Linde et al (2016) included RCTs at least 8 weeks in duration that compared acupuncture with sham acupuncture, standard care, or another comparator intervention in adults with episodic or chronic tension-type headache. Interventions had to include at least 6 acupuncture sessions given at least once a week. The primary outcome measure was treatment response (at least a 50% reduction in headache frequency) 3 to 4 months after randomization. Outcomes at 8 weeks or less, 5 to 6 months, and more than 6 months after randomization were reviewed. Secondary outcomes included number of headache days, headache intensity, frequency of analgesic use, and headache scores.

Twelve RCTs met reviewers’ inclusion criteria; all were parallel-group trials. Seven RCTs included a sham control group, and all were blinded. Control groups in other trials were physical therapy (3 studies), relaxation or massage (2 studies), and delayed acupuncture treatment (similar to a no treatment group). One study had more than 2 arms. The trials that did not use a sham control were considered at major risk of bias. Key outcomes are shown in Table 2.
Table 2. Key Outcomes for Tension-Type Headache

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Follow-Up</th>
<th>No. Trials</th>
<th>Results</th>
<th>Treatment Effect</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acupuncture vs sham</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong> a</td>
<td>Up to 2 mo after randomization</td>
<td>4</td>
<td></td>
<td>RR=1.26</td>
<td>1.10 to 1.45</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>3-4 mo after randomization</td>
<td>4</td>
<td></td>
<td>RR=1.27</td>
<td>1.00 to 1.48</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>5-6 mo after randomization</td>
<td>4</td>
<td></td>
<td>RR=1.17</td>
<td>1.02 to 1.35</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>No. headache days</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Up to 2 mo after randomization</td>
<td>4</td>
<td></td>
<td>MD = -1.49</td>
<td>-2.58 to -0.39</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>3-4 mo after randomization</td>
<td>4</td>
<td></td>
<td>MD = -1.62</td>
<td>-2.69 to -0.54</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>5-6 mo after randomization</td>
<td>4</td>
<td></td>
<td>MD = -1.51</td>
<td>-2.59 to -0.43</td>
<td>0.006</td>
</tr>
</tbody>
</table>

CI: confidence interval; MD: mean difference; RR: relative risk ratio.

a At least a 50% reduction in headache frequency.

In a pooled analysis comparing acupuncture with sham acupuncture, acupuncture had statistically significant effects on treatment response (the primary outcome) and the number of headache days at all time points for which data were available. There were insufficient data for pooling on other secondary outcome measures. Cochrane reviewers did not comment on whether the differences between groups in pooled analyses were clinically significant.

**Section Summary: Tension-Type Headache**

Pooled analyses in a Cochrane review on acupuncture for tension-type headache consistently found statistically significant benefits of acupuncture compared with sham acupuncture. These findings were specific to 5 to 6 months of follow-up; there were insufficient data to conduct analyses of longer term follow-up (ie, >6 months). Reviewers did not comment on the clinical significance of the findings.

**Pain-Related Conditions: Low Back Pain**

**Clinical Context and Test Purpose**
The purpose of acupuncture is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with low back pain.

The question addressed in this evidence review is: Does the use of acupuncture improve the net health outcome for individuals with low back pain?

The following PICOTS were used to select literature to inform this review.

**Patients**
The relevant population of interest is individuals with low back pain.

**Interventions**
The therapy being considered is acupuncture.
Comparators
The following therapies are currently being used to treat with low back pain: medication therapy, physical therapy, and other conservative therapies.

Outcomes
The general outcomes of interest are symptoms (eg, pain reduction), functional outcomes, medication use, and treatment-related morbidity.

Timing
Follow-up over months is of interest for relevant outcomes.

Setting
Patients with low back pain are actively managed by physical therapists and primary care providers in an outpatient setting.

Study Selection Criteria
Methodologically credible studies were selected using the principles outlined for indication 1.

Systematic Reviews
Lam et al (2013) conducted a systematic review and meta-analysis of RCTs to evaluate the effectiveness of acupuncture for nonspecific chronic low back pain. Among the 32 studies included in the systematic review, 25 studies presented relevant data for meta-analysis. Reviewers adopted a minimally important change of 15 mm in visual analog scale score, 2 points for numeric pain scale score for pain, 5 points for Roland-Morris Disability Questionnaire score, and 10 points for Oswestry Disability Index score for pooled results that use the same outcome scales (ie, mean difference) to determine if an intervention had a clinically significant effect on pain. Acupuncture had a clinically meaningful reduction in levels of self-reported pain compared with sham and improved function when compared with no treatment in the immediate postintervention period. Levels of function also improved clinically when acupuncture plus usual care was compared with usual care alone. When acupuncture was compared with medications (nonsteroidal anti-inflammatory drugs, muscle relaxants, analgesics) and usual care, there were statistically significant differences between the control and the intervention groups, but these differences were too small to be of any clinical significance (see Table 3).

Furlan et al (2005) published a Cochrane review of acupuncture and dry needling for low back pain. Reviewers included RCTs in adults with nonspecific low back pain and myofascial pain syndrome in the low back. The RCTs had to report at least 1 of 4 outcome measures: pain intensity measured by a visual analog scale, global improvement measure, back-specific functional status scale (eg, Roland-Morris Disability Questionnaire, Oswestry Disability Index), or return to work. Only 1 sham-controlled study on acupuncture for acute back pain was found, and it did not find between-group differences in pain or function after 1 treatment session.
Six RCTs compared acupuncture with sham acupuncture. Chronic pain outcomes are reported in Table 3.

<table>
<thead>
<tr>
<th>Table 3. Key Outcomes for Chronic Low Back Pain</th>
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<tbody>
<tr>
<td><strong>Outcomes</strong></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Lam et al (2013)²</td>
</tr>
<tr>
<td><strong>Acupuncture vs no treatment</strong></td>
</tr>
<tr>
<td>Pain</td>
</tr>
<tr>
<td>Levels of function</td>
</tr>
<tr>
<td><strong>Acupuncture vs medication</strong></td>
</tr>
<tr>
<td>Pain</td>
</tr>
<tr>
<td>Levels of function</td>
</tr>
<tr>
<td><strong>Acupuncture vs sham acupuncture</strong></td>
</tr>
<tr>
<td>Pain</td>
</tr>
<tr>
<td>6-12 wk</td>
</tr>
<tr>
<td><strong>Acupuncture in addition to usual care vs usual care</strong></td>
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<tr>
<td>Pain</td>
</tr>
<tr>
<td>10-36 wk</td>
</tr>
<tr>
<td>Levels of function</td>
</tr>
<tr>
<td>10-36 wk</td>
</tr>
<tr>
<td>Furlan et al (2005)⁸</td>
</tr>
<tr>
<td><strong>Acupuncture vs sham</strong></td>
</tr>
<tr>
<td>Pain</td>
</tr>
<tr>
<td>Up to 3 mo</td>
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<tr>
<td>3 mo to 1 y</td>
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<tr>
<td>Global improvement</td>
</tr>
<tr>
<td>Up to 3 mo</td>
</tr>
<tr>
<td><strong>Acupuncture vs other intervention</strong></td>
</tr>
<tr>
<td>Pain</td>
</tr>
<tr>
<td>Up to 3 mo</td>
</tr>
<tr>
<td>3 mo to 1 y</td>
</tr>
</tbody>
</table>
Pain was significantly lower with acupuncture than with sham immediately after treatment and after short-term follow-up (up to 3 months), but there was no significant difference between groups at intermediate follow-up (3 months to 1 year). Similarly, scores were significantly better in the acupuncture group than in the sham group immediately after treatment, but there was no significant between-group difference at the short-term follow-up. In pooled analyses of studies comparing acupuncture with other interventions (eg massage, spinal manipulation, medication), there were significant differences immediately after treatment and at intermediate follow-up, favoring the other intervention groups; reviewers did not find a significant between-group difference at short-term follow-up.

Section Summary: Low Back Pain
A Cochrane review found insufficient evidence from a sham-controlled trial to assess acupuncture and acute back pain. The trial had limitations (eg, only 1 session of acupuncture) and did not find significantly better outcomes with acupuncture vs sham acupuncture. Pooled analyses of sham-controlled randomized trials on chronic low back pain in 2 different meta-analyses found improvement in pain up to 3 months. No significant global improvement was observed at up to 3 months. Sham-controlled data beyond 3-month follow-up were not available. In pooled analyses of acupuncture vs other treatments, one of the meta-analyses found statistically significant but not clinically meaningful improvement in terms of pain reductions and functional improvements for acupuncture compared with other medications both during the immediate postintervention period and 10 to 36 weeks postintervention.

Pain-Related Conditions: Other Pain-Related Conditions

Clinical Context and Test Purpose
The purpose of acupuncture is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with other pain-related conditions (eg, shoulder pain, lateral elbow pain, carpal tunnel syndrome, cancer pain in adults, chronic pain in adults with spinal cord injury, pain in endometriosis, pain in rheumatoid arthritis).

The question addressed in this evidence review is: Does the use of acupuncture improve the net health outcome for individuals with other pain-related conditions?

The following PICOTS were used to select literature to inform this review.

Patients
The relevant populations of interest are individuals with other pain-related conditions (eg, shoulder pain, lateral elbow pain, carpal tunnel syndrome, cancer pain in adults, chronic pain in adults with spinal cord injury, pain in endometriosis, pain in rheumatoid arthritis).
Interventions
The therapy being considered is acupuncture.

Comparators
The following therapies are currently being used to treat other pain-related conditions: medication therapy, physical therapy, and other conservative therapies.

Outcomes
The general outcomes of interest are symptoms, functional outcomes, medication use, and treatment-related morbidity.

Timing
Follow-up times vary by disease processes, but would typically range across months for relevant outcomes.

Setting
Patients with other pain-related conditions are actively managed by physical therapists and primary care providers in an outpatient setting.

Study Selection Criteria
Methodologically credible studies were selected using the principles outlined for indication 1.

Systematic Reviews
Various Cochrane reviews have found insufficient evidence to demonstrate that acupuncture is effective for treating shoulder pain, lateral elbow pain, carpal tunnel syndrome, cancer pain in adults, chronic pain in patients with spinal cord injury, pain in endometriosis, and pain in rheumatoid arthritis. These reviews identified few RCTs, low-quality RCTs, and/or lack of significantly better outcomes with acupuncture than with control conditions.

Section Summary: Other Pain-Related Conditions
Current evidence is insufficient to draw conclusions on the efficacy of acupuncture for other pain-related conditions.

Nausea and Vomiting

Clinical Context and Test Purpose
The purpose of acupuncture is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with nausea or vomiting or at high risk of nausea or vomiting.

The question addressed in this evidence review is: Does the use of acupuncture improve the net health outcome for individuals with nausea and vomiting?

The following PICOTS were used to select literature to inform this review.
**Patients**
The relevant populations of interest are individuals with nausea or vomiting or at high risk of nausea or vomiting.

**Interventions**
The therapy being considered is acupuncture.

**Comparators**
The following therapies are currently being used to treat nausea or vomiting: medication therapy and other conservative therapies.

**Outcomes**
The general outcomes of interest are symptoms (eg, reductions in incidence of nausea and vomiting), functional outcomes, medication use, and treatment-related morbidity.

**Timing**
Follow-up times vary by disease processes, but would typically range across months for relevant outcomes.

**Setting**
Patients with nausea or vomiting or at high risk of nausea or vomiting are actively managed by primary care providers in an outpatient clinical setting.

**Study Selection Criteria**
Methodologically credible studies were selected using the principles outlined for indication 1.

**Hyperemesis Gravidarum**
Boelig et al (2016) published a Cochrane review of various interventions for treating hyperemesis gravidarum (severe nausea and vomiting during pregnancy [morning sickness]). Reviewers did not identify any studies comparing acupuncture with a placebo intervention. One RCT comparing acupuncture with medication (metoclopramide) did not find a significant difference between groups in the rates of symptom reduction (relative risk [RR], 1.40; 95% CI, 0.79 to 2.49) or cessation of symptoms (RR=1.51; 95% CI, 0.92 to 2.48).

A Cochrane review by Matthews et al (2015), assessing interventions for nausea and vomiting in early pregnancy, identified 2 RCTs by the same research group on traditional acupuncture, but only 1 trial presented data in a form suitable for extraction. The RCT did not find significant differences in outcomes in patients treated with acupuncture vs sham. For example, for mean nausea score on day 7, the difference was -0.70 (95% CI, -1.36 to -0.04); and for mean vomiting score on day 7, the difference was -0.10 (95% CI, -0.58 to 0.38).
Chemotherapy-Induced Nausea and Vomiting
A Cochrane review by Ezzo et al (2006) addressed various types of acupuncture point stimulation (ie, needles, magnetic, acupressure, electrical stimulation) for reducing nausea and vomiting associated with chemotherapy. Primary outcomes were acute vomiting, acute nausea, delayed vomiting, and delayed nausea. Reviewers included RCTs with any comparison group, and sensitivity analyses were conducted on sham-controlled vs non-sham-controlled trials. In addition, subgroup analyses were conducted on each method of acupuncture point stimulation.

Fourteen RCTs met eligibility criteria, and 11 were included in the analysis. Of them, a single RCT used manual acupuncture (ie, insertion, manual rotation of needles) and three used electroacupuncture. The remaining trials used other techniques, largely self-administered acupressure using fingers or a wristband.

Pooled analysis of the 4 trials using either manual acupuncture or electroacupuncture found a statistically significant reduction in the incidence of acute vomiting during the next 24 hours in the acupuncture group vs the control group (RR=0.74; 95% CI, 0.58 to 0.94; p=0.01). However, none of the individual trials showed a significant benefit of acupuncture or electroacupuncture on acute vomiting; and pooled analysis of the 3 trials on electroacupuncture was not statistically significant (RR=0.86; 95% CI, 0.68 to 1.09). Data were not available for the other 3 primary outcomes.

An updated review by Ezzo et al (2014); it was withdrawn because it was not updated.

Postoperative Nausea and Vomiting
A Cochrane review by Lee et al (2015) evaluated 10 interventions for stimulating the wrist acupuncture point PC6 for the prevention of postoperative nausea and vomiting (PONV). Reviewers identified 59 trials; a plurality of them addressed acupressure, which can be self-administered. Because there were no analyses specific to acupuncture, its effect on PONV could not be determined.

Section Summary: Nausea and Vomiting
Two Cochrane reviews addressed acupuncture for treating nausea and vomiting in pregnancy. A 2016 review identified 1 RCT on hyperemesis gravidarum, and that trial did not find a significant difference in outcomes for patients receiving acupuncture vs metoclopramide. A 2015 review identified 2 RCTs by the same research group. One of the RCTs had data suitable for extraction, and it did not find a significant difference in outcomes between acupuncture and a sham intervention.

A 2006 Cochrane review addressed acupuncture for treating chemotherapy-induced nausea and vomiting. It was withdrawn by Cochrane because a planned 2014 update was not completed. The review identified a trial on manual acupuncture and three on electroacupuncture. Pooled analysis of these 4 trials found a significantly lower incidence of acute vomiting during the next 24 hours...
with acupuncture or electroacupuncture vs a control condition. However, these findings were not robust—no individual trial had a significant finding for this outcome and pooled analysis of the 3 trials on electroacupuncture did not find a significant benefit from electroacupuncture on acute vomiting. Moreover, the number of trials was small and data were not available on 3 of the 4 outcomes.

A 2015 Cochrane review assessed 10 interventions for stimulation of the wrist acupuncture point PC6 to prevent or delay PONV. Conclusions could not be drawn on acupuncture for PONV because only a few studies evaluated acupuncture and findings were not stratified by intervention.

**Opioid Dependence**

**Clinical Context and Test Purpose**

The purpose of acupuncture is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with opioid dependence.

The question addressed in this evidence review is: Does the use of acupuncture improve the net health outcome for individuals with opioid dependence?

The following PICOTS were used to select literature to inform this review.

**Patients**

The relevant population of interest is individuals with opioid dependence.

**Interventions**

The therapy being considered is acupuncture.

**Comparators**

The following therapies are currently being used to treat opioid dependence: tapering, medication therapy, counseling, and other replacement therapies.

**Outcomes**

The general outcomes of interest are symptoms, functional outcomes, medication use, and treatment-related morbidity.

**Timing**

Follow-up over weeks to months is of interest for relevant outcomes.

**Setting**

Patients with opioid dependence are actively managed by multiple specialists in in- and outpatient settings.

**Study Selection Criteria**

Methodologically credible studies were selected using the principles outlined for indication 1.
Non–Cancer Pain
Windmill et al (2013) published a Cochrane review of interventions for reducing prescribed opioid use in patients with chronic non–cancer pain who had a treatment goal of reduction or cessation of opioid use. Selection criteria included RCTs comparing interventions with sham, active control, or usual care. One RCT on acupuncture was identified. It compared 6 weeks of electroacupuncture (n=17) with sham electroacupuncture (n=18). At the end of treatment, 64% of the electroacupuncture group and 46% of the sham group had reduced opioid consumption; the difference between groups was not statistically significant. At the 20-week follow-up, patients in the electroacupuncture group, but not the sham group, had significantly increased opioid use from their posttreatment level.

Opiate Addiction
Other than the Windmill et al (2013) review, no Cochrane reviews were identified on acupuncture in opioid users. A systematic review by Lin et al (2012) addressed acupuncture for treating opiate addiction. Reviewers searched for RCTs of individuals who met criteria for opiate or heroin addiction; trials could be blinded or unblinded. Ten trials met these inclusion criteria. None mentioned blinding. Four studies used acupuncture with manual stimulation, four used auricular acupuncture, one used electroacupuncture, and another used a Chinese acupoint stimulating device (Han’s acupoint nerve stimulator). Reviewers rated 8 trials as low quality and two as higher quality. The 2 studies rated higher quality both examined auricular acupuncture, and both reported that this treatment did not have a significant effect on outcomes when used as an adjunct to standard methadone treatment services. Reviewers did not pool study findings. They concluded that there was insufficient evidence to draw conclusions on the efficacy of acupuncture for treating opiate addiction.

Section Summary: Opioid Dependence
A Cochrane review identified an RCT that did not find a significant benefit from acupuncture in reducing opioid consumption in patients with chronic non-cancer-related pain. A narrative systematic review concluded that there was insufficient evidence from high-quality RCTs to draw conclusions on the efficacy of acupuncture in the treatment of opiate addiction.

Summary of Evidence

Pain-Related Conditions
For individuals who have episodic migraines who receive acupuncture, the evidence includes RCTs and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. Pooled analyses of 15 sham-controlled trials on episodic migraine in a Cochrane review found significantly better outcomes with acupuncture, which were considered to be clinically significant. Pooled analyses of trials on acupuncture vs medication found a significant benefit of acupuncture at the end of treatment but not at the end of the follow-up period. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.
For individuals who have tension-type headaches who receive acupuncture, the evidence includes RCTs and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. Pooled analyses in a Cochrane review on acupuncture for tension-type headaches consistently found statistically significant benefits of acupuncture compared with sham up to 5 to 6 months. The clinical significance of the findings was not assessed. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have low back pain who receive acupuncture, the evidence includes RCTs and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. A Cochrane review identified a single sham-controlled trial on acute low back pain and outcomes were not significantly better with acupuncture. Findings for chronic back pain in the Cochrane review were mixed. Pooled analyses of sham-controlled randomized trials on chronic low back pain in 2 different meta-analyses found improvements in pain up to 3 months. No significant global improvement was observed at up to 3 months in the acupuncture group. Longer term sham-controlled data are not available. Pooled analyses found no clinically meaningful improvement regarding pain or function among the acupuncture recipients compared with the group receiving other treatments (eg, pain immediately postintervention or during 10 to 36 weeks postintervention). The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have other pain-related conditions (eg, shoulder pain, lateral elbow pain, carpal tunnel syndrome, cancer pain in adults, chronic pain in adults with spinal cord injury, pain in endometriosis, pain in rheumatoid arthritis) who receive acupuncture, the evidence includes a few RCTs and systematic reviews of these trials. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. The RCTs were of low quality and/or lacked significantly better outcomes with acupuncture than with control conditions. The evidence is insufficient to determine the effects of the technology on health outcomes.

Nausea and Vomiting
For individuals who have nausea or vomiting or are at high risk of nausea or vomiting who receive acupuncture, the evidence includes RCTs and meta-analyses. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. Two Cochrane reviews addressed acupuncture for treating nausea and vomiting in pregnancy. The few RCTs identified did not find significant differences in outcomes between acupuncture and sham acupuncture. A third Cochrane review addressed chemotherapy-induced nausea and vomiting. Findings were not robust. A pooled analysis of 4 trials (1 on manual acupuncture, 3 on electroacupuncture) found that the acupuncture intervention was associated with a significantly lower incidence of acute vomiting during the next 24 hours. However, no individual trial had a significant finding for this outcome, and a pooled analysis of the 3 trials on electroacupuncture did not find a significant benefit from electroacupuncture on acute vomiting. Moreover,
data from these trials were not available on 3 of the 4 outcomes of interest. A fourth Cochrane review addressed 10 interventions involving stimulation of the wrist acupuncture point PC6. Conclusions about acupuncture could not be drawn from this review because only a small number studies of assessed acupuncture and review findings were not stratified by intervention. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Opioid Dependence**
For individuals who have opioid dependence who receive acupuncture, the evidence includes RCTs and systematic reviews. Relevant outcomes include symptoms, functional outcomes, medication use, and treatment-related morbidity. A Cochrane review identified a single RCT, which did not find a significant benefit from acupuncture in reducing opioid consumption in patients with chronic non-cancer-related pain. A narrative systematic review concluded that there is insufficient evidence from high-quality RCTs to draw conclusions about the efficacy of acupuncture in the treatment of opiate addiction. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Supplemental Information**

**Practice Guidelines and Position Statements**

**American College of Rheumatology**
The 2012 guidelines from the American College of Rheumatology on the treatment of osteoarthritis (OA) with acupuncture recommended the following:

“Treatment with traditional Chinese acupuncture or instruction in the use of transcutaneous electrical stimulation are conditionally recommended only when the patient with knee OA has chronic moderate to severe pain and is a candidate for total knee arthroplasty but either is unwilling to undergo the procedure, has comorbid medical conditions, or is taking concomitant medications that lead to a relative or absolute contraindication to surgery or a decision by the surgeon not to recommend the procedure....” 

**National Institute for Health and Care Excellence**
In 2012, the National Institute for Health and Care Excellence guidance on the diagnosis and management headaches in those over 12 years of age recommended a course of up to 10 sessions of acupuncture over 5 to 8 weeks for prophylactic treatment of chronic tension-type headaches.

For migraines, the guidance recommended a course of up to 10 sessions of acupuncture over 5 to 8 weeks for prophylactic treatment if both topiramate and propranolol were unsuitable or ineffective.

The 2016 Institute guidance on the assessment and management of low back pain and sciatica in those over 16 years of age recommended not offering acupuncture for low back pain with or without sciatica.
U.S. Preventive Services Task Force Recommendations
No U.S. Preventive Services Task Force recommendations on acupuncture have been identified.

Medicare National Coverage
A national coverage determination states the following on acupuncture:

“Although acupuncture has been used for thousands of years in China and for decades in parts of Europe, it is a new agent of unknown use and efficacy in the United States. Even in those areas of the world where it has been widely used, its mechanism is not known. Three units of the National Institutes of Health, the National Institute of General Medical Sciences, National Institute of Neurological Diseases and Stroke, and Fogarty International Center have been designed to assess and identify specific opportunities and needs for research attending the use of acupuncture for surgical anesthesia and relief of chronic pain. Until the pending scientific assessment of the technique has been completed and its efficacy has been established, Medicare reimbursement for acupuncture, as an anesthetic or as an analgesic or for other therapeutic purposes, may not be made. Accordingly, acupuncture is not considered reasonable and necessary....”

In addition, Centers for Medicare & Medicaid Services issued a 2003 national coverage analysis of acupuncture for fibromyalgia and a 2003 decision analysis on acupuncture for OA, both indicating noncoverage of the service.

Ongoing and Unpublished Clinical Trials
Some currently unpublished trials that might influence this review are listed in Table 4.

Table 4. Summary of Key Trials

<table>
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<tr>
<th>NCT No.</th>
<th>Trial Name</th>
<th>Planned Enrollment</th>
<th>Completion Date</th>
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<tr>
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<tr>
<td>NCT02047851</td>
<td>Randomized, Blinded, Sham-controlled Trial of Acupuncture for the Management of Joint Pain in Patients With Psoriasis</td>
<td>30</td>
<td>Dec 2017 (ongoing)</td>
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<td>NCT02834702</td>
<td>Sinew Acupuncture for Neck Pain: Randomized Controlled Trial</td>
<td>130</td>
<td>Jun 2020</td>
</tr>
<tr>
<td>Unpublished</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCT02770963</td>
<td>Efficacy of Acupuncture for Discogenic Sciatica</td>
<td>60</td>
<td>Jun 2018 (unknown)</td>
</tr>
</tbody>
</table>

NCT: national clinical trial.

a Denotes industry-sponsored or cosponsored trial.

References


**Billing Coding/Physician Documentation Information**

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<tr>
<th>Code</th>
<th>Description</th>
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<tr>
<td>97810</td>
<td>Acupuncture, 1 or more needles; without electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient</td>
</tr>
<tr>
<td>97811</td>
<td>Acupuncture, 1 or more needles; without electrical stimulation, each additional 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s) (List separately in addition to code for primary procedure)</td>
</tr>
<tr>
<td>97813</td>
<td>Acupuncture, 1 or more needles; with electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient</td>
</tr>
<tr>
<td>97814</td>
<td>Acupuncture, 1 or more needles; with electrical stimulation, each additional 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s) (List separately in addition to code for primary procedure)</td>
</tr>
</tbody>
</table>

**ICD-10 Codes**

- G43.001- G43.019: Migraine without aura; code range
- G43.101- G43.419: Migraine with aura; code range (episodic is not chronic so those codes were not included)
- G43.80- G43.919: Other types of migraines; code range
- G44.201- G44.229: Tension-type headache; code range

**Additional Policy Key Words**

N/A

**Policy Implementation/Update Information**

2/1/2017  New Policy. May be considered medically necessary for treatment of
episodic migraine and tension-type headache and is otherwise considered investigational for the indications addressed in the policy.

8/1/2017  No policy statement changes.
2/1/2018  No policy statement changes.
8/1/2018  No policy statement changes.
2/1/2019  No policy statement changes.

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