

Medical Policy



Nonprofit corporations and independent licensees
of the Blue Cross and Blue Shield Association

Joint Medical Policies are a source for BCBSM and BCN medical policy information only. These documents are not to be used to determine benefits or reimbursement. Please reference the appropriate certificate or contract for benefit information. This policy may be updated and is therefore subject to change.

***Current Policy Effective Date: 9/1/24**
(See policy history boxes for previous effective dates)

Title: Interferential Stimulation (IFS) (Sympathetic Therapy)

Description/Background

Interferential current stimulation (IFS) is a type of electrical stimulation that has been investigated as a technique to reduce pain, improve function and range of motion, and treat gastrointestinal disorders.

This stimulation uses paired electrodes of 2 independent circuits carrying high-frequency and medium-frequency alternating currents. The superficial electrodes are aligned on the skin around the affected area. It is believed that IFS permeates tissues more effectively, with less unwanted stimulation of cutaneous nerves, and is more comfortable than transcutaneous electrical nerve stimulation. There are no standardized protocols for the use of IFS; IFS may vary by the frequency of stimulation, the pulse duration, treatment time, and electrode-placement technique.

Regulatory Status:

A number of interferential stimulator devices have received 510(k) marketing clearance from the U.S. Food and Drug Administration (FDA), including the Medstar™ 100 (MedNet Services) and the RS-4i® (RS Medical). Interferential current stimulation may be included in multimodal electrotherapy devices such as transcutaneous electrical nerve stimulation and functional electrostimulation.

Medical Policy Statement

Interferential stimulation is considered experimental/investigational. This therapy has not been shown to improve long-term patient clinical outcomes.

Inclusionary and Exclusionary Guidelines

N/A

CPT/HCPCS Level II Codes *(Note: The inclusion of a code in this list is not a guarantee of coverage. Please refer to the medical policy statement to determine the status of a given procedure)*

Established codes:

N/A

Other codes (investigational, not medically necessary, etc.):

S8130

S8131

97014

97032

Rationale

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.

MUSCULOSKELETAL CONDITIONS

Randomized controlled trials (RCTs) with placebo are extremely important to assess treatments of painful conditions, due to the expected placebo effect, the subjective nature of pain assessment in general, and the variable natural history of pain that often responds to conservative care. Therefore, to establish whether an intervention for pain is effective, a placebo comparison is needed.

Clinical Context and Therapy Purpose

The purpose of using interferential current stimulation (IFS) in individuals who have musculoskeletal conditions 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 use of IFS improve health outcomes for those with musculoskeletal conditions?

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

Population

The population of interest are individuals with musculoskeletal conditions.

Interventions

The therapy being considered is IFS.

Comparators

The following therapies are currently being used: physical therapy, medication, and other types of electrical stimulation.

Outcomes

The specific outcomes of interest are pain control, increased functional capacity, and improved quality of life (QOL). IFS would be used as adjunctive treatment with observed effects to be expected within six months.

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

Hussein et al (2021) included 19 trials in a meta-analysis of patients (N=1167) with musculoskeletal pain.¹ Two trials compared IFS with placebo and the pooled mean difference in pain was significantly reduced with IFS versus placebo (-0.98; 95% confidence interval [CI], -1.42 to -0.54; $p < .0001$), but not in the 6 trials comparing IFS to other interventions (-0.04; 95% CI, -0.20 to 0.12; $p < .65$). When used as an adjunct to other pain interventions, IFS did not significantly improve pain compared with placebo in 4 studies (-0.06; 95% CI, -0.6 to 0.48; $p = .82$) or compared with active treatment in 8 studies (0.02; 95% CI, -0.88 to 0.92; $p = \text{not reported}$). The authors concluded that IFS reduced musculoskeletal pain when used as a single agent compared with placebo, but this is limited by the small number of trials ($n = 2$) and patients enrolled ($n = 91$) in these trials.

A network meta-analysis by Zeng et al (2015) identified 27 RCTs on 5 types of electrical stimulation therapies used to treat pain in patients with knee osteoarthritis.² Reviewers found that IFS was significantly more effective than control interventions for pain relief (standardized mean difference [SMD]; 2.06; 95% credible interval [CrI], 1.10 to 3.19) and pain intensity (SMD = -0.92; 95% CrI, -1.72 to -0.05). The validity of these conclusions are uncertain due to the limitations of network meta-analysis that uses indirect comparisons to make conclusions. A further limitation of this analysis is that the findings of placebo-controlled studies were not reported separately; rather, they were pooled in analysis of usual care comparators.

The National Institute of Health and Care Excellence (NICE) (2016) published an evidence review on non-invasive treatments for low back pain.³ This review included 4 non-US RCTs published between 1999 and 2014 that compared IFC to sham (n=117), usual care (n=60), or manual therapies (n=387). NICE reported that compared to sham or traction, IFC did not demonstrate a clinically important improvement in pain. No studies evaluated impact on quality of life, nor did any studies include people with sciatica. NICE concluded that evidence does not support IFC for low back pain.

In 2010, Fuentes et al published a systematic review and meta-analysis of randomized controlled trials (RCTs) evaluating the effectiveness of interferential stimulation (IFS) for treating pain.⁴ A total of 20 RCTs met the following inclusion criteria: included adults diagnosed with a painful musculoskeletal condition (e.g., knee, back, joint, shoulder or osteoarthritic pain); compared IFS (alone or as a co-intervention) to placebo, no treatment, or an alternative intervention; and assessed pain on a numeric scale. Fourteen of the trials reported data that could be included in a pooled analysis. IFS as a stand-alone intervention was not found to be more effective than placebo or an alternative intervention at reducing pain. For example, a pooled analysis of 2 studies comparing IFC alone and placebo did not find a statistically significant difference in pain intensity at discharge; the pooled mean difference (MD) was 1.17 (95% confidence interval [CI]:1.70 to 4.05). In addition, a pooled analysis of 2 studies comparing IFC alone and an alternative intervention (e.g., traction or massage) did not find a significant difference in pain intensity at discharge; the pooled MD was -0.16, 95% CI: -0.62 to 0.31. Moreover, in a pooled analysis of five studies comparing IFC as a co-intervention to a placebo group, there was a non-significant finding (MD=1.60, 95% CI: -0.13 to 3.34). The meta-analysis found IFC plus another intervention to be superior to a control group (e.g., no-treatment). A pooled analysis of 3 studies found an MD of 2.45 (95% CI:1.69 to 3.22). The latter analysis is limited in that the specific effects of IFC versus the co-intervention cannot be determined, and it does not control for potential placebo effects.

Randomized Controlled Trials

This section includes RCTs not included in the systematic reviews discussed above.

To evaluate IFS after arthroscopic knee surgery, Kadi et al (2019) conducted a double blind, placebo controlled RCT in 98 individuals.⁵ IFS or sham treatment (pads applied with no current) was delivered for 30 minutes, twice a day for 5 days postoperatively. Although IFS significantly reduced the amount of paracetamol used by day 5, no significant difference was found between the groups with respect to pain, range of motion, or edema at days 0 through 30.

Alqualo Costa et al (2021) conducted a placebo-controlled RCT of ICS and photo biomodulation in 168 adults with knee osteoarthritis.⁶ Participants were randomized to one of 4 groups: active IFS plus placebo photobiomodulation, placebo IFS plus active photo

biomodulation, active IFS plus active photo biomodulation, and placebo IFS plus placebo photo biomodulation. Patients received treatments 3 times a week for 4 weeks, totaling 12 sessions. Both patients and outcome assessors were blinded to treatment allocation. The combination of active IFS plus active photo biomodulation significantly reduced pain intensity at rest and during movement compared to the IFS alone and placebo groups. Similar improvements were not shown in the group that received IFS alone. This study was limited by its small sample size and multiple statistical comparisons.

Section Summary: Musculoskeletal Conditions

Placebo-controlled RCTs of IFS for treating musculoskeletal pain and impaired function have mostly found that it does not significantly improve outcomes. Meta-analyses for IFS in musculoskeletal conditions have generally found IFS to be no more effective than other therapies. One network meta-analysis did find improvement with IFS compared with control, but the analysis is limited by indirect comparisons.

GASTROINTESTINAL DISORDERS

Clinical Context and Therapy Purpose

The purpose of using IFS in individuals who have gastrointestinal disorders (e.g., constipation, irritable bowel syndrome, and dyspepsia) 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 use of IFS improve health outcomes for those with gastrointestinal disorders?

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

Population

The population of interest are individuals with a gastrointestinal disorder such as constipation, irritable bowel syndrome, or dyspepsia.

Interventions

The therapy being considered is IFS.

Comparators

The following therapies are currently being used: dietary changes, medication, and other types of electrical stimulation.

Outcomes

The specific outcomes of interest are pain control, increased functional capacity, and improved quality of life. Safety and efficacy of IFS would be evaluated at one month following a four-week treatment.

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.

Constipation

Review of Evidence

No large RCTs have adequately evaluated the comparative effects of using IFS to treat constipation versus the comparators of interest. Ideally, an RCT would compare IFS to another treatment of interest such as dietary changes, medication, or different types of electrical stimulation and include an IFS sham-control group to rule out a potential placebo effect.

Several RCTs evaluating IFS for treating children with constipation and/or other lower gastrointestinal symptoms were identified. The RCTs had small sample sizes and did not consistently find a benefit of interferential stimulation.

A systematic review of neuromodulation approaches for constipation and fecal incontinence in children by Iacona et al (2019) included 2 RCTs, as well as 1 prospective study, and 2 pilot studies (N=126).⁷ Study follow-up times ranged from 1 to 6 months. Systematic review authors reported that all of the studies reported an improvement in symptoms including defecation frequency, soiling episodes, and abdominal pain. This systematic review included the RCT by Kajbafzadeh and colleagues (2012) in Iran randomized 30 children with intractable constipation to receive IFS or sham stimulation.⁸ Children ranged in age from 3 to 12 years, and all had failed 6 months of conventional therapy e.g., dietary changes and laxatives. Patients received fifteen 20-minute sessions, 3 times a week over 5 weeks. Over 6 months, the mean frequency of defecation increased from 2.5 times per week to 4.7 times per week in the treatment group and from 2.8 times per week to 2.9 times per week in the control group. The mean pain during defecation score decreased from 0.35 to 0.20 in the treatment group and from 0.29 to 0.22 in the control group. The authors reported that there was a statistically significant difference between groups in constipation symptoms.

Additionally, another RCT was published by Clarke et al in 2009; the study was conducted in Australia.⁹ Thirty-three children with slow transit constipation (mean age, 12 years) were randomized to receive IFS or sham treatment. They received twelve 20-minute sessions over 4 weeks. The primary outcome was health-related quality of life and the main instrument used was the Pediatric Quality of Life Inventory (PedsQL). The authors only reported within-group changes; they did not compare the treatment and control groups. There was not a statistically significant change in QOL, as perceived by the parent in either the active or sham treatment group. The mean parentally perceived QOL scores changed from 70.3 to 70.1 in the active treatment group and from 69.8 to 70.2 in the control group. There was also no significant difference in QOL, as perceived by the child after sham treatment. The score on the PedsQL group as perceived by the child, did increase significantly in the active treatment group (mean of 72.9 pre-treatment and 81.1 post-treatment, p=0.005).

In adults, 1 small, single-blind, sham-controlled RCT conducted in Australia was identified.¹⁰ Thirty-three women (mean age, 45 years) with functional constipation were randomized to IFS (N=17) or sham treatment (N=16). The IFS was self-delivered by the participants in their homes for 1 hour per day for 6 weeks. The participants were trained by an unblinded study coordinator in the placement of the 4 electrodes as either crossed for active IFS or uncrossed for sham IFS. The primary outcome was the number of patients with ≥ 3

spontaneous bowel movements per week. Although active IFS significantly increase the primary outcome (53% vs. 12%; $P=.02$), there were no between-group differences on numerous other secondary outcomes, such as quality of life and the more clinically meaningful and guideline-recommended outcome of spontaneous *complete* bowel movement.

Irritable Bowel Disease

Review of Evidence

An RCT with adults was published in 2012 by Coban and colleagues in Turkey.¹¹ The authors randomized 67 individuals with irritable bowel syndrome to active or placebo interferential current stimulation (IFS). Patients with functional dyspepsia were excluded. Patients received a total of four 15-minute sessions over 4 weeks. Fifty-eight of 67 (87%) patients completed the study. One month after treatment, primary outcomes measures did not differ significantly between the treatment and control groups. Treatment response was defined as more than a 50% improvement in symptoms. For the symptom of abdominal discomfort, for example, the response rate was 68% in the treatment group and 44% in the control group. For bloating and discomfort, the response rate was 48% in the treatment group and 46% in the placebo group. Using a visual analogue scale (VAS) measure, 72% of the treatment group and 69% of the control group reported improvement in abdominal discomfort.

Dyspepsia

Review of Evidence

One RCT, by Koklu and colleagues (2010) in Turkey, was identified that evaluated interferential current stimulation for treating dyspepsia.¹² The study randomized patients to active IFS ($n=25$) or sham treatment ($n=25$); patients were unaware of treatment allocation. There were 12 treatment sessions over 4 weeks; each session lasted 15 minutes. A total of 44 of 50 (88%) randomized patients completed the therapy session and follow-up questionnaires at 2 and 4 weeks. The authors did not specify primary outcome variables; they measured the frequency of 10 gastrointestinal symptoms. In an intention-to-treat (ITT) analysis at 4 weeks, IFS was superior to placebo for the symptoms of early satiation and heartburn, but not for the other 8 symptoms. For example, before treatment, 16 of 25 (64%) patients in each group reported experiencing heartburn. At 4 weeks, 9 patients (36%) in the treatment group and 13 patients (52%) in the sham group reported heartburn; $p=.02$. Among symptoms that did not differ at follow-up between groups, 24 of 25 patients (96%) in each group reported epigastric discomfort before treatment. In the ITT analysis at 4 weeks, 5 of 25 patients (20%) in the treatment group and 6 of 25 (24%) patients in the placebo group reported epigastric discomfort.

Section Summary: Gastrointestinal Disorders

IFS has been tested for a variety of gastrointestinal (GI) conditions, with a small number of trials completed for each condition. The results of these trials are mixed, with some reporting benefit and others reporting no benefit. This body of evidence is inconclusive to determine whether IFS is an efficacious treatment for gastrointestinal conditions.

POST-STROKE SPASTICITY

Clinical Context and Therapy Purpose

The purpose of using IFS in individuals who have poststroke spasticity 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 use of IFS improve health outcomes for those with poststroke spasticity?

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

Population

The population of interest is individuals with poststroke spasticity.

Interventions

The therapy being considered is IFS.

Comparators

The following therapy is currently being used: standard stroke rehabilitation.

Outcomes

The specific outcomes of interest are improved function and QOL. Effect of IFS would be assessed one hour after a single treatment.

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 single-blind RCT evaluating IFS as a treatment of post-stroke was published by Suh et al in 2014.¹³ Forty-two inpatient stroke patients with plantar flexor spasticity were randomized to a single 60-minute session with IFS or a placebo IFS treatment following a 30 minutes of standard rehabilitation. In the placebo treatment, electrodes were attached but current was not applied. Outcomes were measured immediately before and 1 hour after the intervention. The primary outcomes were gastrocnemius spasticity measured on a 0 to 5 Modified Ashworth Scale and 2 balance-related measures: the Functional Reach test and the Berg Balance Scale. In addition, gait speed was measured using a 10-meter walk test and gait function was assessed with the Timed Up and Go Test. The IFS group performed significantly better than the placebo group on all the aforementioned outcomes ($p < .05$ for each comparison). For example, the mean (SD) difference in the Modified Ashworth Scale was 1.55 (0.76) in the IFS group and 0.40 (0.50) in the placebo group. A major limitation of the study was that outcomes were only measured 1 hour after the intervention and no data were available on longer-term impacts of the intervention.

Additionally, an RCT comparing IFS ($n=20$) to electrical acupuncture (EAC) ($n=20$) in individuals with hemiplegic shoulder pain after stroke was published by Eslamian et al (2020).²¹ The interventions were added to standard care and delivered twice a week for a total of 10 sessions. The primary outcome was reduction in pain intensity at 5-weeks compared to

baseline as measured using a 10 cm Visual Analogue Scale (VASs). Results were mixed across outcomes. For example, rates of clinically significant improvement of at least 13 on the Shoulder Pain and Disability Index (SPADI) questionnaire were similar between groups (75% versus 65%). However, the rate of clinically significant improvement in pain intensity (defined as 1.4 points on the VAS at 5-weeks) was lower in the IFS group (35.0% versus 70.0%). Additionally, this study has several limitations, including lack of a sham control group, a very small sample size, and a short follow-up interval.

Section Summary: Post-stroke Spasticity

Data from small RCTs with very short follow-up provides insufficient evidence on the impact of IFS on health outcomes in patients with chronic stroke.

SUMMARY OF EVIDENCE

For individuals who have musculoskeletal conditions who receive IFS, the evidence includes randomized controlled trials (RCTs) and meta-analyses. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. Placebo-controlled randomized trial(s) have found that IFS when used to treat musculoskeletal pain and impaired function(s), does not significantly improve outcomes. Meta-analyses for IFS in musculoskeletal conditions have generally found IFS to be no more effective than other therapies. One network meta-analysis did find improvement with IFS compared with control, but the analysis is limited by indirect comparisons. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have gastrointestinal disorders who receive IFS, the evidence includes RCTs. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use and treatment-related morbidity. IFS has been tested for a variety of gastrointestinal conditions, with a small number of trials completed for each condition. Trials results are mixed, with some reporting benefit and others not. This body of evidence is inconclusive on whether IFS is an efficacious treatment for gastrointestinal conditions. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have post-stroke spasticity who receive IFS, the evidence includes 1 RCT. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. The RCT has a small sample size and very short follow-up (immediately post treatment). The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Ongoing and Unpublished Clinical Trials

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

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 College of Occupational and Environmental Medicine (ACOEM)

ACOEM published several relevant guidelines:

- Shoulder disorders: The guideline stated that the evidence on interferential current stimulation (IFS) is insufficient and, depending on the specific disorder, either did not recommend IFS or were neutral on whether or not to recommend it.¹⁵
- Low back disorders: The guideline that the IFS is insufficient, and the intervention is not recommended.¹⁶
- Knee disorders: The guideline stated that IFS is recommended for post-operative ACL reconstruction, meniscectomy, and knee chondroplasty immediately post-operatively in the elderly. This was a level “C” recommendation.¹⁷

American College of Physicians and the American Pain Society

In 2009, the clinical practice guidelines from the American College of Physicians and the American Pain Society concluded that there was insufficient evidence to recommend interferential stimulation for the treatment of low back pain.¹⁸ An update of these guidelines by the American College of Physicians (2017) confirmed the 2009 findings that there was insufficient evidence to determine the effectiveness of interferential current stimulation (IFS) for the treatment of low back pain.¹⁹

National Institute for Health and Care Excellence

In 2016, the National Institute for Health and Care Excellence had a guideline (NG59) on assessment and management of low back pain and sciatica in people aged 16 and over.³ The guideline states “Do not offer interferential therapy for managing low back pain with or without sciatica”.

No clinical guidelines were identified that discussed interferential current stimulation for the treatment of dyspepsia, constipation, or irritable bowel disease.

Ongoing and Unpublished Clinical Trials

There are not any ongoing or unpublished trials that would likely influence this review.

Government Regulations

National/Local Medicare:

There is no specific HCPCS code for interferential stimulators/stimulation for Medicare. There is no local or national medical policy on this subject for Medicare.

(The above Medicare information is current as of the review date for this policy. However, the coverage issues and policies maintained by the Centers for Medicare & Medicare Services [CMS, formerly HCFA] are updated and/or revised periodically. Therefore, the most current CMS information may not be contained in this document. For the most current information, the reader should contact an official Medicare source.)

Related Policies

- Deep Brain Stimulation
 - Occipital Nerve Stimulation
 - Peripheral Subcutaneous Field Stimulation and Peripheral Nerve Stimulation
 - Percutaneous Tibial Nerve Stimulation
 - Transcranial Magnetic Stimulation as a Treatment of Depression and Other Psychiatric/Neurologic Disorders
 - Vagus Nerve Stimulation
-

References

1. Hussein HM, Alshammari RS, Al-Barak SS, et al. A systematic review and meta-analysis investigating the pain-relieving effect of interferential current on musculoskeletal pain. *Am J Phys Med Rehabil.* Aug31 2021. PMID 34469914
2. Zeng C, Li H, Yang T, et al. Electrical stimulation for pain relief in knee osteoarthritis: systematic review and network meta-analysis. *Osteoarthritis Cartilage.* Feb 2015;23(2):189-202. PMID 25497083
3. National Institute for Health and Care Excellence (NICE). Low back pain and sciatica in over 16s: assessment and management [NG59]. 2016; <https://www.nice.org.uk/guidance/ng59>. Accessed April 28, 2023.
4. Fuentes JP, Armijo Olivo S, Magee DJ, et al. Effectiveness of interferential current therapy in the management of musculoskeletal pain: a systematic review and meta-analysis. *Phys Ther.* Sep 2010;90(9):1219-1238. PMID 20651012
5. Kadi MR, Hepguler S, Atamaz FC, et al. Is interferential current effective in the management of pain, range of motion, and edema following total knee arthroplasty surgery? A randomized double-blind controlled trial. *Clin Rehabil.* Jun 2019; 33(6): 1027-1034. PMID 30764635
6. Alqualo-Costa R, Rampazo EP, Thome GR, et al. Interferential current and photobiomodulation in knee osteoarthritis: A randomized, placebo-controlled, double-blind clinical trial. *Clin Rehabil.* Apr 26 2021: 2692155211012004. PMID 33896234
7. Iacona R, Ramage L, Malakounides G. Current State of Neuromodulation for Constipation and Fecal Incontinence in Children: A Systematic Review. *Eur J Pediatr Surg.* Dec 2019; 29(6): 495-503. PMID 30650450
8. Kajbafzadeh AM, Sharifi-Rad L, Nejat F, et al. Transcutaneous interferential electrical stimulation for management of neurogenic bowel dysfunction in children with myelomeningocele. *Int J Colorectal Dis.* Apr 2012;27(4):453-458. PMID 22065105
9. Clarke MC, Chase JW, Gibb S, et al. Improvement of quality of life in children with slow transit constipation after treatment with transcutaneous electrical stimulation. *J Pediatr Surg.* Jun 2009;44(6):1268-1272; discussion 1272. PMID 19524752
10. Moore JS, Gibson PR, Burgell RE. Randomised clinical trial: transabdominal interferential electrical stimulation vs sham stimulation in women with functional constipation. *Aliment Pharmacol Ther.* Apr 2020; 51(8): 760-769. PMID 32128859
11. Coban S, Akbal E, Koklu S, et al. Clinical trial: transcutaneous interferential electrical stimulation in individuals with irritable bowel syndrome - a prospective double-blind randomized study. *Digestion.* Aug 2012;86(2):86-93. PMID 22846190

12. Koklu S, Koklu G, Ozguclu E, et al. Clinical trial: interferential electric stimulation in functional dyspepsia patients - a prospective randomized study. *Aliment Pharmacol Ther.* May 2010;31(9):961-968. PMID 20136803
13. Suh HR, Han HC, Cho HY. Immediate therapeutic effect of interferential current therapy on spasticity, balance, and gait function in chronic stroke patients: a randomized control trial. *Clin Rehabil.* Sep 2014;28(9):885-891. PMID 24607801
14. Eslamian F, Farhoudi M, Jahanjoo F, et al. Electrical interferential current stimulation versus electrical acupuncture in management of hemiplegic shoulder pain and disability following ischemic stroke-a randomized clinical trial. *Arch Physiother.* 2020; 10: 2. PMID 31938571
15. American College of Occupational and Environmental Medicine (ACOEM). *Shoulder Disorders Guideline (2016).*
https://www.dir.ca.gov/dwc/MTUS/ACOEM_Guidelines/Shoulder-Disorders-Guideline.pdf.
16. Hegmann KT, Travis R, Andersson GBJ, et al. Non-Invasive and Minimally Invasive Management of Low Back Disorders. *J Occup Environ Med.* Mar 2020; 62(3): e111-e138. PMID 31977923
17. American College of Occupational and Environmental Medicine (ACOEM). *Knee Disorders.* In: Hegmann KT, ed. *Occupational medicine practice guidelines. Evaluation and management of common health problems and functional recovery in workers.* 3rd ed. Elk Grove Village, IL: ACOEM; 2011:1-503.
18. Chou R, Atlas SJ, Stanos SP, et al. Nonsurgical interventional therapies for low back pain: a review of the evidence for an American Pain Society clinical practice guideline. *Spine (Phila Pa 1976).* May 1 2009;34(10):1078-1093. PMID 19363456
19. Qaseem A, Wilt TJ, McLean RM, et al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med.* Apr 04 2017; 166(7): 514-530. PMID 28192789
20. Blue Cross Blue Shield Association. *Interferential Stimulation. Medical Policy Reference Manual.* Policy # 1.01.24. Issue 6:2016. Original policy date 7/17/03. Last review date July 2022.
21. HAYES Medical Technology Directory. *Interferential Therapy for Pain and Bone Fractures.* Lansdale, PA: HAYES, Inc., 4/28/08, last updated 4/2/12, archived 5/28/13.

The articles reviewed in this research include those obtained in an Internet based literature search for relevant medical references through April 10, 2024, the date the research was completed.

Joint BCBSM/BCN Medical Policy History

Policy Effective Date	BCBSM Signature Date	BCN Signature Date	Comments
5/15/03	5/15/03	5/6/03	Joint policy established
11/1/06	8/4/06	8/4/06	Routine maintenance
3/1/08	12/11/07	11/27/07	Routine maintenance
1/1/09	10/13/08	12/30/08	Routine maintenance
7/1/12	4/10/12	5/18/12	Routine maintenance; policy reformatted to mirror BCBSA policy. Policy status unchanged
11/1/13	8/22/13	8/27/13	Routine update; no change in policy status.
5/1/15	2/17/15	2/27/15	Routine update, no change in policy status.
7/1/16	4/19/16	4/19/16	Routine update, no change in policy status.
7/1/16	4/18/17	4/18/17	Updated rationale section, added reference #1 and 10. No change in policy status.
9/1/17	6/20/17	6/20/17	Updated rationale section, added references # 11, Removed Blue Cross Complete no change in policy status.
9/1/18	6/19/18	6/19/18	Routine policy maintenance. No references added/deleted. No change in status.
9/1/19	6/18/19		Routine policy maintenance. No change in policy status.
9/1/20	6/16/20		Routine policy maintenance. No change in policy status.
9/1/21	6/15/21		Routine policy maintenance. No change in policy status.
9/1/22	6/21/22		Routine policy maintenance. No change in policy status. Added codes 97014 and 97032 to the coding section of the body of the policy. These codes were inadvertently left off the policy.

9/1/23	6/13/23		Routine policy maintenance. No change in policy status. Vendor: N/A (ky)
9/1/24	6/11/24		Routine policy maintenance. No change in policy status. Vendor: N/A eviCore manages codes 97014 and 97032 for HMO under OT but not pertinent to this JUMP policy. (ky)

Next Review Date: 2nd Qtr. 2025

Pre-Consolidation Medical Policy History

Original Policy Date		Comments
BCN	2/5/02	Revised: N/A
BCBSM	N/A	Revised: N/A

**BLUE CARE NETWORK BENEFIT COVERAGE
POLICY: INTERFERENTIAL STIMULATION**

I. Coverage Determination:

Commercial HMO (includes Self-Funded groups unless otherwise specified)	Not covered.
BCNA (Medicare Advantage)	See government section.
BCN65 (Medicare Complementary)	Coinsurance covered if primary Medicare covers the service.

II. Administrative Guidelines:

N/A