



MASSACHUSETTS

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Medical Policy

Electrical Stimulation for the Treatment of Arthritis

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Policy Number: 302

BCBSA Reference Number: 1.01.27 (For Plans internal use only)

NCD/LCD: N/A

Related Policies

- Transcutaneous Electrical Nerve Stimulation (TENS) #003
- Electrical Bone Growth Stimulation of the Appendicular Skeleton #499

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity Medicare HMO BlueSM and Medicare PPO BlueSM Members

Electrical or electromagnetic stimulation is considered INVESTIGATIONAL for the treatment of osteoarthritis or rheumatoid arthritis.

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed inpatient.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed outpatient.

	Outpatient
Commercial Managed Care (HMO and POS)	This is not a covered service.
Commercial PPO and Indemnity	This is not a covered service.
Medicare HMO Blue SM	This is not a covered service.
Medicare PPO Blue SM	This is not a covered service.

CPT Codes / HCPCS Codes / ICD Codes

The following codes are included below for informational purposes. Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's

contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

CPT Codes

There is no specific CPT code for this service.

HCPCS Codes

HCPCS codes:	Code Description
E0762	Transcutaneous electrical joint stimulation device system, includes all accessories

Description

Electrical and electromagnetic stimulation are being investigated to improve functional status and to relieve pain related to osteoarthritis and rheumatoid arthritis that are unresponsive to other standard therapies. Noninvasive electrical stimulators generate a weak electrical current within the target site using pulsed electromagnetic fields, capacitive coupling, or combined magnetic fields. In capacitive coupling, small skin pads or electrodes are placed on either side of the knee or wrist. Electrical stimulation is provided by an electronic device that noninvasively delivers a subsensory low-voltage, monophasic electrical field to the target site of pain. Pulsed electromagnetic fields are delivered via treatment coils placed over the skin. Combined magnetic fields deliver a time-varying field by superimposing that field onto an additional static magnetic field.

In basic research studies, pulsed electrical stimulation has been shown to alter chondrocyte-related gene expression in vitro and to have regenerative effects in animal models of cartilage injury. It is proposed that the device treats the underlying cause of the disease by stimulating the joint tissue and improving the overall health of the joint and that it provides a slow-acting, but longer-lasting improvement in symptoms. Therefore, pulsed electrical stimulation is proposed to be similar to bone stimulator therapy for fracture nonunion (see policy #499).

Summary

Pulsed electrical and electromagnetic stimulation are being investigated to improve functional status and relieve pain related to osteoarthritis and rheumatoid arthritis that is unresponsive to other standard therapies. Electrical stimulation is provided using a device that noninvasively delivers a subsensory, low-voltage, monophasic electrical field to the target site of pain. Pulsed electromagnetic fields are delivered using coils placed over the skin.

For individuals who have arthritis who receive pulsed electrical or electromagnetic stimulation, the evidence includes systematic reviews and a number of small RCTs. Relevant outcomes are symptoms, functional outcomes, health status measures, and treatment-related morbidity. A review of the literature did not find adequate evidence that use of pulsed electrical or electromagnetic stimulation for the treatment of arthritis improves health outcomes. A 2020 meta-analysis identified 15 randomized sham-controlled trials on treatment of osteoarthritis of the knee. There was some evidence of clinically and statistically significant improvement in pain, but no evidence of clinically significant improvement in stiffness, function, or quality of life. These conclusions are limited by methodologic shortcomings and inconsistent trial results. Variable results seen in more recent RCTs might also be related to the different devices and treatment durations used. Additional studies with larger numbers of subjects are needed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Policy History

Date	Action
4/2022	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
4/2021	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
4/2019	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
4/2017	Annual policy review. New references added.
7/2016	Annual policy review. New references added.
2/2015	Annual policy review. New references added.
3/2014	Annual policy review. New references added.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
1/19/2011	New policy, effective 1/19/2011 describing ongoing non-coverage.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

References

1. Department of Health & Human Services. Correction to substantially equivalent letter of June 6, 2003 for BionicCare Stimulator. June 8, 2006. https://www.accessdata.fda.gov/cdrh_docs/pdf3/K030332.pdf. Accessed January 18, 2022.
2. Yang X, He H, Ye W, et al. Effects of Pulsed Electromagnetic Field Therapy on Pain, Stiffness, Physical Function, and Quality of Life in Patients With Osteoarthritis: A Systematic Review and Meta-Analysis of Randomized Placebo-Controlled Trials. *Phys Ther*. Jul 19 2020; 100(7): 1118-1131. PMID 32251502
3. Negm A, Lorbergs A, Macintyre NJ. Efficacy of low frequency pulsed subsensory threshold electrical stimulation vs placebo on pain and physical function in people with knee osteoarthritis: systematic review with meta-analysis. *Osteoarthritis Cartilage*. Sep 2013; 21(9): 1281-9. PMID 23973142
4. Fary RE, Carroll GJ, Briffa TG, et al. The effectiveness of pulsed electrical stimulation in the management of osteoarthritis of the knee: results of a double-blind, randomized, placebo-controlled, repeated-measures trial. *Arthritis Rheum*. May 2011; 63(5): 1333-42. PMID 21312188
5. Li S, Yu B, Zhou D, et al. Electromagnetic fields for treating osteoarthritis. *Cochrane Database Syst Rev*. Dec 14 2013; (12): CD003523. PMID 24338431
6. Garland D, Holt P, Harrington JT, et al. A 3-month, randomized, double-blind, placebo-controlled study to evaluate the safety and efficacy of a highly optimized, capacitively coupled, pulsed electrical stimulator in patients with osteoarthritis of the knee. *Osteoarthritis Cartilage*. Jun 2007; 15(6): 630-7. PMID 17303443
7. Zizic TM, Hoffman KC, Holt PA, et al. The treatment of osteoarthritis of the knee with pulsed electrical stimulation. *J Rheumatol*. Sep 1995; 22(9): 1757-61. PMID 8523357
8. Bagnato GL, Miceli G, Marino N, et al. Pulsed electromagnetic fields in knee osteoarthritis: a double blind, placebo-controlled, randomized clinical trial. *Rheumatology (Oxford)*. Apr 2016; 55(4): 755-62. PMID 26705327
9. Wuschech H, von Hehn U, Mikus E, et al. Effects of PEMF on patients with osteoarthritis: Results of a prospective, placebo-controlled, double-blind study. *Bioelectromagnetics*. Dec 2015; 36(8): 576-85. PMID 26562074
10. Nelson FR, Zvirbulis R, Pilla AA. Non-invasive electromagnetic field therapy produces rapid and substantial pain reduction in early knee osteoarthritis: a randomized double-blind pilot study. *Rheumatol Int*. Aug 2013; 33(8): 2169-73. PMID 22451021

11. Fukuda TY, Alves da Cunha R, Fukuda VO, et al. Pulsed shortwave treatment in women with knee osteoarthritis: a multicenter, randomized, placebo-controlled clinical trial. *Phys Ther.* Jul 2011; 91(7): 1009-17. PMID 21642511
12. Dundar U, Asik G, Ulasli AM, et al. Assessment of pulsed electromagnetic field therapy with Serum YKL-40 and ultrasonography in patients with knee osteoarthritis. *Int J Rheum Dis.* Mar 2016; 19(3): 287-93. PMID 25955771
13. Ozguclu E, Cetin A, Cetin M, et al. Additional effect of pulsed electromagnetic field therapy on knee osteoarthritis treatment: a randomized, placebo-controlled study. *Clin Rheumatol.* Aug 2010; 29(8): 927-31. PMID 20473540
14. Trock DH, Bollet AJ, Dyer RH, et al. A double-blind trial of the clinical effects of pulsed electromagnetic fields in osteoarthritis. *J Rheumatol.* Mar 1993; 20(3): 456-60. PMID 8478852
15. Trock DH, Bollet AJ, Markoll R. The effect of pulsed electromagnetic fields in the treatment of osteoarthritis of the knee and cervical spine. Report of randomized, double blind, placebo controlled trials. *J Rheumatol.* Oct 1994; 21(10): 1903-11. PMID 7837158
16. Jacobson JI, Gorman R, Yamanashi WS, et al. Low-amplitude, extremely low frequency magnetic fields for the treatment of osteoarthritic knees: a double-blind clinical study. *Altern Ther Health Med.* Sep-Oct 2001; 7(5): 54-64, 66-9. PMID 11565402
17. Pipitone N, Scott DL. Magnetic pulse treatment for knee osteoarthritis: a randomised, double-blind, placebo-controlled study. *Curr Med Res Opin.* 2001; 17(3): 190-6. PMID 11900312
18. Thamsborg G, Florescu A, Oturai P, et al. Treatment of knee osteoarthritis with pulsed electromagnetic fields: a randomized, double-blind, placebo-controlled study. *Osteoarthritis Cartilage.* Jul 2005; 13(7): 575-81. PMID 15979009
19. Sutbeyaz ST, Sezer N, Koseoglu BF. The effect of pulsed electromagnetic fields in the treatment of cervical osteoarthritis: a randomized, double-blind, sham-controlled trial. *Rheumatol Int.* Feb 2006; 26(4): 320-4. PMID 15986086
20. Ay S, Evcik D. The effects of pulsed electromagnetic fields in the treatment of knee osteoarthritis: a randomized, placebo-controlled trial. *Rheumatol Int.* Apr 2009; 29(6): 663-6. PMID 19015858
21. Kulcu DG, Gulsen G, Altunok EC. Short-term efficacy of pulsed electromagnetic field therapy on pain and functional level in knee osteoarthritis: a randomized clinical study. *Turk J Rheumatol.* 2009;24(3):144-148.
22. Moldovan I, Dita R, Pop L. The effects of focused pulsed electromagnetic field therapy in patients with knee osteoarthritis. A randomized, placebo-controlled study. *Palestrica of the Third Millenium Civilization and Sport.* 2012;13:91-95.
23. Pavlovic AS, Djurasic LM. The effect of low frequency pulsing electromagnetic field in treatment of patients with knee joint osteoarthritis. *Acta Chir Iugosl.* 2012; 59(3): 81-3. PMID 23654012
24. Kanat E, Alp A, Yurtkuran M. Magnetotherapy in hand osteoarthritis: a pilot trial. *Complement Ther Med.* Dec 2013; 21(6): 603-8. PMID 24280467
25. Nicolakis P, Kollmitzer J, Crevenna R, et al. Pulsed magnetic field therapy for osteoarthritis of the knee--a double-blind sham-controlled trial. *Wien Klin Wochenschr.* Aug 30 2002; 114(15-16): 678-84. PMID 12602111
26. de Paula Gomes CAF, Politti F, de Souza Bacelar Pereira C, et al. Exercise program combined with electrophysical modalities in subjects with knee osteoarthritis: a randomised, placebo-controlled clinical trial. *BMC Musculoskelet Disord.* Apr 20 2020; 21(1): 258. PMID 32312265
27. Bannuru RR, Osani MC, Vaysbrot EE, et al. OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis. *Osteoarthritis Cartilage.* Nov 2019; 27(11): 1578-1589. PMID 31278997
28. American Academy of Orthopaedic Surgeons. Management of osteoarthritis of the knee (non-arthroplasty). 2021; <https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf>. Accessed January 18, 2022
29. Kolasinski SL, Neogi T, Hochberg MC, et al. 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. *Arthritis Care Res (Hoboken).* Feb 2020; 72(2): 149-162. PMID 31908149
30. Fraenkel L, Bathon JM, England BR, et al. 2021 American College of Rheumatology Guideline for the Treatment of Rheumatoid Arthritis. *Arthritis Care Res (Hoboken).* Jul 2021; 73(7): 924-939. PMID 34101387