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Medical Policies

Print

Policy Number:	S-5025		
Policy Name:	Spinal Cord and Dorsal Root Ganglion Stimulation		
Policy Type:	Medical	**Policy Subtype:**	Surgery
Effective Date:	09-15-2025	**End Date:**	11-02-2025

Description

Spinal cord stimulation (SCS) delivers low-voltage electrical stimulation to the dorsal columns of the spinal cord to block the sensation of pain; this is achieved through a surgically implanted SCS device, which comes equipped with a radio frequency receiver. The neurostimulator device is also issued with a standard power source (battery) that can be implanted or worn externally. Other neurostimulators target the dorsal root ganglion.

Policy Application

All claims submitted for this policy will be processed according to the policy effective date and associated revision effective dates in effect on the date of service.

Criteria

Coverage is subject to the specific terms of the member's benefit plan.

Spinal cord stimulation with standard or high-frequency stimulation may be considered **medically necessary** for treatment of severe and chronic pain of the trunk or limbs that is refractory to all other pain therapies when performed according to policy guidelines.

Dorsal root ganglion neurostimulation is considered **medically necessary** for the treatment of severe and chronic pain of the trunk or limbs that is refractory to all other pain therapies when performed according to policy guidelines.

Spinal cord stimulation is considered **investigational** in all other situations including, but not limited to, treatment of critical limb ischemia to forestall amputation and treatment of refractory angina pectoris, heart

failure, and cancer-related pain.

Policy Guidelines

Individual selection focuses on determining whether the individual is refractory to other types of treatment. The following considerations may apply.

- The treatment is used only as a last resort; other treatment modalities (pharmacologic, surgical, psychological, physical, if applicable) have failed or are judged to be unsuitable or contraindicated;
- Pain is neuropathic in nature (i.e., resulting from actual damage to the peripheral nerves). Common indications include, but are not limited to, failed back surgery syndrome, complex regional pain syndrome (i.e., reflex sympathetic dystrophy), arachnoiditis, radiculopathies, phantom limb/stump pain, and peripheral neuropathy. Spinal cord stimulation is generally not effective in treating nociceptive pain (resulting from irritation, not damage to the nerves) and central deafferentation pain (related to central nervous system damage from a stroke or spinal cord injury).
- No serious untreated drug habituation exists;
- Demonstration of at least 50 percent pain relief with a temporarily implanted electrode precedes permanent implantation;
- All the facilities, equipment, and professional and support personnel required for the proper diagnosis, treatment, and follow-up of the individual are available.

'Burst' neurostimulation is an alternate programming of a standard SCS device. A clinician programmer application is used to configure a standard SCS device to provide stimulation in 'bursts' rather than at a constant ('tonic') rate.

The Centers for Medicare & Medicaid Services has issued instructions that the existing implantable neurostimulator code C1820 should only be used for stimulators that are not high frequency.

Removal Guidelines

One time removal or revision of stimulator will be allowed per medical necessity criteria, (i.e., current stimulator is out of warranty).

Repeat removal or revision requests of stimulator will be reviewed by the Medical Director.

Removal of stimulator for technology upgrade when stimulator is still under warranty is not covered.

Procedure Codes

63650	63655	63661	63662	63663	63664	63685
63688	95970	95971	95972	C1767	C1778	C1787
C1820	C1822	C1826	C1883	C1897	L8679	L8680
L8685	L8686	L8687	L8688			

Summary of Evidence

Treatment-Refractory Chronic Pain

For individuals who have treatment-refractory chronic pain of the trunk or limbs who receive standard spinal cord stimulation, the evidence includes systematic reviews and randomized controlled trials (RCTs). Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. Available RCTs are heterogeneous regarding underlying diagnoses in select individual populations. However, the trials including individuals with underlying neuropathic pain processes have shown a significant benefit with spinal cord stimulation. Systematic reviews have supported the use of spinal cord stimulation to treat refractory trunk or limb pain, and individuals who have failed all other treatment modalities have few options. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have treatment-refractory chronic pain of the trunk or limbs who receive high-frequency spinal cord stimulation, the evidence includes a systematic review and four (4) RCTs. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. Two (2) RCTs that enrolled participants not previously treated with spinal cord stimulation reported clinically and statistically significant benefits associated with high-frequency spinal cord stimulation. Another RCT in individuals who had chronic pain despite previous treatment with standard spinal cord stimulation found no benefit for those receiving high-frequency stimulation compared with sham-control; however, it is difficult to compare these findings with other trials of spinal cord stimulation due to the different individual populations, short treatment periods, and the crossover period effect. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have treatment-refractory chronic pain of the trunk or limbs who receive dorsal root ganglion neurostimulation, the evidence includes a systematic review, an RCT, and case series. Relevant outcomes are symptoms, functional outcomes, quality of life, medication use, and treatment-related morbidity. The unblinded RCT found that individuals receiving dorsal root ganglion neurostimulation had significantly higher rates of treatment success (physical functioning score and quality of life measures), at three (3) and 12 months compared with those receiving standard spinal cord stimulation devices. Dorsal root ganglion neurostimulation was found to be noninferior to spinal cord stimulation in the percentage achieving greater than or equal to 50 percent pain reduction, emotional functioning score, and 36-Item Short-Form Health Survey scores. Both groups experienced paresthesias but individuals in the dorsal root ganglion group reported less postural variation in paresthesia and reduced extraneous stimulation in nonpainful areas. Rates of serious adverse events were similar between the two (2) study arms. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

Critical Limb Ischemia

For individuals who have critical limb ischemia who receive spinal cord stimulation, the evidence includes systematic reviews of several small RCTs. Relevant outcomes are overall survival, symptoms, functional outcomes, quality of life, morbid events, hospitalizations, and treatment-related morbidity. In pooled analyses, spinal cord stimulation was associated with a lower risk of amputation versus control, but results were not consistently statistically significant due to differences in methodologies. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Treatment-Refractory Angina Pectoris

For individuals who have treatment-refractory angina pectoris who receive spinal cord stimulation, the evidence includes systematic reviews and RCTs. Relevant outcomes are overall survival, symptoms, functional outcomes, quality of life, morbid events, hospitalizations, and treatment-related morbidity. Numerous small RCTs have evaluated spinal cord stimulation as a treatment for refractory angina. While some have reported benefits, most have not. In two (2) recent RCTs, there was no significant benefit in the primary outcomes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Heart Failure

For individuals who have heart failure who receive spinal cord stimulation, the evidence includes RCTs. Relevant outcomes are overall survival, symptoms, functional outcomes, quality of life, morbid events, hospitalizations, and treatment-related morbidity. An RCT (N=66) comparing spinal cord stimulation using active stimulation with sham-control in individuals who had New York Heart Association functional class III heart failure and a left ventricular ejection fraction of 35 percent or less did not find significant differences between groups but might have been underpowered to do so. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Cancer-Related Pain

For individuals who have cancer-related pain who receive spinal cord stimulation, the evidence includes case series. Relevant outcomes are symptoms, functional outcomes, medication use, and treatment-related morbidity. No RCTs evaluating spinal cord stimulation in this population were identified. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Professional Statements and Societal Positions Guidelines

Not Applicable

Diagnosis Codes

G56.40	G56.41	G56.42	G56.43	G57.70	G57.71	G57.72
G57.73	G89.21	G89.22	G89.28	G89.29	G89.4	G90.50
G90.51	G90.511	G90.512	G90.513	G90.519	G90.52	G90.521
G90.522	G90.523	G90.529	G90.59	M25.50	M25.51	M25.511
M25.512	M25.519	M25.52	M25.521	M25.522	M25.529	M25.53
M25.531	M25.532	M25.539	M25.54	M25.541	M25.542	M25.549
M25.55	M25.551	M25.552	M25.559	M25.56	M25.561	M25.562
M25.569	M25.57	M25.571	M25.572	M25.579	M54.10	M54.11
M54.12	M54.13	M54.14	M54.15	M54.16	M54.17	M54.18
M54.30	M54.31	M54.32	M54.40	M54.41	M54.42	M54.50
M54.51	M54.59	M54.6	M54.81	M54.89	M54.9	M79.10

M79.11	M79.12	M79.18	M79.601	M79.602	M79.603	M79.604
M79.605	M79.606	M79.609	M79.62	M79.621	M79.622	M79.629
M79.63	M79.631	M79.632	M79.639	M79.64	M79.641	M79.642
M79.643	M79.644	M79.645	M79.646	M79.65	M79.651	M79.652
M79.659	M79.66	M79.661	M79.662	M79.669	M79.67	M79.671
M79.672	M79.673	M79.674	M79.675	M79.676	R52	

CURRENT CODING

CPT:

63650	PRQ IMPLTJ NSTIM ELECTRODE ARRAY EPIDURAL	Medicaid Expansion
63655	LAM IMPLTJ NSTIM ELTRDS PLATE/PADDLE EDRL	Medicaid Expansion
63661	RMVL SPINAL NSTIM ELTRD PRQ ARRAY INCL FLUOR	Medicaid Expansion
63662	RMVL SPINAL NSTIM ELTRD PLATE/PADDLE INCL FLUOR	Medicaid Expansion
63663	REVJ INCL RPLCMT NSTIM ELTRD PRQ RA INCL FLUOR	Medicaid Expansion
63664	REVJ INCL RPLCMT NSTIM ELTRD PLT/PDLE INCL FLUOR	Medicaid Expansion
63685	INSJ/RPLCMT SPINAL NPG/RCVR POCKET CRTJ&CONNJ	Medicaid Expansion
63688	REVJ/RMVL IMPL SPI NPG/RCVR DTCH CONNJ ELTRD RA	Medicaid Expansion
95970	ELEC ALYS IMPLT NPGT PHYS/QHP W/O PROGRAMMING	Medicaid Expansion
95971	ELEC ALYS IMPLT NPGT SMPL SP/PN NPGT PRGRMG	Medicaid Expansion
95972	ELEC ALYS IMPLT NPGT CPLX SP/PN PRGRMG	Medicaid Expansion
63650	PRQ IMPLTJ NSTIM ELECTRODE ARRAY EPIDURAL	Commercial

63655	LAM IMPLTJ NSTIM ELTRDS PLATE/PADDLE EDRL	Commercial
63661	RMVL SPINAL NSTIM ELTRD PRQ ARRAY INCL FLUOR	Commercial
63662	RMVL SPINAL NSTIM ELTRD PLATE/PADDLE INCL FLUOR	Commercial
63663	REVJ INCL RPLCMT NSTIM ELTRD PRQ RA INCL FLUOR	Commercial
63664	REVJ INCL RPLCMT NSTIM ELTRD PLT/PDLE INCL FLUOR	Commercial
63685	INSJ/RPLCMT SPINAL NPG/RCVR POCKET CRTJ&CONNJ	Commercial
63688	REVJ/RMVL IMPL SPI NPG/RCVR DTCH CONNJ ELTRD RA	Commercial
95970	ELEC ALYS IMPLT NPGT PHYS/QHP W/O PROGRAMMING	Commercial
95971	ELEC ALYS IMPLT NPGT SMPL SP/PN NPGT PRGRMG	Commercial
95972	ELEC ALYS IMPLT NPGT CPLX SP/PN PRGRMG	Commercial

HCPCS:

C1767	Generator, neuro non-recharg	Medicaid Expansion
C1778	Lead, neurostimulator	Medicaid Expansion
C1787	Patient progr, neurostim	Medicaid Expansion
C1820	Generator neuro rechg bat sy	Medicaid Expansion
C1822	Gen, neuro, hf, rechg bat	Medicaid Expansion
C1826	Gen, neuro, clo loop, rechg	Medicaid Expansion
C1883	Adapt/ext, pacing/neuro lead	Medicaid Expansion
C1897	Lead, neurostim test kit	Medicaid Expansion
L8679	Imp neurosti pls gn any type	Medicaid Expansion
L8680	Implt neurostim elctr each	Medicaid Expansion
L8685	Implt nrostm pls gen sng rec	Medicaid Expansion
L8686	Implt nrostm pls gen sng non	Medicaid Expansion
L8687	Implt nrostm pls gen dua rec	Medicaid Expansion

L8688	Implt nrostm pls gen dua non	Medicaid Expansion
C1767	Generator, neuro non-recharg	Commercial
C1778	Lead, neurostimulator	Commercial
C1787	Patient progr, neurostim	Commercial
C1820	Generator neuro rechg bat sy	Commercial
C1822	Gen, neuro, hf, rechg bat	Commercial
C1826	Gen, neuro, clo loop, rechg	Commercial
C1883	Adapt/ext, pacing/neuro lead	Commercial
C1897	Lead, neurostim test kit	Commercial
L8679	Imp neurosti pls gn any type	Commercial
L8680	Implt neurostim elctr each	Commercial
L8685	Implt nrostm pls gen sng rec	Commercial
L8686	Implt nrostm pls gen sng non	Commercial
L8687	Implt nrostm pls gen dua rec	Commercial
L8688	Implt nrostm pls gen dua non	Commercial

References

1. Eldabe S, Buchser E, Duarte RV. Complications of Spinal Cord Stimulation and Peripheral Nerve Stimulation Techniques: A Review of the Literature. Pain Med. Feb 2016; 17(2): 325-36. PMID 26814260
2. Sivanesan E, Bicket MC, Cohen SP. Retrospective analysis of complications associated with dorsal root ganglion stimulation for pain relief in the FDA MAUDE database. Reg Anesth Pain Med. Jan 2019; 44(1): 100-106. PMID 30640660
3. U.S. Food and Drug Administration. Conduct a trial stimulation period before implanting a spinal cord stimulator (SCS) - letter to health care providers. September 3, 2020. https://www.fda.gov/medical-devices/letters-health-care-providers/conduct-trial-stimulation-period-implanting-spinal-cord-stimulator-scs-letter-health-care-providers. Accessed March 3, 2022.
4. Food and Drug Administration. Cordis Programmable Neural Stimulator: Premarket Approval. Accessed February 28, 2022.
5. Turk DC, Dworkin RH, Allen RR, et al. Core outcome domains for chronic pain clinical trials: IMMPACT recommendations. Pain. Dec 2003; 106(3): 337- 345. PMID 14659516
6. Dworkin RH, Turk DC, Farrar JT, et al. Core outcome measures for chronic pain clinical trials: IMMPACT recommendations. Pain. Jan 2005; 113(1-2): 9- 19. PMID 15621359
7. Dworkin RH, Turk DC, Wyrwich KW, et al. Interpreting the clinical importance of treatment outcomes in chronic pain clinical trials: IMMPACT recommendations. J Pain. Feb 2008; 9(2): 105-21. PMID 18055266
8. Kerns RD, Turk DC, Rudy TE. The West Haven-Yale Multidimensional Pain Inventory (WHYMPI). Pain. Dec 1985; 23(4): 345-356. PMID 4088697
9. Cleeland CS, Ryan KM. Pain assessment: global use of the Brief Pain Inventory. Ann Acad Med Singap. Mar 1994; 23(2): 129-38. PMID 8080219

10. Fairbank JC, Pynsent PB. The Oswestry Disability Index. Spine (Phila Pa 1976). Nov 15 2000; 25(22): 2940-52; discussion 2952. PMID 11074683
11. Ostelo RW, Deyo RA, Stratford P, et al. Interpreting change scores for pain and functional status in low back pain: towards international consensus regarding minimal important change. Spine (Phila Pa 1976). Jan 01 2008; 33(1): 90-4. PMID 18165753
12. Wells GA, Tugwell P, Kraag GR, et al. Minimum important difference between patients with rheumatoid arthritis: the patient's perspective. J Rheumatol. Mar 1993; 20(3): 557-60. PMID 8478873
13. Kosinski M, Zhao SZ, Dedhiya S, et al. Determining minimally important changes in generic and disease-specific health-related quality of life questionnaires in clinical trials of rheumatoid arthritis. Arthritis Rheum. Jul 2000; 43(7): 1478-87. PMID 10902749
14. Angst F, Aeschlimann A, Stucki G. Smallest detectable and minimal clinically important differences of rehabilitation intervention with their implications for required sample sizes using WOMAC and SF-36 quality of life measurement instruments in patients with osteoarthritis of the lower extremities. Arthritis Rheum. Aug 2001; 45(4): 384-91. PMID 11501727
15. Beck ATS, R.A. Beck Depression Inventory. San Antonio, TX: Psychological Corporation; 1993.
16. Curran SL, Andrykowski MA, Studts JL. Short Form of the Profile of Mood States (POMS-SF): Psychometric information. Psychol Assess 1995;7:80-83.
17. Visnjevac O, Costandi S, Patel BA, et al. A Comprehensive Outcome-Specific Review of the Use of Spinal Cord Stimulation for Complex Regional Pain Syndrome. Pain Pract. Apr 2017; 17(4): 533-545. PMID 27739179
18. O'Connell NE, Wand BM, McAuley J, et al. Interventions for treating pain and disability in adults with complex regional pain syndrome. Cochrane Database Syst Rev. Apr 30 2013; (4): CD009416. PMID 23633371
19. Grider JS, Manchikanti L, Carayannopoulos A, et al. Effectiveness of Spinal Cord Stimulation in Chronic Spinal Pain: A Systematic Review. Pain Physician. Jan 2016; 19(1): E33-54. PMID 26752493
20. Head J, Mazza J, Sabourin V, et al. Waves of Pain Relief: A Systematic Review of Clinical Trials in Spinal Cord Stimulation Waveforms for the Treatment of Chronic Neuropathic Low Back and Leg Pain. World Neurosurg. Nov 2019; 131: 264-274.e3. PMID 31369885
21. Duarte RV, Nevitt S, Maden M, et al. Spinal cord stimulation for the management of painful diabetic neuropathy: a systematic review and meta- analysis of individual patient and aggregate data. Pain. Nov 01 2021; 162(11): 2635-2643. PMID 33872236
22. Henson JV, Varhabhatla NC, Bebic Z, et al. Spinal Cord Stimulation for Painful Diabetic Peripheral Neuropathy: A Systematic Review. Pain Ther. Dec 2021; 10(2): 895-908. PMID 34244979
23. Raghu ALB, Parker T, Aziz TZ, et al. Invasive Electrical Neuromodulation for the Treatment of Painful Diabetic Neuropathy: Systematic Review and Meta- Analysis. Neuromodulation. Jan 2021; 24(1): 13-21. PMID 32588933
24. Strand NH, Burkey AR. Neuromodulation in the Treatment of Painful Diabetic Neuropathy: A Review of Evidence for Spinal Cord Stimulation. J Diabetes Sci Technol. Mar 2022; 16(2): 332-340. PMID 34842478
25. O'Connell NE, Ferraro MC, Gibson W, et al. Implanted spinal neuromodulation interventions for chronic pain in adults. Cochrane Database Syst Rev. Dec 02 2021; 12: CD013756. PMID 34854473
26. North RB, Kidd DH, Farrokhi F, et al. Spinal cord stimulation versus repeated lumbosacral spine surgery for chronic pain: a randomized, controlled trial. Neurosurgery. 2005; 56(1): 98-106; discussion 106-7. PMID 15617591
27. Kumar K, Taylor RS, Jacques L, et al. Spinal cord stimulation versus conventional medical management for neuropathic pain: a multicentre randomised controlled trial in patients with failed back surgery syndrome. Pain. Nov 2007; 132(1-2): 179-88. PMID 17845835
28. Kumar K, Taylor RS, Jacques L, et al. The effects of spinal cord stimulation in neuropathic pain are sustained: a 24-month follow-up of the prospective randomized controlled multicenter trial of the effectiveness of spinal cord stimulation. Neurosurgery. Oct 2008; 63(4): 762-70; discussion 770. PMID 18981888

29. Kemler MA, Barendse GA, van Kleef M, et al. Spinal cord stimulation in patients with chronic reflex sympathetic dystrophy. N Engl J Med. Aug 31 2000; 343(9): 618-24. PMID 10965008
30. Kemler MA, De Vet HC, Barendse GA, et al. The effect of spinal cord stimulation in patients with chronic reflex sympathetic dystrophy: two years' follow-up of the randomized controlled trial. Ann Neurol. Jan 2004; 55(1): 13- 8. PMID 14705107
31. Kemler MA, de Vet HC, Barendse GA, et al. Effect of spinal cord stimulation for chronic complex regional pain syndrome Type I: five-year final follow-up of patients in a randomized controlled trial. J Neurosurg. Feb 2008; 108(2): 292-8. PMID 18240925
32. Slangen R, Schaper NC, Faber CG, et al. Spinal cord stimulation and pain relief in painful diabetic peripheral neuropathy: a prospective two-center randomized controlled trial. Diabetes Care. Nov 2014; 37(11): 3016-24. PMID 25216508
33. de Vos CC, Meier K, Zaalberg PB, et al. Spinal cord stimulation in patients with painful diabetic neuropathy: a multicentre randomized clinical trial. Pain. Nov 2014; 155(11): 2426-31. PMID 25180016
34. Duarte RV, Andronis L, Lenders MW, et al. Quality of life increases in patients with painful diabetic neuropathy following treatment with spinal cord stimulation. Qual Life Res. Jul 2016; 25(7): 1771-7. PMID 26694963
35. Rigoard P, Basu S, Desai M, et al. Multicolumn spinal cord stimulation for predominant back pain in failed back surgery syndrome patients: a multicenter randomized controlled trial. Pain. Jun 2019; 160(6): 1410-1420. PMID 30720582
36. Hou S, Kemp K, Grabois M. A Systematic Evaluation of Burst Spinal Cord Stimulation for Chronic Back and Limb Pain. Neuromodulation. Jun 2016; 19(4): 398-405. PMID 27139915
37. De Ridder D, Plazier M, Kamerling N, et al. Burst spinal cord stimulation for limb and back pain. World Neurosurg. Nov 2013; 80(5): 642-649.e1. PMID 23321375
38. De Ridder D, Vanneste S, Plazier M, et al. Burst spinal cord stimulation: toward paresthesia-free pain suppression. Neurosurgery. May 2010; 66(5): 986- 90. PMID 20404705
39. Schu S, Slotty PJ, Bara G, et al. A prospective, randomised, double-blind, placebo-controlled study to examine the effectiveness of burst spinal cord stimulation patterns for the treatment of failed back surgery syndrome. Neuromodulation. Jul 2014; 17(5): 443-50. PMID 24945621
40. Kriek N, Groeneweg JG, Stronks DL, et al. Preferred frequencies and waveforms for spinal cord stimulation in patients with complex regional pain syndrome: A multicentre, double-blind, randomized and placebo-controlled crossover trial. Eur J Pain. Mar 2017; 21(3): 507-519. PMID 27714945
41. Deer T, Slavin KV, Amirdelfan K, et al. Success Using Neuromodulation With BURST (SUNBURST) Study: Results From a Prospective, Randomized Controlled Trial Using a Novel Burst Waveform. Neuromodulation. Jan 2018; 21(1): 56-66. PMID 28961366
42. Eldabe S, Duarte R, Gulve A, et al. Analgesic Efficacy of "Burst" and Tonic (500 Hz) Spinal Cord Stimulation Patterns: A Randomized Placebo-Controlled Crossover Study. Neuromodulation. Apr 2021; 24(3): 471-478. PMID 33251662
43. Bicket MC, Dunn RY, Ahmed SU. High-Frequency Spinal Cord Stimulation for Chronic Pain: Pre-Clinical Overview and Systematic Review of Controlled Trials. Pain Med. Dec 2016; 17(12): 2326-2336. PMID 28025366
44. Perruchoud C, Eldabe S, Batterham AM, et al. Analgesic efficacy of high- frequency spinal cord stimulation: a randomized double-blind placebo- controlled study. Neuromodulation. Jul-Aug 2013; 16(4): 363-9; discussion 369. PMID 23425338
45. Kapural L, Yu C, Doust MW, et al. Novel 10-kHz High-frequency Therapy (HF10 Therapy) Is Superior to Traditional Low-frequency Spinal Cord Stimulation for the Treatment of Chronic Back and Leg Pain: The SENZA- RCT Randomized Controlled Trial. Anesthesiology. Oct 2015; 123(4): 851-60. PMID 26218762
46. Petersen EA, Stauss TG, Scowcroft JA, et al. Effect of High-frequency (10- kHz) Spinal Cord Stimulation in Patients With Painful Diabetic Neuropathy: A Randomized Clinical Trial. JAMA Neurol. Jun 01 2021; 78(6): 687-698. PMID 33818600

47. De Andres J, Monsalve-Dolz V, Fabregat-Cid G, et al. Prospective, Randomized Blind Effect-on-Outcome Study of Conventional vs High- Frequency Spinal Cord Stimulation in Patients with Pain and Disability Due to Failed Back Surgery Syndrome. Pain Med. Dec 01 2017; 18(12): 2401-2421. PMID 29126228
48. Petersen EA, Stauss TG, Scowcroft JA, et al. Durability of High-Frequency 10- kHz Spinal Cord Stimulation for Patients With Painful Diabetic Neuropathy Refractory to Conventional Treatments: 12-Month Results From a Randomized Controlled Trial. Diabetes Care. Jan 01 2022; 45(1): e3-e6. PMID 34844993
49. Kapural L, Yu C, Doust MW, et al. Comparison of 10-kHz High-Frequency and Traditional Low-Frequency Spinal Cord Stimulation for the Treatment of Chronic Back and Leg Pain: 24-Month Results From a Multicenter, Randomized, Controlled Pivotal Trial. Neurosurgery. Nov 2016; 79(5): 667- 677. PMID 27584814
50. Al-Kaisy A, Palmisani S, Smith TE, et al. Long-Term Improvements in Chronic Axial Low Back Pain Patients Without Previous Spinal Surgery: A Cohort Analysis of 10-kHz High-Frequency Spinal Cord Stimulation over 36 Months. Pain Med. Jun 01 2018; 19(6): 1219-1226. PMID 29077889
51. Vuka I, Marcius T, Dosenovic S, et al. Neuromodulation with electrical field stimulation of dorsal root ganglion in various pain syndromes: a systematic review with focus on participant selection. J Pain Res. 2019; 12: 803-830. PMID 30881093.
52. Deer TR, Hunter CW, Mehta P, et al. A Systematic Literature Review of Dorsal Root Ganglion Neurostimulation for the Treatment of Pain. Pain Med. Aug 01 2020; 21(8): 1581-1589. PMID 32803221
53. Moman RN, Peterson AA, Maher DP, et al. Infectious Complications of Dorsal Root Ganglion Stimulation: A Systematic Review and Pooled Analysis of Incidence. Neuromodulation. Jun 06 2021. PMID 34096135
54. Food and Drug Administration. Summary of Safety and Effectiveness Data (SSED): Axium Neurostimulator System. 2016; https://www.accessdata.fda.gov/cdrh_docs/pdf15/P150004b.pdf. Accessed March 3, 2022.
55. Deer TR, Levy RM, Kramer J, et al. Dorsal root ganglion stimulation yielded higher treatment success rate for complex regional pain syndrome and causalgia at 3 and 12 months: a randomized comparative trial. Pain. Apr 2017; 158(4): 669-681. PMID 28030470
56. Mekhail N, Deer TR, Kramer J, et al. Paresthesia-Free Dorsal Root Ganglion Stimulation: An ACCURATE Study Sub-Analysis. Neuromodulation. Feb 2020; 23(2): 185-195. PMID 30861286
57. Weiner RL, Yeung A, Montes Garcia C, et al. Treatment of FBSS Low Back Pain with a Novel Percutaneous DRG Wireless Stimulator: Pilot and Feasibility Study. Pain Med. Oct 2016; 17(10): 1911-1916. PMID 27125284
58. Ubbink DT, Vermeulen H. Spinal cord stimulation for non-reconstructable chronic critical leg ischaemia. Cochrane Database Syst Rev. Feb 28 2013; (2): CD004001. PMID 23450547
59. Klomp HM, Steyerberg EW, Habbema JD, et al. What is the evidence on efficacy of spinal cord stimulation in (subgroups of) patients with critical limb ischemia?. Ann Vasc Surg. May-Jun 2009; 23(3): 355-63. PMID 19128928
60. Klomp HM, Spincemaille GH, Steyerberg EW, et al. Spinal-cord stimulation in critical limb ischaemia: a randomised trial. ESES Study Group. Lancet. Mar 27 1999; 353(9158): 1040-4. PMID 10199350
61. Abu Dabrh AM, Steffen MW, Asi N, et al. Nonrevascularization-based treatments in patients with severe or critical limb ischemia. J Vasc Surg. Nov 2015; 62(5): 1330-9.e13. PMID 26409842
62. Pan X, Bao H, Si Y, et al. Spinal Cord Stimulation for Refractory Angina Pectoris: A Systematic Review and Meta-analysis. Clin J Pain. Jun 2017; 33(6): 543-551. PMID 27875377
63. Tsigaridas N, Naka K, Tsapogas P, et al. Spinal cord stimulation in refractory angina. A systematic review of randomized controlled trials. Acta Cardiol. Apr 2015; 70(2): 233-43. PMID 26148385
64. Zipes DP, Svorkdal N, Berman D, et al. Spinal cord stimulation therapy for patients with refractory angina who are not candidates for revascularization. Neuromodulation. Nov-Dec 2012; 15(6): 550-8; discussion 558-9. PMID 22494013
65. Lanza GA, Grimaldi R, Greco S, et al. Spinal cord stimulation for the treatment of refractory angina pectoris: a multicenter randomized single-blind study (the SCS-ITA trial). Pain. Jan 2011; 152(1): 45-52. PMID 21084162

66. Torre-Amione G, Alo K, Estep JD, et al. Spinal cord stimulation is safe and feasible in patients with advanced heart failure: early clinical experience. Eur J Heart Fail. Jul 2014; 16(7): 788-95. PMID 24961194
67. Zipes DP, Neuzil P, Theres H, et al. Determining the Feasibility of Spinal Cord Neuromodulation for the Treatment of Chronic Systolic Heart Failure: The DEFEAT-HF Study. JACC Heart Fail. Feb 2016; 4(2): 129-136. PMID 26682789
68. Lihua P, Su M, Zejun Z, et al. Spinal cord stimulation for cancer-related pain in adults. Cochrane Database Syst Rev. Feb 28 2013; (2): CD009389. PMID 23450600
69. Peng L, Min S, Zejun Z, et al. Spinal cord stimulation for cancer-related pain in adults. Cochrane Database Syst Rev. Jun 29 2015; (6): CD009389. PMID 26121600
70. Mekhail NA, Mathews M, Nageeb F, et al. Retrospective review of 707 cases of spinal cord stimulation: indications and complications. Pain Pract. Mar-Apr 2011; 11(2): 148-53. PMID 21371254
71. Lanza GA, Barone L, Di Monaco A. Effect of spinal cord stimulation in patients with refractory angina: evidence from observational studies. Neuromodulation. Nov-Dec 2012; 15(6): 542-9; disdcussion 549. PMID 22364309
72. Deer T, Pope J, Hunter C, et al. Safety Analysis of Dorsal Root Ganglion Stimulation in the Treatment of Chronic Pain. Neuromodulation. Feb 2020; 23(2): 239-244. PMID 30861617
73. Dworkin RH, O'Connor AB, Kent J, et al. Interventional management of neuropathic pain: NeuPSIG recommendations. Pain. Nov 2013; 154(11): 2249- 2261. PMID 23748119
74. Manchikanti L, Abdi S, Atluri S, et al. An update of comprehensive evidence- based guidelines for interventional techniques in chronic spinal pain. Part II: guidance and recommendations. Pain Physician. Apr 2013; 16(2 Suppl): S49- 283. PMID 23615883
75. Aman MM, Mahmoud A, Deer T, et al. The American Society of Pain and Neuroscience (ASPN) Best Practices and Guidelines for the Interventional Management of Cancer-Associated Pain. J Pain Res. 2021; 14: 2139-2164. PMID 34295184
76. Deer TR, Pope JE, Lamer TJ, et al. The Neuromodulation Appropriateness Consensus Committee on Best Practices for Dorsal Root Ganglion Stimulation. Neuromodulation. Jan 2019; 22(1): 1-35. PMID 30246899
77. National Institute for Health and Care Excellence (NICE). Spinal cord stimulation for chronic pain of neuropathic or ischaemic origin [TA159]. 2008; https://www.nice.org.uk/guidance/ta159. Accessed March 2, 2022.
78. Centers for Medicare and Medicaid Services. National Coverage Determination (NCD) for Electrical Nerve Stimulators (160.7). 1995; https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=240&ncdver=1&bc=AAAAgAAAAAAA&. Accessed March 3, 2022.

ND Committee Review

Internal Medical Policy Committee 3-16-2020 Annual Review-no changes *Effective May 4, 2020*

Internal Medical Policy Committee 3-17-2021 Annual Review-no changes *Effective May 5, 2021*

Internal Medical Policy Committee 9-21-2021 *Effective November 1, 2021*

- *Added* statement regarding Removal Guidelines.

Internal Medical Policy Committee 3-23-2022 *Effective May 2, 2022*

- *Added* Diagnosis Codes

Internal Medical Policy 3-23-2023 Revision - *Effective May 1, 2023*

- *Added* Summary of Evidence
- *Updated* references

Internal Medical Policy 5-15-2024 Coding - *Effective July 1, 2024*

- *Added* Policy Application
- *Added* HCPCS Code C1826
- *Removed* Diagnosis Codes: G90.51, G903519, G90.52, G90.529, M25.51, M25.519, M25.52, M25.529, M25.53, M25.539, M25.54, M25.549, M25.55, M25.559, M25.56, M25.569, M25.57, M25.579, M79.62, M79.629, M79.63, M79.639, M79.64, M79.643, M79.646, M79.65, M79.659, M79.66, M79.669, M79.67, M79.673, M79.676, and R52.

Disclaimer

Current medical policy is to be used in determining a Member's contract benefits on the date that services are rendered. Contract language, including definitions and specific inclusions/exclusions, as well as state and federal law, must be considered in determining eligibility for coverage. Members must consult their applicable benefit plans or contact a Member Services representative for specific coverage information. Likewise, medical policy, which addresses the issue(s) in any specific case, should be considered before utilizing medical opinion in adjudication. Medical technology is constantly evolving, and the Company reserves the right to review and update medical policy periodically.