

Policy: MP330

Section: Medical Benefit Policy

Subject: Responsive Neurostimulation

Applicable Lines of Business

Commercial	Χ	CHIP	Х
Medicare	Х	ACA	Х
Medicaid	Х		

I. Policy: Responsive Neurostimulation

II. Purpose/Objective:

To provide a policy of coverage regarding Responsive Neurostimulation

III. Responsibility:

- A. Medical Directors
- **B.** Medical Management

IV. Required Definitions

- 1. Attachment a supporting document that is developed and maintained by the policy writer or department requiring/authoring the policy.
- 2. Exhibit a supporting document developed and maintained in a department other than the department requiring/authoring the policy.
- 3. Devised the date the policy was implemented.
- 4. Revised the date of every revision to the policy, including typographical and grammatical changes.
- 5. Reviewed the date documenting the annual review if the policy has no revisions necessary.

V. Additional Definitions

Medical Necessity or Medically Necessary means Covered Services rendered by a Health Care Provider that the Plan determines are:

- a. appropriate for the symptoms and diagnosis or treatment of the Member's condition, illness, disease or injury;
- b. provided for the diagnosis, and the direct care and treatment of the Member's condition, illness disease or injury;
- c. in accordance with current standards of good medical treatment practiced by the general medical community.
- d. not primarily for the convenience of the Member, or the Member's Health Care Provider; and
- e. the most appropriate source or level of service that can safely be provided to the Member. When applied to hospitalization, this further means that the Member requires acute care as an inpatient due to the nature of the services rendered or the Member's condition, and the Member cannot receive safe or adequate care as an outpatient.

Medicaid Business Segment

Medically Necessary — A service, item, procedure, or level of care that is necessary for the proper treatment or management of an illness, injury, or disability is one that:

- Will, or is reasonably expected to, prevent the onset of an illness, condition, injury or disability.
- Will, or is reasonably expected to, reduce or ameliorate the physical, mental or developmental effects of an illness, condition, injury or disability.
- Will assist the Member to achieve or maintain maximum functional capacity in performing daily activities, taking

into account both the functional capacity of the Member and those functional capacities that are appropriate for Members of the same age.

DESCRIPTION:

The Responsive Neurostimulation System (RNS) is used to treat adult members with partial onset epilepsy who have failed treatment with at least 2 seizure medications and who are not candidates for resection of their seizure focus. About one-third of members with epilepsy have seizures that are poorly controlled with medications alone. Members are considered candidates for RNS after comprehensive diagnostic testing that has localized one or two seizure foci but are determined not to be candidates for surgical resection for a particular reason. These reasons include seizures that originate from more than one area of the brain, seizures that arise from areas of the brain that cannot be resected without causing a deficit, or seizures that are difficult to discretely localize.

INDICATIONS:

Responsive Neurostimulation will be considered medically necessary when ALL of the following criteria are met:

- Diagnosis of focal (aka, partial) epilepsy has been established; and
- The member is 18 years or older; and
- Medical record documentation of failure of two (2) or more antiepileptic medications; and
- No more than two (2) well-localized foci have been identified by diagnostic testing; and
- The member experiences an average of three (3) or more disabling seizures per month over the prior three months; **and**
- The member is not a candidate for a focal resection of the epileptogenic foci; and
- There is no evidence of a rapidly progressive neurologic disorder; and
- There is no evidence of a primary generalized epilepsy

LIMITATIONS:

The replacement/revision of a responsive neurostimulator is considered medically necessary for members who meet all of the above criteria, when the existing device is no longer under warranty and cannot be repaired.

EXCLUSIONS:

The Plan does NOT provide coverage for Responsive Neurostimulation for any diagnosis other than those listed above because it is considered experimental, investigational or unproven. There is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this treatment on health outcomes when compared to established treatments or technologies.

Medicaid Business Segment:

Any requests for services, that do not meet criteria set in the PARP, may be evaluated on a case by case basis.

Note: A complete description of the process by which a given technology or service is evaluated and determined to be experimental, investigational or unproven is outlined in MP 15 - Experimental Investigational or Unproven Services or Treatment.

CODING ASSOCIATED WITH: Responsive Neurostimulation

The following codes are included below for informational purposes and may not be all inclusive. Inclusion of a procedure or device code(s) does not constitute or imply coverage nor does it imply or guarantee provider reimbursement. Coverage is determined by the member specific benefit plan document and any applicable laws regarding coverage of specific services. Please note that per Medicare coverage rules, only specific CPT/HCPCS Codes may be covered for the Medicare Business Segment. Please consult the CMS website at www.cms.gov or the local Medicare Administrative Carrier (MAC) for more information on Medicare coverage and coding requirements

- 61850 Twist drill or burr hole(s) for implantation of neurostimulator electrodes, cortical
- 61860 Craniectomy or craniotomy for implantation of neurostimulator electrodes, cerebral, cortical
- 61863 Twist drill, burr hole, craniotomy, or craniectomy with stereotactic implantation of neurostimulator electrode array in subcortical site (eg, thalamus, globus pallidus, subthalamic nucleus, periventricular, periaqueductal gray), without use of intraoperative microelectrode recording; first array
- 61864 Twist drill, burr hole, craniotomy, or craniectomy with stereotactic implantation of neurostimulator electrode array in subcortical site (eg, thalamus, globus pallidus, subthalamic nucleus, periventricular, periaqueductal gray), without use of intraoperative microelectrode recording; each additional array (List separately in addition to primary procedure)
- 61880 Revision or removal of intracranial neurostimulator electrodes

- 61885 Insertion or replacement of cranial neurostimulator pulse generator or receiver, direct or inductive coupling; with connection to a single electrode array
- 61886 Insertion or replacement of cranial neurostimulator pulse generator or receiver, direct or inductive coupling; with connection to 2 or more electrode arrays
- 61888 revision or removal of cranial neurostimulator pulse generator or receiver
- 95970 Electronic analysis of implanted neurostimulator pulse generator/transmitter (eg, contact group(s), interleaving, amplitude, pulse width, frequency [Hz], on/off cycling, burst, magnet mode, dose lockout, patient selectable parameters, responsive neurostimulation, detection algorithms, closed loop parameters, and passive parameters) by physician or other qualified health care professional; with brain, cranial nerve, spinal cord, peripheral nerve, or sacral nerve, neurostimulator pulse generator/transmitter, without programming
- 95971 Electronic analysis of implanted neurostimulator pulse generator/transmitter (eg, contact group(s), interleaving, amplitude, pulse width, frequency [Hz], on/off cycling, burst, magnet mode, dose lockout, patient selectable parameters, responsive neurostimulation, detection algorithms, closed loop parameters, and passive parameters) by physician or other qualified health care professional; with simple spinal cord or peripheral nerve (eg, sacral nerve) neurostimulator pulse generator/transmitter programming by physician or other qualified health care professional
- 95983 Electronic analysis of implanted neurostimulator pulse generator/transmitter (eg, contact group(s), interleaving, amplitude, pulse width, frequency [Hz], on/off cycling, burst, magnet mode, dose lockout, patient selectable parameters, responsive neurostimulation, detection algorithms, closed loop parameters, and passive parameters) by physician or other qualified health care professional; with brain neurostimulator pulse generator/transmitter programming, first 15 minutes face-to-face time with physician or other qualified health care professional
- 95984 Electronic analysis of implanted neurostimulator pulse generator/transmitter (eg, contact group(s), interleaving, amplitude, pulse width, frequency [Hz], on/off cycling, burst, magnet mode, dose lockout, patient selectable parameters, responsive neurostimulation, detection algorithms, closed loop parameters, and passive parameters) by physician or other qualified health care professional; with brain neurostimulator pulse generator/transmitter programming, each additional 15 minutes face-to-face time with physician or other qualified health care professional (List separately in addition to code for primary procedure)
- C1767 Generator neurostimulator (implantable) non-rechargeable
- C1778 Lead, neurostimulator (implantable)
- C1787 Patient programmer, neurostimulator
- C1816 Receiver and/or transmitter, neurostimulator (implantable)
- C1820 Generator, neurostimulator (implantable), non high frequency with rechargeable battery and charging system
- C1822 Generator, neurostimulator (implantable), high frequency with rechargeable battery and charging system
- C1897 Lead, neurostimulator test kit (implantable)
- L8680 Implantable neurostimulator electrode, each
- L8682 Implantable neurostimulator radiofrequency receiver
- L8683 Radiofrequency transmitter (external) for use with implantable neurostimulator radiofrequency receiver
- L8685 Implantable neurostimulator pulse generator, single array, rechargeable includes extension
- L8686 Implantable neurostimulator pulse generator, single array, non-rechargeable, includes extension
- L8687 Implantable neurostimulator pulse generator, dual array, rechargeable, includes extension
- L8688 Implantable neurostimulator pulse generator, dual array, non-rechargeable, includes extension
- L8689 External recharging system for battery (internal) for use with implantable neurostimulator, replacement only

Current Procedural Terminology (CPT®) © American Medical Association: Chicago, IL

LINE OF BUSINESS:

Eligibility and contract specific benefits, limitations and/or exclusions will apply. Coverage statements found in the line of business specific benefit document will supersede this policy. For Medicare, applicable LCD's and NCD's will supercede this policy. For PA Medicaid Business segment, this policy applies as written.

REFERENCES:

Geisinger Technology Assessment Committee Triage Group. September 2018

Fisher RS, Cross JH, French JA, et al. Operational classification of seizure types by the International League Against Epilepsy: Position Paper of the ILAE Commission for Classification and Terminology. Epilepsia. Apr 2017;58(4):522-530.

Heck CN, King-Stephens D, Massey AD, et al. Two-year seizure reduction in adults with medically intractable partial onset epilepsy treated with responsive neurostimulation: final results of the RNS System Pivotal trial. Epilepsia. Mar 2014;55(3):432-441.

Costa J, Fareleira F, Ascencao R, et al. Clinical comparability of the new antiepileptic drugs in refractory partial epilepsy: a systematic review and meta-analysis. Epilepsia. Jul 2011;52(7):1280-1291.

Wiebe S, Blume WT, Girvin JP, et al. A randomized, controlled trial of surgery for temporal-lobe epilepsy. N Engl J Med. Aug 2 2001;345(5):311-318.

de Tisi J, Bell GS, Peacock JL, et al. The long-term outcome of adult epilepsy surgery, patterns of seizure remission, and relapse: a cohort study. Lancet. Oct 15 2011;378(9800):1388-1395.

Noe K, Sulc V, Wong-Kisiel L, et al. Long-term outcomes after nonlesional extratemporal lobe epilepsy surgery. JAMA Neurol. Aug 2013;70(8):1003-1008.

Fridley J, Thomas JG, Navarro JC, et al. Brain stimulation for the treatment of epilepsy. Neurosurg Focus. Mar 2012;32(3):E13.

Fisher RS. Therapeutic devices for epilepsy. Ann Neurol. Feb 2012;71(2):157-168.

Kossoff EH, Ritzl EK, Politsky JM, et al. Effect of an external responsive neurostimulator on seizures and electrographic discharges during subdural electrode monitoring. Epilepsia. Dec 2004;45(12):1560-1567.

Anderson WS, Kossoff EH, Bergey GK, et al. Implantation of a responsive neurostimulator device in patients with refractory epilepsy. Neurosurg Focus. Sep 2008;25(3):E12.

NeuroPace. NeuroPace: RNS System User Manual [Rev Date 04/2015]. 2015; http://www.neuropace.com/wp-content/uploads/2015/11/UserManual.pdf pdf icon.

DiLorenzo DJ, Mangubat EZ, Rossi MA, et al. Chronic unlimited recording electrocorticography-guided resective epilepsy surgery: technology-enabled enhanced fidelity in seizure focus localization with improved surgical efficacy. J Neurosurg. Jun 2014;120(6):1402-1414.

King-Stephens D, Mirro E, Weber PB, et al. Lateralization of mesial temporal lobe epilepsy with chronic ambulatory electrocorticography. Epilepsia. Jun 2015;56(6):959-967.

Spencer D, Gwinn R, Salinsky M, et al. Laterality and temporal distribution of seizures in patients with bitemporal independent seizures during a trial of responsive neurostimulation. Epilepsy Res. Feb 2011;93(2-3):221-225.

Food and Drug Administration. Summary of Safety and Effectiveness Data: RNS System 2013; https://www.accessdata.fda.gov/cdrh_docs/pdf10/P100026b.pdf pdf icon.

Morrell MJ, Group RNSSiES. Responsive cortical stimulation for the treatment of medically intractable partial epilepsy. Neurology. Sep 27 2011;77(13):1295-1304.

Loring DW, Kapur R, Meador KJ, et al. Differential neuropsychological outcomes following targeted responsive neurostimulation for partial-onset epilepsy. Epilepsia. Nov 2015;56(11):1836-1844.

Meador KJ, Kapur R, Loring DW, et al. Quality of life and mood in patients with medically intractable epilepsy treated with targeted responsive neurostimulation. Epilepsy Behav. Apr 2015;45:242-247.

Cox JH, Seri S, Cavanna AE. Clinical utility of implantable neurostimulation devices as adjunctive treatment of uncontrolled seizures. Neuropsychiatr Dis Treat. Dec 2014;10:2191-2200.

Gooneratne IK, Green AL, Dugan P, et al. Comparing neurostimulation technologies in refractory focal-onset epilepsy. J Neurol Neurosurg Psychiatry. Nov 2016;87(11):1174-1182.

Bergey GK, Morrell MJ, Mizrahi EM, et al. Long-term treatment with responsive brain stimulation in adults with refractory partial seizures. Neurology. Feb 24 2015;84(8):810-817.

Lee B, Zubair MN, Marquez YD, et al. A single-center experience with the neuropace rns system: a review of techniques and potential problems. World Neurosurg. Sep 2015;84(3):719-726.

Child ND, Stead M, Wirrell EC, et al. Chronic subthreshold subdural cortical stimulation for the treatment of focal epilepsy originating from eloquent cortex. Epilepsia. Mar 2014;55(3):e18-21.

Hayes Inc. Hayes Search and Summary. NeuroPace RNS System (NeuroPace Inc.) for Pediatric Epilepsy. Hayes, Inc.; December 2016

Geller EB, Skarpaas TL, Gross RE, et. al. Brain responsive neurostimulation in patients with medically intractable temporal lobe epilepsy. Epilepsia 2017 Jun;58(6):994-1004

Jobst BC, Kapur R, Barkley GL, et. al. Brain-responsive neurostimulation in patients with medically intractable seizures arising from eloquent and other neocortical areas. Epilepsia 2017 Jun;58(6):1005-1014

Chan AY, Rolston JD, RAO VR, et. al Effect of neurostimulation on cognition and mood in refractory epilepsy. Epilepsia Open 2018 Feb 13:3(1):18-29.

Boon P, De Cock E, Mertens A, et. al. Neurostimulation for drug-resistant: a systematatic review of clinical evidence for efficacy, safety, contraindications and predictors for response. Curr Opin Neurol 2018 Apr 31(2):198-210

Ellens NR, Eilsevich K, Burdette DE, et. al. A comparison of vagal nerve stimulation and responsive neurostimulation for the treatment of medically refractory complex partial epilepsy. Stereotact Funct Neurosurg 2018;96(4):259-263.

ECRI Institute. Health Technology Assessment. RNS System (NeuroPace, Inc) for Treating Pediatric Epilepsy. Published 6/10/2019

Matias C, Sharan A, Wu C. Responsive neurostimulation for the treatment of epilepsy. Neurosurg Clin N Am 2019;30(2): 231-242

Bercu MM, Friedman D, Silverberg A, et al. Responsive neurostimulation for refractory epilepsy in the pediatric population: A single-center experience. Epilepsy Behav. Nov 2020; 112: 107389.

Nair DR, Laxer KD, Weber PB, et al. Nine-year prospective efficacy and safety of brain-responsive neurostimulation for focal epilepsy. Neurology. Sep 01 2020; 95(9): e1244-e1256.

Zewdie E, Ciechanski P, Kup HC, et al. Safety and tolerability of transcranial magnetic and direct current stimulation in children: Prospective single center evidence from 3.5 million stimulations. Brain Stimul. 2020;13(3):565-575.

Kusyk DM, Meinert J, Stabingas KC, Yin Y, Whiting AC. Systematic Review and Meta-Analysis of Responsive Neurostimulation in Epilepsy. World Neurosurg. 2022 Nov;167: e70-e78.

Skrehot HC, Englot DJ, Haneef Z. Neuro-stimulation in focal epilepsy: A systematic review and metaanalysis. Epilepsy Behav. May 2023; 142: 109182

Roa JA, Marcuse L, Fields M, et al. Long-term outcomes after responsive neurostimulation for treatment of refractory epilepsy: a single-center experience of 100 cases. J Neurosurg. 2023;139(5):1463-1470.

This policy will be revised as necessary and reviewed no less than annually.

Devised: 8/19

Revised:

Reviewed: 8/20, 8/21, 8/22, 8/23, 8/24

CMS UM Oversight Committee Approval: 12/23; 11/8/24

Geisinger Health Plan may refer collectively to health care coverage sponsors Geisinger Health Plan, Geisinger Quality Options, Inc., and Geisinger Indemnity Insurance Company, unless otherwise noted. Geisinger Health Plan is part of Geisinger, an integrated health care delivery and coverage organization.

Coverage for experimental or investigational treatments, services and procedures is specifically excluded under the member's certificate with Geisinger Health Plan. Unproven services outside of an approved clinical trial are also specifically excluded under the member's certificate with Geisinger Health Plan. This policy does not expand coverage to services or items specifically excluded from coverage in the member's certificate with Geisinger Health Plan. Additional information can be found in MP015 Experimental, Investigational or Unproven Services.

Prior authorization and/or pre-certification requirements for services or items may apply. Pre-certification lists may be found in the member's contract specific benefit document. Prior authorization requirements can be found at https://www.geisinger.org/health-plan/providers/ghp-clinical-policies

Please be advised that the use of the logos, service marks or names of Geisinger Health Plan, Geisinger Quality Options, Inc. and Geisinger Indemnity Insurance Company on a marketing, press releases or any communication piece regarding the contents of this medical policy is strictly prohibited without the prior written consent of Geisinger Health Plan. Additionally, the above medical policy does not confer any endors ement by Geisinger Health Plan, Geisinger Quality Options, Inc. and Geisinger Indemnity Insurance Company regarding the medical service, medical device or medical lab test described under this medical policy.