

Clinical Policy: Evoked Potential Testing

Reference Number: CP.MP.134

Last Review Date: 09/20

[Coding Implications](#)

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Description

Types of evoked potentials include somatosensory, brainstem auditory, visual and motor. Sensory evoked potentials evaluate electrical activity in the nervous system in response to stimulation of specific nerve pathways. Monitoring of neurophysiologic evoked potentials intraoperatively helps prevent neurologic injury during neurological, orthopedic, and other types of surgeries. This policy describes the medically necessary indications for neurophysiologic evoked potentials.

Policy/Criteria

- I. It is the policy of health plans affiliated with Centene Corporation® that evoked potential testing is **medically necessary** for the following indications:
 - A. Somatosensory Evoked Potentials Testing
 1. Aid in the evaluation of prognosis of acute anoxic encephalopathy, within the initial 72 hours of onset (e.g. after cardiac arrest);
 2. Assessment of a decline in status which may warrant emergent surgery in unconscious spinal cord injury patients who show specific structural damage to the somatosensory system, and who are candidates for emergency spinal cord surgery;
 3. Aid in the diagnosis of multiple sclerosis;
 4. Aid in the assessment of coma following traumatic, hypoxic-ischemic, and other diffuse brain injuries;
 5. Assessment of central nervous system deficiency identified on clinical exam when not explained by appropriate imaging studies;
 6. Management of conditions causing spinocerebral degeneration, such as Friedreich's ataxia or peripheral nerve degeneration (e.g. diabetic neuropathy);
 7. Intraoperative monitoring during surgeries that may affect neural structures.
 - B. Brainstem Auditory Evoked Potential Testing
 1. Assessment of brainstem function such as during tumor infiltration of the brainstem and after a lesion has been surgically removed;
 2. Diagnosis and monitoring of demyelinating and degenerative diseases affecting the brain stem such as multiple sclerosis, central pontine myelinolysis, and olivopontocerebellar degeneration;
 3. Diagnosis of lesions in the auditory system (e.g., acoustic neuroma);
 4. Aid in the evaluation of prognosis in coma within the initial 72 hours of onset, excluding evaluation of brain death;
 5. Screening for hearing loss of infants and preverbal children or children with developmental delay or intellectual disability;
 6. Intraoperative monitoring during surgeries that may affect neural structures.
 - C. Visual Evoked Potential Testing

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1. Diagnosis and monitoring of optic nerve function and/or during demyelinating disorders of the optic nerve (e.g., multiple sclerosis, optic neuritis);
2. Assessment of suspected disorder of the optic nerve, optic chiasm or pre-optic chiasmatic radiations (visual evoked potentials are not useful for post-chiasmatic disease);
3. Evaluation of visual loss in those unable to communicate.

II. It is the policy of health plans affiliated with Centene Corporation[®] that somatosensory evoked potentials, motor evoked potentials using transcranial electrical stimulation, and brainstem auditory evoked potentials are **medically necessary** during intracranial, orthopedic, spinal, and vascular surgeries.

III. It is the policy of health plans affiliated with Centene Corporation[®] that evoked potential testing is **experimental/investigational** for the following indications:

- A. Intraoperative monitoring of visual evoked potentials;
- B. Motor evoked potentials from transcranial magnetic stimulation.

IV. It is the policy of health plans affiliated with Centene Corporation[®] that evoked potential testing is **not medically necessary** for the following indications:

- A. Motor evoked potentials for non-operative monitoring;
- B. Visual evoked potentials, any of the following:
 1. Glaucoma or glaucoma suspect
 2. Amblyopia
 3. Diabetes
- C. For the evaluation/assessment of all other conditions than those specified above.

Background

Sensory evoked potentials provide electrical recordings of afferent and efferent networks within the central and peripheral nervous systems in response to specific stimulation. These sophisticated tests facilitate the diagnosis nerve damage, or locate the specific site of nerve damage. There are several types of evoked potentials including sensory evoked potentials and motor evoked potentials. Examples of sensory evoked potentials include somatosensory, brainstem auditory, and visual evoked potentials. Somatosensory evoked potentials generate sensory information from peripheral nerve stimulation.² Brainstem auditory evoked potentials are created in response to aural cues and are evaluated at the brainstem and posterior fossa.² Visual evoked potentials provide information regarding conduction within the visual pathway, including the retino-striate conduction time.² Motor evoked potentials are elicited by electrical or magnetic stimulation of the motor cortex or spinal cord.

Intraoperative monitoring of neurophysiologic responses involves the electrophysiologic measurement of myogenic and neural responses during the course of surgeries. These measurements and testing are in response to controlled and modality specific stimulation. According to the American Speech Language Hearing Association's Position Statement on Intraoperative Monitoring, the primary objectives of intraoperative monitoring include: (1) to avoid intraoperative injury to neural structures; (2) to facilitate specific stages of the surgical

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procedure; (3) to reduce the risk of permanent postoperative neurological injury; and (4) to assist the surgeon in identifying specific neural structures.¹

The American Academy of Neurology published an assessment of intraoperative neurophysiologic monitoring with an evidence based guideline update in 2012.³ This guideline specifically addressed whether spinal cord intraoperative monitoring with somatosensory and motor evoked potentials predict adverse surgical outcomes. All studies that met inclusion criteria were consistent in showing all of the occurrences of paraparesis, paraplegia, and quadriplegia in the intraoperative monitoring of patients with evoked potential changes, and showed no occurrences of paraparesis, paraplegia, and quadriplegia in patients without evoked potential changes.³ Thus, intraoperative neurophysiologic monitoring provides operating teams with information regarding increased risk of severe adverse neurologic outcomes. Furthermore, the American Society Clinical Neurophysiology has published specific guidelines on an array of specifications, including the amplifier, safety, filtering, calibration, replication, and interpretation of results.⁴

Coding Implications

This clinical policy references Current Procedural Terminology (CPT®). CPT® is a registered trademark of the American Medical Association. All CPT codes and descriptions are copyrighted 2020, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

| CPT® Codes | Description |
|------------|---|
| 92585 | Auditory evoked potentials for evoked response audiometry and/or testing of the central nervous system; comprehensive |
| 95925 | Short–latency somatosensory evoked potential study, stimulation of any/all peripheral nerves or skin sites, recording from the central nervous system; in upper limbs |
| 95926 | Short–latency somatosensory evoked potential study, stimulation of any/all peripheral nerves or skin sites, recording from the central nervous system; in lower limbs |
| 95927 | Short–latency somatosensory evoked potential study, stimulation of any/all peripheral nerves or skin sites, recording from the central nervous system; in the trunk or head |
| 95928 | Central motor evoked potential study (transcranial motor stimulation); upper limbs |
| 95929 | Central motor evoked potential study (transcranial motor stimulation); lower limbs |
| 95930 | Visual evoked potential (VEP) testing central nervous system, checkerboard or flash testing, central nervous system except glaucoma, with interpretation and report. |

| CPT® Codes | Description |
|-------------------|--|
| 95938 | Short–latency somatosensory evoked potential study, stimulation of any/all peripheral nerves or skin sites, recording from the central nervous system; in upper and lower limbs |
| 95939 | Central motor evoked potential study (transcranial motor stimulation), in upper and lower limbs |
| 95940 | Continuous intraoperative neurophysiology monitoring in the operating room, one on one monitoring requiring personal attendance, each 15 minutes (List separately in addition to code for primary procedure) |
| 95941 | Continuous intraoperative neurophysiology monitoring, from outside the operating room (remote or nearby) or for monitoring of more than one case while in the operating room, per hour (List separately in addition to code for primary procedure) |
| 0333T | Visual evoked potential, screening of visual acuity, automated |

| HCPCS Codes | Description |
|--------------------|--|
| G0453 | Continuous intraoperative neurophysiology monitoring, from outside the operating room (remote or nearby), per patient, (attention directed exclusively to one patient) each 15 minutes (list in addition to primary procedure) |

ICD-10-CM Diagnosis Codes that Support Coverage Criteria

| ICD-10-CM Code | Description |
|-----------------------|---|
| A17.0-A17.89 | Tuberculosis of nervous system |
| A39.82 | Meningococcal retrobulbar neuritis |
| C30.1 | Malignant neoplasm of middle ear |
| C41.0 | Malignant neoplasm of bones of skull and face |
| C41.2 | Malignant neoplasm of vertebral column |
| C70.0-C70.9 | Malignant neoplasm of meninges |
| C71.0-C71.9 | Malignant neoplasm of brain |
| C72.0-C72.9 | Malignant neoplasm of spinal cord, cranial nerves and other parts of the central nervous system |
| C79.31-C79.32 | Secondary malignant neoplasm of brain and cerebral meninges |
| C79.49 | Secondary malignant neoplasm of other parts of nervous system |
| D02.3 | Carcinoma in situ of other parts of respiratory system |
| D14.0 | Benign neoplasm of middle ear, nasal cavity and accessory sinus |
| D16.6 | Benign neoplasm of vertebral column |
| D18.02 | Hemangioma of intracranial structures |
| D32.0-D32.9 | Benign neoplasm of meninges |
| D33.0-D33.9 | Benign neoplasm of brain and other parts of central nervous system |
| D38.5 | Neoplasm of uncertain behavior of other respiratory organs |
| D42.0-D42.9 | Neoplasm of uncertain behavior of meninges |
| D43.0-D43.9 | Neoplasm of uncertain behavior of brain and central nervous system |

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| ICD-10-CM Code | Description |
|----------------|---|
| D44.3 | Neoplasm of uncertain behavior of pituitary gland |
| D44.4 | Neoplasm of uncertain behavior of craniopharyngeal duct |
| D44.5 | Neoplasm of uncertain behavior of pineal gland |
| D49.1 | Neoplasm of unspecified behavior of respiratory system |
| D49.6 | Neoplasm of unspecified behavior of brain |
| E08.40 | Diabetes mellitus due to underlying condition with diabetic neuropathy, unspecified |
| E08.41 | Diabetes mellitus due to underlying condition with diabetic mononeuropathy |
| E08.42 | Diabetes mellitus due to underlying condition with diabetic polyneuropathy |
| E08.43 | Diabetes mellitus due to underlying condition with diabetic autonomic (poly)neuropathy |
| E08.44 | Diabetes mellitus due to underlying condition with diabetic amyotrophy |
| E08.49 | Diabetes mellitus due to underlying condition with other diabetic neurological complication |
| E71.520 | Childhood cerebral X-linked adrenoleukodystrophy |
| E71.521 | Adolescent X-linked adrenoleukodystrophy |
| E71.522 | Adrenomyeloneuropathy |
| E71.528 | Other X-linked adrenoleukodystrophy |
| E71.529 | X-linked adrenoleukodystrophy, unspecified type |
| G06.0-G06.2 | Intracranial and intraspinal abscess and granuloma |
| G11.10 | Early-onset cerebellar ataxia, unspecified |
| G11.11 | Friedreich ataxia |
| G11.19 | Other early-onset cerebellar ataxia |
| G23.0 | Hallervorden-Spatz disease |
| G23.1 | Progressive supranuclear ophthalmoplegia (Steele-Richardson-Olszewski) |
| G23.2 | Striatonigral degeneration |
| G23.8 | Other specified degenerative diseases of basal ganglia |
| G31.89 | Other specified degenerative diseases of nervous system |
| G31.9 | Degenerative disease of nervous system, unspecified |
| G35 | Multiple sclerosis |
| G36.0-G36.9 | Other acute disseminated demyelination |
| G37.0-G37.9 | Other demyelinating diseases of central nervous system |
| G50.0-G50.9 | Disorders of trigeminal nerve |
| G52.0-G52.9 | Disorders of other cranial nerves |
| G54.0 | Brachial plexus disorders |
| G54.1 | Lumbosacral plexus disorders |
| G54.2 | Cervical root disorders, not elsewhere classified |
| G54.3 | Thoracic root disorders, not elsewhere classified |
| G54.4 | Lumbosacral root disorders, not elsewhere classified |
| G90.3 | Multi-system degeneration of the autonomic nervous system |

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| ICD-10-CM Code | Description |
|-------------------|--|
| G90.8 | Other disorders of autonomic nervous system |
| G90.9 | Disorder of the autonomic nervous system, unspecified |
| G93.0 | Cerebral cysts |
| G93.1 | Anoxic brain damage, not elsewhere classified |
| G93.5 | Compression of the brain |
| G95.9 | Disease of spinal cord, unspecified |
| G96.89 | Other specified disorders of central nervous system |
| H35.54 | Dystrophies primarily involving the retinal pigment epithelium |
| H46.0-H46.9 | Optic neuritis |
| H47.011-H47.649 | Other disorders of optic (2nd) nerve and visual pathways |
| H53.001 – H53.9 | Visual disturbances |
| H54.3 | Unqualified visual loss, both eyes |
| H54.60-H54.62 | Unqualified visual loss, one eye |
| H81.01 – H81.09 | Meniere’s disease |
| H81.391 – H81.399 | Other peripheral vertigo |
| H81.4 | Vertigo of central origin |
| H90.0-H90.72 | Conductive and sensorineural hearing loss |
| H91.01-H91.93 | Other and unspecified hearing loss |
| H93.3x1 – H93.3x9 | Disorders of acoustic nerve |
| I60.00-I60.8 | Nontraumatic subarachnoid hemorrhage |
| I61.0-I61.8 | Nontraumatic intracerebral hemorrhage |
| I62.00-I62.1 | Other and unspecified nontraumatic intracranial hemorrhage |
| I63.00-I63.9 | Cerebral infarction |
| I65.01-I65.9 | Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction |
| I66.01-I66.9 | Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction |
| I67.0-I67.7 | Other cerebral vascular diseases |
| I71.00-I71.9 | Aortic aneurysm and dissection |
| I72.0 | Aneurysm of carotid artery |
| I77.71 | Dissection of carotid artery |
| I77.74 | Dissection of vertebral artery |
| M40.00-M40.57 | Kyphosis and lordosis |
| M41.00- M41.9 | Scoliosis |
| M43.00-M43.09 | Spondylolysis |
| M43.10-M43.19 | Spondylolisthesis |
| M47.011-M47.9 | Spondylosis |
| M48.00-M48.08 | Spinal stenosis |
| M50.00-M50.93 | Cervical disc disorders |
| M51.04-M51.9 | Thoracic, thoracolumbar, and lumbosacral intervertebral disc disorders |
| P10.0-P10.9 | Intracranial laceration and hemorrhage due to birth injury |
| P11.0-P11.9 | Other birth injuries to central nervous system |
| P14.0-P14.9 | Birth injury to peripheral nervous system |

| ICD-10-CM Code | Description |
|---|--|
| Q01.0-Q01.9 | Encephalocele |
| Q04.0-Q04.9 | Other congenital malformations of brain |
| Q05.0-Q05.9 | Spina bifida |
| Q07.00-Q07.03 | Arnold –Chiari syndrome |
| Q28.0-Q28.9 | Other congenital malformations of circulatory systems |
| Q76.2 | Congenital spondylolisthesis |
| Q85.00-Q85.09 | Phakomatoses, not elsewhere classified |
| R40.20-R40.2444 | Coma |
| R44.1 | Visual hallucinations |
| R48.3 | Visual agnosia |
| R94.110 – R94.138 | Abnormal results of function studies of peripheral nervous system and special senses |
| S02.0XX- S02.42X (add 7 th digit A-S) | Fracture of skull and facial bones |
| S04.011-S04.9XX (add 7th digit A-S) | Injury of optic nerve and pathways |
| S06.0X0-S06.898 (add 7th digit A-S) | Intracranial injury |
| S07.0XX -S07.9XX (add 7th digit A-S) | Crushing injury of head |
| S12.000 -S12.9XX (add 7th digit A-S) | Fracture of cervical vertebrae and other parts of the neck |
| S14.0XX- S14.9XX (add 7th digit A-S) | Injury of nerves and spinal cord at neck level |
| S22.000 -S22.089 (add 7th digit A-S) | Fracture of thoracic vertebrae |
| S24.101- S24.9XX(add 7th digit A-S) | Other and unspecified injuries of thoracic spinal cord |
| S34.01X -S34.9XX (add 7th digit A-S) | Injury of lumbar and sacral spinal cord and nerves at abdomen, lower back and pelvis level |
| Z01.110 | Encounter for hearing examination following failed hearing screening |
| Z08 | Encounter for follow-up examination after completed treatment for malignant neoplasm |
| Z87.710-Z87.798 | Personal history of (corrected) congenital malformations |

| Reviews, Revisions, and Approvals | Date | Approval Date |
|--|-------|---------------|
| Policy developed, Neurological surgery specialist reviewed. | 11/16 | 11/16 |
| References reviewed and updated. 2018 ICD-10 CM coding clarifications. | 11/17 | 11/17 |
| References reviewed and updated. Codes reviewed. | 10/18 | 10/18 |
| Removed age limit in I.B.6 and replaced with “infants and preverbal children or children with developmental delay or intellectual disability.” | 10/19 | 10/19 |

| Reviews, Revisions, and Approvals | Date | Approval Date |
|---|-------|---------------|
| References reviewed and updated. ICD-10 codes deleted in 2019: H81.41, H81.42,H81.43, H81.49. Specialist review | | |
| Minor language update in description and criteria. SSEP (I.A.): Added time- frame for evaluation of prognosis during acute anoxic encephalopathy; removed evaluation of brain death; removed assessment of CNS deficiency and localization of the cause of neurologic deficits as inclusive to assessment of CNS deficiency noted in I.A.5. Added peripheral nerve degeneration to I.A.7. BAEP (I.B) Removed indication “testing in acquired metabolic function”; added “during tumor infiltration to the brainstem” to assessment of brainstem function; Added acoustic neuroma as an example of lesion of auditory system; Added evaluation of prognosis during coma within the initial 72 hours of coma onset as an indication. VEP (I.C.) Added examples of demyelinating disorders; Added assessment of pre-optic chiasmatic radiations to criteria. Added ICD-10 codes: E08.40, E08.41, E08.42, E08.43, E08.44, E08.49, E71.520, E71.521, E71.522, E71.528, E71.529, G31.89, G31.9, G90.8, G90.9, H46.0-H46.9, H54.3, H54.60- H54.7. Deleted the following ICD-10 codes: G93.6, G93.82, R40.2, R40.3, R42, R47.01. Specialist reviewed. | 01/20 | 01/20 |
| Reorganized section IV and added indications when visual evoked potentials are not medically necessary. Revised IV.C, “Treatment of all other conditions than those specified above” to “evaluation/assessment of all other conditions...” Added additional ICD 10 codes A39.82 H35.54, R44.1 and R48.3 as supporting medical necessity. Removed code H54.7 from list of medically necessary codes. ICD-10 code updates, 1-/20: Replaced G11.1 with G11.10 and revised description. Added subcategories G11.11 and G11.19. Replaced G96.8 with G96.89. References reviewed and updated. Replaced “members” with “members/enrollees” in all instances. | 09/20 | 09/20 |

References

1. American Speech-Language-Hearing Association. (1992). Neurophysiologic Intraoperative Monitoring [Position Statement]. Available from <https://www.asha.org/policy/PS1992-00036/>
2. Walsh P, Kane N, Butler S. The clinical role of evoked potentials. J Neurol Neurosurg Psychiatry 2005 Jun;76 Suppl 2:ii16-22 .
3. Nuwer MR, Emerson RG, Galloway G, et al. Evidence-based guideline update: Intraoperative spinal monitoring with somatosensory and transcranial electrical motor evoked potentials. Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and the American Clinical Neurophysiology Society (ACNS). Neurology 78.8 (2012): 585-589.
4. American Society Clinical Neurophysiology. Guideline 9A: Guidelines on Evoked Potentials. Journal of Clinical Neurophysiology. Volume 23 Number 2. April 2006.
5. Legatt AD, Emerson RG, Epstein CM. et al. ACNS Guideline: Transcranial Electrical Stimulation Motor Evoked Potential Monitoring. J Clin Neurophysiol. 2016 Feb;33(1):42-50.

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6. Holdefer RN, MacDonald DB, Skinner SA. Somatosensory and motor evoked potentials as biomarkers for post-operative neurological status. Clin Neurophysiol. 2015 May;126(5):857-65. doi: 10.1016/j.clinph.2014.11.009.

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. “Health Plan” means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan’s affiliates, as applicable.

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This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members/enrollees. This clinical policy is not intended to recommend treatment for members/enrollees. Members/enrollees should consult with their treating physician in connection with diagnosis and treatment decisions.

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Note: For Medicaid members/enrollees, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members/enrollees, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at <http://www.cms.gov> for additional information.

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