Clinical Policy: Evoked Potential Testing

Reference Number: CP.MP.134
Date of Last Revision: 08/21

Coding Implications
Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information

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 spinocerebellar degeneration, such as Fredreich'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

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 chiasmic radiations (visual evoked potentials are not useful for post-chiasmic 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 there is insufficient evidence in the published peer-reviewed literature to support evoked potential testing 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 Langue 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

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
92652	Auditory evoked potentials; for threshold estimation at multiple frequencies, with interpretation and report
92653	Auditory evoked potentials; neurodiagnostic, with interpretation and report
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

CPT® Codes	Description
95930	Visual evoked potential (VEP) testing central nervous system, checkerboard or flash testing, central nervous system except glaucoma, with interpretation and report.
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
0333T	Visual evoked potential, screening of visual acuity, automated

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
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

ICD-10-CM Code	Description
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
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

ICD-10-CM Code	Description
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
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

ICD-10-CM Code	Description
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 7th 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	Revision 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." References reviewed and updated. ICD-10 codes deleted in 2019: H81.41, H81.42,H81.43, H81.49. Specialist review	10/19	10/19
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	01/20	01/20

Reviews, Revisions, and Approvals	Revision Date	Approval Date
"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 chiasmic 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.		
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
CPT code 92585 deleted 1/1/21. Added replacement CPT codes 92652 and 92653. "Experimental/investigational" verbiage replaced with descriptive language in in policy statement III.	04/21	
Annual review completed. Minor typo corrections. Changed "review date" in the header to "date of last revision" and "date" in the revision log header to "revision date." References reviewed, updated, and reformatted. Coding reviewed and updated. Removed intraoperative CPT codes 95940, 95941, and HCPCS code G0453.	08/21	08/21

References

1. American Speech-Language-Hearing Association. Neurophysiologic intraoperative monitoring position statement. https://www.asha.org/policy/ps1992-00036/. Published 1992. Accessed July 26, 2021.
2. Walsh P, Kane N, Butler S. The clinical role of evoked potentials. *J Neurol Neurosurg Psychiatry*. 2005;76 Suppl 2(Suppl 2):ii16-ii22. doi:10.1136/jnnp.2005.068130
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. *Neurology*. 2012;78(8):585-589. doi:10.1212/WNL.0b013e318247fa0e
4. American Clinical Neurophysiology Society. Guideline 9A: Guidelines on evoked potentials. *J Clin Neurophysiol*. 2006;23(2):125-137. doi:10.1097/00004691-200604000-00010

5. Legatt AD, Emerson RG, Epstein CM, et al. ACNS Guideline: Transcranial Electrical Stimulation Motor Evoked Potential Monitoring. *J Clin Neurophysiol*. 2016;33(1):42-50. doi:10.1097/WNP.0000000000000253
6. Holdefer RN, MacDonald DB, Skinner SA. Somatosensory and motor evoked potentials as biomarkers for post-operative neurological status. *Clin Neurophysiol*. 2015;126(5):857-865. 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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