

# Clinical Policy: Evoked Potential Testing

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[Coding Implications](#)

## 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 PA Health & Wellness (PHW)<sup>®</sup> 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 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 (e.g. 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 PHW<sup>®</sup> 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 PHW<sup>®</sup> 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 PHW<sup>®</sup> 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 of 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.<sup>1</sup> Brainstem auditory evoked potentials are created in response to aural cues and are evaluated at the brainstem and posterior fossa.<sup>2</sup> Visual evoked potentials provide information regarding conduction within the visual pathway, including the retino-striate conduction time.<sup>1</sup> 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 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 procedure; (3) to reduce the risk of permanent postoperative neurological injury; and (4) to assist the surgeon in identifying specific neural structures.<sup>2</sup>

The American Academy of Neurology published an assessment of intraoperative neurophysiologic monitoring with an evidence-based guideline update in 2012.<sup>3</sup> 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 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.<sup>3</sup> Thus, intraoperative neurophysiologic monitoring provides operating teams with information regarding increased risk of severe adverse neurologic outcomes. Furthermore, the American Society of Clinical Neurophysiology has published specific guidelines on an array of specifications, including the amplifier, safety, filtering, calibration, replication, and interpretation of results.<sup>4</sup>

**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 2023, 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  |
| 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**

| <b>ICD-10-CM Code</b> | <b>Description</b>  |
|-----------------------|---|
| 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                      |
| 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   |

| ICD-10-CM Code       | Description  |
|----------------------|--|
| 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   |
| 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 –<br>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 –<br>H93.3x9 | Disorders of acoustic nerve  |
| I60.00-I60.8         | Nontraumatic subarachnoid hemorrhage                                   |
| I61.0-I61.8          | Nontraumatic intracerebral hemorrhage                                  |

| ICD-10-CM Code  | Description  |
|---|--|
| 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  |
| R48.3   | Visual agnosia   |
| R94.110 – R94.138   | Abnormal results of function studies of peripheral nervous system and special senses |
| S02.0XX-<br>S02.42X (add 7 <sup>th</sup><br>digit A-S)    | Fracture of skull and facial bones   |
| S04.011-S04.9XX<br>(add 7th digit A-S)                    | Injury of optic nerve and pathways   |
| S06.0X0 through<br>S06.899 (add 7th<br>digit A through S) | Intracranial injury  |



| ICD-10-CM Code                              | Description   |
|---|---|
| S07.0XX -<br>S07.9XX (add 7th<br>digit A-S) | Crushing injury of head   |
| S12.000 -S12.9XX<br>(add 7th digit A-S)     | Fracture of cervical vertebrae and other parts of the neck                                    |
| S14.0XX-<br>S14.9XX (add 7th<br>digit A-S)  | Injury of nerves and spinal cord at neck level  |
| S22.000 -S22.089<br>(add 7th digit A-S)     | Fracture of thoracic vertebrae  |
| S24.101-<br>S24.9XX(add 7th<br>digit A-S)   | Other and unspecified injuries of thoracic spinal cord  |
| S34.01X -<br>S34.9XX (add 7th<br>digit A-S) | Injury of lumbar and sacral spinal cord and nerves at abdomen, lower back<br>and pelvis level |
| Z01.110                                     | Encounter for hearing examination following failed hearing screening                          |
| Z08   | Encounter for follow-up examination after completed treatment for<br>malignant neoplasm       |
| Z87.710-Z87.798                             | Personal history of (corrected) congenital malformations                                      |

| Reviews, Revisions, and Approvals   | Revision<br>Date | Approval<br>Date |
|---|------------------|------------------|
| Policy Developed  | 09/18            | 10/18            |
| References reviewed and updated. Codes reviewed.  | 12/18            |                  |
| Annual Review. References reviewed and updated. Codes reviewed.   | 10/19            |                  |
| Removed age limit in I.B.6 and replaced with “infants and preverbal children or children with developmental delay or intellectual disability.” ICD-10 codes deleted in 2019: H81.41, H81.42,H81.43, H81.49. 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, | 10/20            | 12/2020          |

| Reviews, Revisions, and Approvals  | Revision Date | Approval Date |
|--|---------------|---------------|
| <p>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. 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. Specialist reviewed.</p> |               |               |
| <p>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. References reviewed and updated. Specialist reviewed</p>   | 07/30/2021    | 08/09/2021    |
| <p>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.</p>  | 12/22/2021    |               |
| <p>Annual review. References reviewed and updated. Specialist reviewed.</p>  | 12/8/2022     |               |
| <p>Annual review. Added new 2023 ICD-10 codes to S06 code range. References reviewed and updated. Reviewed by external specialist.</p>   | 09/2023       | 02/2024       |
| <p>Annual review. Minor rewording in background with no impact to criteria. References reviewed and updated.</p>   | 10/2024       |               |

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