Priority Health

MEDICAL POLICY
No. 91510-R6

ELECTROENCEPHALOGRAPHY (EEG)

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Date Of Origin: September 14, 2005	**Status: Current**

Summary of Changes

Additions:

- Added section II. GOVERNMENTAL REGULATIONS

Clarifications:

- Clarified language in section II. B. Quantitative Electroencephalography (QEEG)
- Enhanced Section V. DESCRIPTION

I. SCOPE

This medical policy addresses:

- Video electroencephalographic (VEEG) monitoring with video, conducted at home, at a freestanding center, or in a hospital-based facility.
- Quantitative electroencephalography (QEEG), including digital spike analysis

II. POLICY/CRITERIA

A. **Video electroencephalographic (EEG) monitoring**: Priority Health may consider electroencephalography/electroencephalographic monitoring with video (VEEG) medically necessary when the applicable InterQual® criteria are met (CP:Procedures subset *Video Electroencephalographic (EEG) Monitoring*).

Indications for which VEEG monitoring may be considered medically necessary include the following:

- **Suspected epileptic seizure**: Members with suspected epileptic seizures can have a video EEG performed **at home, in a free-standing center, or in a hospital-based setting**. It is important to consider whether highly skilled medical personnel are needed to witness the event, the associated phenomena of the seizure or event, and any associated inherent risk, and whether sleep deprivation plays a role in the onset of seizures.
- **Suspected non-epileptic seizure**: For members with suspected non-epileptic seizures, video EEG can be performed **at home, in a free-standing center, or in a hospital-based setting**. It is important to consider whether highly skilled medical personnel are needed to witness the event, the associated phenomena of the seizure or event and any associated

inherent risk, and whether sleep deprivation plays a role in the onset of seizures. For some patients, the home may be the preferred setting because of the opportunity to observe interpersonal interactions; the hospital setting may be more psychologically provoking.

- **Known seizure disorder**: Members with a known seizure disorder **who are having antiepileptic medications withdrawn should have their video EEG done in a hospital-based setting because of safety issues and access to appropriate medical care in case of an emergency.** Those patients who require precise differentiation or quantification of their seizures by highly skilled medical personnel should have their video EEG where this expertise is available.
- **Preoperative evaluation of member undergoing epilepsy surgery**: Patients who are undergoing video EEG prior to epilepsy surgery **should have the video EEG done in a hospital-based setting at the time the scalp electrodes are placed.** Intracranial electrodes are placed in the hospital.

B. **Quantitative electroencephalography (QEEG) including digital spike analysis**

1. QEEG is considered ***medically necessary*** when all of the following apply:

   a. An adjunct to, and in combination with, a traditional EEG, for specific patients, as determined by their clinical presentations.
   b. Performed by a specialist trained in its use
   c. Used only for the following indications:

      i. **Epilepsy** - one of the following:

         1. When the surface or long-term EEG is inconclusive and additional screening for possible epileptic spikes or seizures is needed.
         2. When ambulatory recording is needed to facilitate subsequent visual EEG interpretation.
         3. For topographic voltage and dipole analysis in pre-surgical candidates with intractable epilepsy.

      ii. **Cerebral vascular disease, dementia or encephalopathy**: when neurological imaging and routine EEG outcomes are inconclusive to confirm diagnostic symptoms.

      iii. **Operating room (OR)**: to provide continuous monitoring for the early detection of an acute intracranial complication during surgery.

iv. **Intensive care unit (ICU) monitoring**: for the detection of nonconvulsive seizures in high-risk ICU patients.

2. **Exclusions**: QEEG is considered ***not medically necessary*** for any other condition or indication including, but not limited to, the following:
   a. Alcoholism
   b. Attention-deficit/hyperactivity disorders (ADD/ADHD)
   c. Depression
   d. Drug/substance abuse
   e. Mild or moderate head injury
   f. Learning disability
   g. Schizophrenia

II. GOVERNMENTAL REGULATIONS

Centers for Medicare & Medicaid Services (CMS)

National Coverage Determinations (NCDs)	
Telephone Transmission of EEGs 160.21	
Local Coverage Determinations (LCDs)	
CGS Administrators, LLC	None identified
First Coast Service Options, Inc.	*Special EEG Tests L34521 A57667*
National Government Services, Inc	*EEG – Ambulatory Monitoring L33399 A57030*
Noridian Healthcare Solutions	None identified
Novitas Solutions, Inc.	None identified
Palmetto GBA	*Special Electroencephalography L33447 A56771*
WPS Insurance Corporation	None identified

III. MEDICAL NECESSITY REVIEW

Prior authorization for certain drugs, devices, services, and procedures may or may not be required. In cases where prior authorization is required, providers will submit a request demonstrating that a drug, service, or procedure is medically necessary. For more information, please refer to the Priority Health Provider Manual.

IV. APPLICATION TO PRODUCTS

Coverage is subject to member's specific benefits. Group specific policy will supersede this policy when applicable.

- **HMO/EPO:** ***This policy applies to insured HMO/EPO plans.***
- **POS:** ***This policy applies to insured POS plans.***
- **PPO:** ***This policy applies to insured PPO plans. Consult individual plan documents as state mandated benefits may apply. If there is a conflict between this policy and a plan document, the provisions of the plan document will govern.***
- **ASO:** ***For self-funded plans, consult individual plan documents. If there is a conflict between this policy and a self-funded plan document, the provisions of the plan document will govern.***
- **INDIVIDUAL:** ***For individual policies, consult the individual insurance policy. If there is a conflict between this medical policy and the individual insurance policy document, the provisions of the individual insurance policy will govern.***
- **MEDICARE:** ***Coverage is determined by the Centers for Medicare and Medicaid Services (CMS) and/or the Evidence of Coverage (EOC); if a coverage determination has not been adopted by CMS, this policy applies.***
- **MEDICAID/HEALTHY MICHIGAN PLAN:** ***For Medicaid/Healthy Michigan Plan members, this policy will apply. Coverage is based on medical necessity criteria being met and the appropriate code(s) from the coding section of this policy being included on the Michigan Medicaid Fee Schedule located at: http://www.michigan.gov/mdch/0,1607,7-132-2945_42542_42543_42546_42551-159815--,00.html. If there is a discrepancy between this policy and the Michigan Medicaid Provider Manual located at: http://www.michigan.gov/mdch/0,1607,7-132-2945_5100-87572--,00.html, the Michigan Medicaid Provider Manual will govern. If there is a discrepancy or lack of guidance in the Michigan Medicaid Provider Manual, the Priority Health contract with Michigan Medicaid will govern. For Medical Supplies/DME/Prosthetics and Orthotics, please refer to the Michigan Medicaid Fee Schedule to verify coverage.***

V. DESCRIPTION

InterQual® Procedures Criteria

InterQual® Procedures criteria are derived from the systematic, continuous review and critical appraisal of the most current evidence-based literature and include input from our independent panel of clinical experts. To generate the most appropriate recommendations, a comprehensive literature review of the clinical evidence was conducted. Sources searched included:

- PubMed
- Agency for Healthcare Research and Quality (AHRQ) Comparative Effectiveness Reviews
- Cochrane Library
- Choosing Wisely
- Centers for Medicare & Medicaid Services (CMS) National Coverage Determinations
- National Institute of Health and Care Excellence (NICE).

Other medical literature databases, medical content providers, data sources, regulatory body websites, and specialty society resources may also have been used.

Relevant studies were assessed for risk of bias following principles described in the Cochrane Handbook. The resulting evidence was assessed for consistency, directness, precision, effect size, and publication bias. Observational trials were also evaluated for the presence of a dose-response gradient and the likely effect of plausible confounders.

Electroencephalography (EEG) is a non-invasive neurophysiological monitoring technique used to record and interpret the electrical activity of the brain. It involves placing electrodes on the scalp to detect voltage fluctuations resulting from ionic current flows within neurons, particularly the pyramidal cells of the cerebral cortex

EEG captures the summated postsynaptic potentials of cortical neurons. These electrical signals are recorded as waveforms that vary in frequency and amplitude, reflecting different states of brain activity. The primary frequency bands include:

Delta (0.5–4 Hz): Deep sleep
Theta (4–8 Hz): Light sleep, drowsiness
Alpha (8–12 Hz): Relaxed wakefulness
Beta (12–30 Hz): Active thinking, alertness
Gamma (>30 Hz): High-level cognitive processing 1

Electrodes are typically arranged according to the International 10–20 system, ensuring standardized placement for reproducibility and clinical interpretation. Signals are amplified and displayed as an electroencephalogram, a graphical representation of brain wave activity.

Video electroencephalographic (EEG) monitoring is EEG monitoring that is enhanced by the addition of video recording. Providers are able to correlate electrophysiologic changes with characteristic behaviors over a prolonged period of time, typically several days. The high yield of diagnostic information from this procedure is used to confirm any suspected seizure activity, detect and classify seizure types and location, adjust medications and assist in surgical planning.

While EEG provides excellent temporal resolution, it has limited spatial resolution due to the attenuation of signals through the skull and scalp. It primarily reflects cortical surface activity and is less effective for detecting deep brain structures. Additionally, EEG is not diagnostic for psychiatric illnesses and must be interpreted in the context of clinical findings

Quantitative Electroencephalography (QEEG) is an advanced neurophysiological assessment technique that involves the mathematical and statistical analysis of the electrical activity of the brain, as recorded by standard EEG. QEEG transforms raw EEG data into numerical values and visual representations (e.g., brain maps), enabling a more objective and detailed evaluation of brain function. While EEG is primarily a diagnostic tool for

identifying overt abnormalities (e.g., seizures), QEEG provides a functional assessment of brain activity, often revealing subtle patterns not visible in standard EEG. QEEG requires the interpretation of a specialist trained in quantitative encephalographic analysis.

QEEG begins with a conventional EEG recording, typically using the International 10–20 system for electrode placement. The raw EEG data is then processed using digital signal analysis techniques, including:

- **Spectral (Frequency) Analysis** – Breaks down EEG signals into component frequency bands (delta, theta, alpha, beta, gamma) to assess power and distribution.
- **Power Spectral Density (PSD)** – Quantifies the intensity of brainwave activity in each frequency band.
- **Coherence Analysis** – Measures the degree of synchronization between different brain regions, indicating functional connectivity.
- **Phase Lag and Phase Coherence** – Evaluate timing relationships between signals from different brain areas.
- **Topographic Brain Mapping** – Visualizes brain activity using color-coded maps, highlighting regional abnormalities or asymmetries 1.

These analyses are often compared to normative databases stratified by age and sex, allowing clinicians to identify deviations from typical brain function.

VI. CODING INFORMATION

ICD-10 Codes that may support medical necessity*:*

E03.5	Myxedema coma
F01.50	Vascular dementia without behavioral disturbance
F01.51x	Vascular dementia with behavioral disturbance
F02.80 – F02.81x	Dementia in other diseases
F03.90	Unspecified dementia without behavioral disturbance
F05	Delirium due to known physiological condition
G13.2	Systemic atrophy primarily affecting the central nervous system in myxedema
G13.8	Systemic atrophy primarily affecting central nervous system in other diseases classified elsewhere
G30.0 – G30.9	Alzheimer's disease
G31.01 – G31.9	Other degenerative diseases of nervous system, not elsewhere classified
G40.301 - G40.411	Generalized idiopathic epilepsy and epileptic syndromes
G46.4	Cerebellar stroke syndrome
G46.5	Pure motor lacunar syndrome
G46.6	Pure sensory lacunar syndrome
G46.7	Other lacunar syndromes
G46.8	Other vascular syndromes of brain in cerebrovascular diseases
G91.4	Hydrocephalus in diseases classified elsewhere
G93.40 – G93.49	Other encephalopathy
G93.7	Reye's syndrome
G94	Other disorders of brain in diseases classified elsewhere
I63.30 - I63.9	Cerebral infarction
I66.01 – I66.09	Occlusion and stenosis of cerebral arteries,
I68.0	Cerebral amyloid angiopathy
I68.8	Other cerebrovascular disorders in diseases classified elsewhere
I69.010	Attention and concentration deficit following nontraumatic subarachnoid hemorrhage
I69.110	Attention and concentration deficit following nontraumatic intracerebral hemorrhage
I69.210	Attention and concentration deficit following other nontraumatic intracranial hemorrhage
I69.310	Attention and concentration deficit following cerebral infarction
I69.810	Attention and concentration deficit following other cerebrovascular disease
I69.910	Attention and concentration deficit following unspecified cerebrovascular disease
R40.0	Somnolence
R40.1	Stupor
R40.20 - R40.3	Coma

ICD-10 Codes that **Do Not Support Medical Necessity**:

F10.10 - F10.99	Alcohol abuse
F11.10 - F11.90	Opioid abuse
F12.10 - F12.90	Cannabis abuse
F13.10 - F13.90	Sedative, hypnotic or anxiolytic abuse
F14.10 - F14.90	Cocaine abuse
F15.10 - F15.90	Other stimulant abuse
F16.10 - F16.90	Hallucinogen abuse
F17.200 - F17.291	Nicotine dependence
F18.10 - F18.90	Inhalant abuse
F19.10 - F19.90	Other psychoactive substance abuse
F20.0 - F20.9	Schizophrenia
F21	Schizotypal disorder
F25.0 - F25.9	Schizoaffective disorder
F31.9	Bipolar disorder, unspecified
F32.0 - F33.9	Major depressive disorder
F34.1	Dysthymic disorder
F40.00 - F40.9	Phobic anxiety disorders
F41.0 - F41.9	Other anxiety disorders
F42.X	Obsessive-compulsive disorder
F44.0 - F44.9	Dissociative and conversion disorders
F45.0 - F45.9	Somatoform disorders
F48.1 - F48.9	Other nonpsychotic mental disorders
F55.0 - F55.8	Abuse of non-psychoactive substances
F68.10	Factitious disorder
F80.0 - F80.9	Specific developmental disorders of speech and language
F81.0 - F81.9	Specific developmental disorders of scholastic skills
F82	Specific developmental disorder of motor function
F84.5	Asperger's syndrome
F84.8	Other pervasive developmental disorders
F84.9	Pervasive developmental disorder, unspecified
F88	Other disorders of psychological development
F89	Unspecified disorder of psychological development
F90.0 - F90.9	Attention-deficit hyperactivity disorder
F93.8	Other childhood emotional disorders
F99	Mental disorder, not otherwise specified
H93.25	Central auditory processing disorder
R45.2	Unhappiness
R45.5	Hostility
R45.6	Violent behavior
R48.0	Dyslexia and alexia
S06.0x0A - S06.0x0S	Concussion without loss of consciousness
S06.1x0A	Traumatic cerebral edema without loss of consciousness, initial encounter
S06.2x0A - S06.20S	Diffuse traumatic brain injury without loss of consciousness
S06.300A - S06.300S	Unspecified focal traumatic brain injury without loss of consciousness
S06.890A - S06.890S	Other specified intracranial injury without loss of consciousness
S06.9x0A - S06.9x0S	Unspecified intracranial injury without loss of consciousness

CPT /HCPCS Codes:

95957 Digital analysis of electroencephalogram (EEG) (e.g., for epileptic spike analysis) (not separately payable)

95961 Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; initial hour of physician attendance

95962 Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; each additional hour of physician attendance (List separately in addition to code for primary procedure)

Not Covered:

S8040 Topographic brain mapping

Ambulatory EEG without/with video monitoring/recording (VEEG)

VII. CODING INFORMATION

ICD-10 Codes that may support medical necessity

G40.901 Epilepsy, unspecified, not intractable, with status epilepticus
G40.909 Epilepsy, unspecified, not intractable, without status epilepticus
R25.9 Unspecified abnormal involuntary movements
R40.0 Somnolence
R40.4 Transient alteration of awareness
R41.0 Disorientation, unspecified
R41.82 Altered mental status, unspecified
R55 Syncope and collapse
R56.1 Post traumatic seizures
R56.9 Unspecified convulsions

ICD-10 Codes that **Do Not Support Medical Necessity**

G47.33 Obstructive sleep apnea (adult) (pediatric)
G12.21 Amyotrophic lateral sclerosis
I46.9 Cardiac arrest, cause unspecified
R53.82 Chronic fatigue, unspecified
R40.20-R40.2444 Coma
G93.82 Brain death
R51.x Headache

CPT /HCPCS Codes

95700 Electroencephalogram (EEG) continuous recording, with video when performed, setup, patient education, and takedown when performed, administered in person by EEG technologist, minimum of 8 channels

95711 Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, 2-12 hours; unmonitored

95712 Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, 2-12 hours; with intermittent monitoring and maintenance

95713 Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, 2-12 hours; with continuous, real-time monitoring and maintenance

95714 Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, each increment of 12-26 hours; unmonitored

95715 Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, each increment of 12-26 hours; with intermittent monitoring and maintenance

95716 Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, each increment of 12-26 hours; with continuous, real-time monitoring and maintenance

95718 Electroencephalogram (EEG), continuous recording, physician or other qualified health care professional review of recorded events, analysis of spike and seizure detection, interpretation and report, 2-12 hours of EEG recording; with video (VEEG)

95720 Electroencephalogram (EEG), continuous recording, physician or other qualified health care professional review of recorded events, analysis of spike and seizure detection, each increment of greater than 12 hours, up to 26 hours of EEG recording, interpretation and report after each 24-hour period; with video (VEEG

95722 Electroencephalogram (EEG), continuous recording, physician or other qualified health care professional review of recorded events, analysis of spike and seizure detection, interpretation, and summary report, complete study; greater than 36 hours, up to 60 hours of EEG recording, with video (VEEG)

95724 Electroencephalogram (EEG), continuous recording, physician or other qualified health care professional review of recorded events, analysis of spike and seizure detection, interpretation, and summary report, complete study; greater than 60 hours, up to 84 hours of EEG recording, with video (VEEG)

95726 Electroencephalogram (EEG), continuous recording, physician or other qualified health care professional review of recorded events, analysis of spike and seizure detection, interpretation, and summary report, complete study; greater than 84 hours of EEG recording, with video (VEEG)

VIII. REFERENCES

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