IEHP UM Subcommittee Approved Authorization Guidelines

Electroencephalogram (EEG)

Policy:
IEHP considers the use of an EEG medically necessary under the following circumstances:

1. In the diagnosis of Epilepsy, or Epilepsy not responding to treatment.
2. In the diagnosis of coma, metabolic encephalopathy, transient neurological events, and/or brain death.
3. Peri-operatively, such as to monitor the depth of anesthesia, or as an indirect indicator of cerebral perfusion during neurosurgery.
4. For the study of sleep and sleep-related disorders when done as part of a polysomnogram.

Frequency of EEG monitoring:

1. There is rarely a need for repeat, routine EEG testing. This should only be performed if there is a persistent differential diagnosis, or if there are breakthrough seizures that may be of a different type than that being initially treated. In this case more prolonged EEG monitoring should be considered.

Necessity of performing EEGs for patients with stable epilepsy:

1. There is no indication for repeat EEG testing in patients with stable epilepsy.
2. There is no indication for a repeat EEG if there are breakthrough seizures without a change in seizure characteristics. In this case, the patient’s medication may need to be adjusted, and an EEG will not change management because there is not a new differential diagnosis. However, if the breakthrough seizure documented has different characteristics from the original type being treated, a repeat EEG may be performed because there is now a new differential diagnosis. Indeed, in this case management may change due to the cause of this new seizure, and the patient’s medication may need to be changed as well.

Bundling EEG studies:

1. Multiple EEG types (i.e. routine/standard, outpatient ambulatory, inpatient video) should not be ordered simultaneously.
2. EEGs should be ordered in a stepwise fashion. A routine/standard EEG should be ordered first. If this test is negative a prolonged ambulatory EEG should be considered. And only if this test is unremarkable should an inpatient Video EEG be done in order to obtain further information about a patient’s condition.

IEHP does not cover EEGs performed under the following circumstances:
1. For the routine evaluation of headaches.
2. To r/o seizures unless there is a differential diagnosis.

Ambulatory EEG can be utilized in the differential diagnosis of syncope and transient ischemic attacks if not elucidated by conventional studies. Ambulatory EEG monitoring should always be preceded by a resting EEG.

CMS National Coverage Determination for EEG Monitoring During Surgical Procedures Involving the Cerebral Vasculature Section 160.8 (2006):
EEG monitoring is a safe and reliable technique for the assessment of gross cerebral blood flow during general anesthesia and is covered under Medicare.

Medi-Cal (2008):
A Polysomnography may include an EEG, electro-oculogram, electromyogram, electrocardiogram, nasal/oral airflow, pulse oximetry, body position and respiratory effort.

Apollo (2013):
EEG is not indicated in the routine evaluation of headaches.

Background:
An Electroencephalogram (EEG) is the recording of electrical activity along the scalp immediately adjacent to the superficial area of the cerebral cortex. An EEG measures voltage fluctuations resulting from ionic current flows within the neurons of the brain.

Routine/standard EEG:
Explanation-
1. Should be performed by a qualified Electroencephalographer or Electroneurodiagnostic Technologist.
2. An adequate number of electrodes (≥16) are essential to ensure that EEG activity is recorded and analyzed accurately.
3. The baseline record should contain at least 20 minutes of technically satisfactory recording to assess baseline waking EEG activity.
Indications/Coverage-
1. Always done as an initial first test in the office setting.
2. If there is a differential diagnosis of seizure versus encephalopathy.
3. To differentiate seizure types (i.e. absence versus complex partial seizures).
4. If normal, the addition of sleep deprivation, photic stimulation, and/or hyperventilation may be recommended in an effort to capture abnormal brain activity.
5. In the case of a suspected seizure, or in an individual with known Epilepsy having breakthrough seizures, an EEG should be obtained within the first 24hrs for best results.

**Outpatient Ambulatory (24 -72 hr) EEG:**

Explanation-
1. Ambulatory EEGs allow for prolonged electroencephalographic recording in an outpatient setting.
2. Less expensive and more convenient than a Video EEG.
3. Sleep is a major activation method for evoking EEG abnormalities.

Indications/Coverage-
1. Should always be preceded by a routine/standard EEG.
2. For patients in whom an Epilepsy diagnosis is suspected but not defined by history, physical, or a routine/standard EEG.
3. For the differential diagnosis of syncope and transient ischemic attacks not diagnosed by conventional studies.
4. Enables a physician to decide whether or not it is safe for a patient to stop using their anti-seizure medications.
5. Especially helpful in the diagnosis of Temporal Lope Epilepsy.

**Inpatient Video (≥23hr) EEG:**

Please see IEHP’s UM Subcommittee Guideline on this topic.

**Effective Date:** November 13, 2013

**Revised:**

**Reviewed Annually:** November 9, 2016
Bibliography:

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