Clinical Policy: Digital EEG Spike Analysis

Reference Number: LA.CP.MP.105 Coding Implications
Date of Last Revision~~ew Date~~: 10~~08~~/202~~0~~2 Revision Log

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

Description
Electroencephalography (EEG) is a significant component of epilepsy diagnosis, along with a thorough medical history and neurological workup. Most EEGs today are performed on digital machines which record data and automatically detect spikes that may indicate seizures[2] ~~(ACNS, 2008)~~. For the purpose of this policy, digital EEG spike analysis, which also is known as 3D dipole localization or dipole source imaging, refers to additional analysis of digitally recorded EEG spikes by a technician and a physician. ~~Digital EEG spike analysis is also called 3D dipole localization or dipole source imaging.~~

Policy/Criteria

I. It is the policy of Louisiana Healthcare Connections that digital EEG spike analysis, including topographic voltage and/or dipole analysis, is medically necessary for the presurgical evaluation of members/enrollees with intractable epilepsy, in conjunction with video EEG long-term monitoring.

II. It is the policy of Louisiana Healthcare Connections that digital EEG spike analysis is not medically necessary for any other indication.

Background
According to the American Clinical Neurophysiology Society's (ACNS) Guidelines for Long Term Monitoring of Epilepsy, digital EEG is the industry standard[2] ~~(2008)~~. Ambulatory EEG, video EEG, and routine EEG all use digital technology and usually incorporate automatic spike detection. These types of EEG analyses are not the same as digital EEG spike (3D dipole localization) analysis. A report by the American Academy of Neurology (AAN) and the ACNS states that multiple well-designed studies have established automatic spike and seizure detection via digital EEG as highly sensitive, though not very specific[1] ~~(1997, p. 280~~). This is also true of EEG in general. There are several reasons that an EEG would record a false positive, and most EEG patterns can be caused by a wide variety of neurologic conditions, while many diseases can produce more than one type of EEG pattern[5] ~~(Moeller, Haider & Hirsch, 2015)~~. Nonetheless, the AAN recommends EEG with automatic seizure and spike detection in clinical practice, commenting that "general clinical use in the community has been very positive"[1] ~~(AAN & ACNS, 1997)~~. Automatic spike detection can save a great amount of time as a technician or electroencephalographer does not have to visually review hours or days of data. However, there are specific circumstances in which further analysis of the EEG is required, beyond the automatic digital spike analysis.

Digital EEG spike analysis assessment and billing should not be used for cases when the EEG was only recorded on digital equipment. Digital EEG spike analysis assessment is reserved specifically for times when substantial additional digital analysis was medically necessary and was performed, such as 3D dipole localization. In these specific circumstances, this would entail

an additional hour's work by the technician to process the data from the digital EEG as well as an extra 20 to 30 minutes of physician time to review the technician's work and review the data produced. This type of analysis is most commonly performed at specialty centers that involve epilepsy surgery programs.[9]

The AAN and ACNS recommend further digital analysis, in conjunction with review by a technician or provider, in the noninvasive evaluation of candidates for epilepsy surgery. ~~(AAN & ACNS, 1997, p. 281).~~ They note that:

> "The well-designed studies of this specific technique [dipole analysis] are few but consistent and confirmed in follow-up postoperatively. The clinical rationale seems clear. Control testing for evoked potential known cortical generator sites has confirmed the technical accuracy of dipole localization. The use of dipole analysis seems sufficiently demonstrated to warrant its clinical use in patients undergoing evaluation for surgical therapy for epilepsy. In other clinical settings, it has not been demonstrated to be sufficiently clinically useful to warrant general clinical use at this time" ~~(AAN & ACNS, 1997, p. 280)~~.

It is important to note that the ACNS specifically states that ambulatory EEG is not appropriate for "detailed characterization of EEG features as is required in presurgical evaluation"[2]. ~~(ACNS, 2008, p. 15).~~

3D spike dipole source analysis, or digital EEG spike analysis, has been shown to be concordant with other modes of presurgical evaluation of epilepsy, including a thorough neurological workup with video EEG, magnetic resonance imaging (MRI), and multiple other imaging and neuropsychological tests; electrocorticography; and magnetoencephalography. ~~(Park et al., 2015). Furthermore, Park and others cite three other studies demonstrating~~ Studies have demonstrated "that dipole source models can be successfully employed to detect the epileptogenic foci of interictal epileptiform discharges"[6] ~~(2015)~~. Park and others agree with the AAN and ACNS that digital EEG spike analysis is "recommended for the presurgical evaluation of intractable epilepsy patients[6] ~~(2015)~~.

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. Inclusion or exclusion of any codes in this policy does not guarantee coverage and may not support medical necessity. 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	Procedure codes that support medical necessity criteria
95957	Digital EEG spike analysis when performed in conjunction with any of the following:

CPT®* Codes	Procedure codes that support medical necessity criteria
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 to -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, 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, with video (VEEG)

ICD-10-CM Diagnosis Codes that Support Coverage Criteria
+ indicates a code requiring an additional character

ICD-10-CM Code	Diagnosis codes that support medical necessity criteria
G40.011	Localization-related (focal) (partial) idiopathic epilepsy and epileptic syndromes with seizures of localized onset, intractable, with status epilepticus
G40.019	Localization-related (focal) (partial) idiopathic epilepsy and epileptic syndromes with seizures of localized onset, intractable, without status epilepticus
G40.111	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, intractable, with status epilepticus
G40.119	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, intractable, without status epilepticus
G40.211	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, intractable, with status epilepticus
G40.219	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, intractable, without status epilepticus
G40.311	Generalized idiopathic epilepsy and epileptic syndromes, intractable, with status epilepticus

ICD-10-CM Code	Diagnosis codes that support medical necessity criteria
G40.319	Generalized idiopathic epilepsy and epileptic syndromes, intractable, without status epilepticus
G40.411	Other generalized epilepsy and epileptic syndromes, intractable, with status epilepticus
G40.419	Other generalized epilepsy and epileptic syndromes, intractable. without status epilepticus
G40.803	Other epilepsy, intractable, with status epilepticus
G40.804	Other epilepsy, intractable, without status epilepticus
G40.813	Lennox-Gastaut syndrome, intractable, with status epilepticus
G40.814	Lennox-Gastaut syndrome, intractable, without status epilepticus
G40.823	Epileptic spasms, intractable, with status epilepticus
G40.824	Epileptic spasms, intractable, without status epilepticus
G40.911	Epilepsy, unspecified, intractable, with status epilepticus
G40.919	Epilepsy, unspecified, intractable, without status epilepticus
G40.A11	Absence epileptic syndrome, intractable, with status epilepticus
G40.A19	Absence epileptic syndrome, intractable, without status epilepticus
G40.B11	Juvenile myoclonic epilepsy, intractable, with status epilepticus
G40.B19	Juvenile myoclonic epilepsy, intractable without status epilepticus

Reviews, Revisions, and Approvals	Revision Date	Approval Date
Converted corporate to local policy.	08/15/2020	
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. Reviewed by specialist. Added "and may not support medical necessity" to coding implications.	10/2022	

References

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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. LHCC 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.

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Providers referred to in this clinical policy are independent contractors who exercise independent judgment and over whom LHCC has no control or right of control. Providers are not agents or employees of LHCC.