

Clinical Policy: Digital EEG Spike Analysis

Reference Number: CP.MP.105

Last Review Date: 01/19

[Coding Implications](#)

[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 (ACNS, 2008). For the purpose of this policy, digital EEG spike analysis refers to additional analysis of digitally recorded EEG spikes by a physician and/or technician. Digital EEG spike analysis is also called 3D dipole localization or dipole source imaging.

Policy/Criteria

- I. It is the policy of health plans affiliated with Centene Corporation® that digital EEG spike analysis is **medically necessary** for members meeting the following criteria:
 - A. Intractable epilepsy with a need for presurgical evaluation including topographic voltage and/or dipole analysis in conjunction with any of the following:
 1. Video EEG
 2. Quantitative EEG
- II. It is the policy of health plans affiliated with Centene Corporation® 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 (2008). Ambulatory EEG, video EEG, and routine EEG all use digital technology and usually incorporate automatic spike detection. 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 (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 (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" (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 some circumstances in which further analysis of the EEG is required, beyond the automatic digital spike analysis.

The ACNS states that in general, 3D dipole localization would require an extra hour of work by a technician, and 20-30 minutes of physician time to review the technician's work and data produced. Moreover, digital EEG analysis by 3D dipole localization is an advanced procedure that is most commonly used at epilepsy surgery centers, where staff are familiar with how to

CLINICAL POLICY

Digital EEG Spike Analysis

perform it. 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” (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 “that dipole source models can be successfully employed to detect the epileptogenic foci of interictal epileptiform discharges” (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 (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 2019, 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. 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:
95830	Insertion by physician or other qualified health care professional of sphenoidal electrodes for electroencephalographic (EEG) recording
95950	Monitoring for identification and lateralization of cerebral seizure focus, electroencephalographic (eg, 8 channel EEG) recording and interpretation, each 24 hours

CPT®* Codes	Procedure codes that support medical necessity criteria
95951	Monitoring for localization of cerebral seizure focus by cable or radio, 16 or more channel telemetry, combined electroencephalographic (EEG) and video recording and interpretation (eg, for presurgical localization), each 24 hours
95953	Monitoring for localization of cerebral seizure focus by computerized portable 16 or more channel EEG, electroencephalographic (EEG) recording and interpretation, each 24 hours, unattended
95954	Pharmacological or physical activation requiring physician or other qualified health care professional attendance during EEG recording of activation phase (eg, thiopental activation test)
95955	Electroencephalogram (EEG) during nonintracranial surgery (eg, carotid surgery)
95956	Monitoring for localization of cerebral seizure focus by cable or radio, 16 or more channel telemetry, electroencephalographic (EEG) recording and interpretation, each 24 hours, attended by a technologist or nurse
95958	Wada activation test for hemispheric function, including electroencephalographic (EEG) monitoring

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
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

ICD-10-CM Code	Diagnosis codes that support medical necessity criteria
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	Date	Approval Date
Policy created.	1/16	1/16
References reviewed and updated. Added 6 th digit to ICD 10 coding to clarify with or without status epilepticus, no codes added.	12/16	1/17
References reviewed and updated.	12/17	01/18
References reviewed and updated.	01/19	01/19

References

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6. Moeller J, Haider AH, Hirsch LJ. Electroencephalography (EEG) in the diagnosis of seizures and epilepsy. In: UpToDate. Garcia P (Ed) UpToDate, Waltham, MA. Accessed January 2, 2019.
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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. 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.

The purpose of this clinical policy is to provide a guide to medical necessity, which is a component of the guidelines used to assist in making coverage decisions and administering benefits. It does not constitute a contract or guarantee regarding payment or results. Coverage decisions and the administration of benefits are subject to all terms, conditions, exclusions and limitations of the coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of insurance, etc.), as well as to state and federal requirements and applicable Health Plan-level administrative policies and procedures.

This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members. This clinical policy is not intended to recommend treatment for members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

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CLINICAL POLICY

Digital EEG Spike Analysis

Note: For Medicaid members, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at <http://www.cms.gov> for additional information.

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