

Clinical Policy: Digital EEG Spike Analysis

Reference Number: CP.MP.105

Date of Last Revision: 09/24

Effective Date: 01/01/2025

[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.¹ Most EEGs today are performed on digital machines, which record data and automatically detect spikes that may indicate seizures.² For the purpose of this policy, digital EEG spike analysis, also known as 3D dipole localization or dipole source imaging, refers to additional analysis of digitally recorded EEG spikes by a technician and a physician.

Policy/Criteria

- I. It is the policy of health plans affiliated with Centene Corporation® that digital electroencephalography (EEG) spike analysis, including topographic voltage and/or dipole analysis, is **medically necessary** for the pre-surgical evaluation of members/enrollees with intractable epilepsy, in conjunction with video EEG long-term monitoring.
- 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 electroencephalography (EEG) is the industry standard.² 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. 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.³

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 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.⁴ Studies have demonstrated "that dipole source models can be successfully employed to detect the

epileptogenic foci of interictal epileptiform discharges.”^{4(p320)} Therefore, digital EEG spike analysis is recommended for the presurgical evaluation of intractable epilepsy patients.⁴

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. 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 analysis of electroencephalogram (EEG) (eg, for epileptic spike analysis) *when performed in conjunction with any of the following:
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, two 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 of EEG recording, 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

ICD-10-CM Code	Diagnosis codes that support medical necessity criteria
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
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
G40.C11	Lafora progressive myoclonus epilepsy, intractable, with status epilepticus
G40.C19	Lafora progressive myoclonus epilepsy, intractable, without status epilepticus

Reviews, Revisions, and Approvals	Revision Date	Approval Date
Policy created.	1/16	1/16
Replaced “members” with “members/enrollees” in all instances. References reviewed and updated.	12/20	1/21
Changed “review date” in the header to “date of last revision” and “date” in the revision log header to “revision date.”	10/21	10/21

Reviews, Revisions, and Approvals	Revision Date	Approval Date
References reviewed, updated, and reformatted. Reviewed by specialist.		
Annual review. References reviewed and updated.	09/22	09/22
Annual review. Minor rewording in Criteria I. Background updated with no impact on criteria. References reviewed and updated. Reviewed by external specialist.	09/23	09/23
Added new for 2024 ICD-10 codes G40.C11 and G40.C19 to ICD-10 coding table.	01/24	
In the coding description for 95957, added a note that was previously removed in error stating that it is performed in conjunction with any of the CPT codes below it. Annual review. Background updated with no impact on criteria. References reviewed and updated.	09/24	09/24

References

1. Moeller J, Haider HA, Hirsch LJ. Electroencephalography (EEG) in the diagnosis of seizures and epilepsy. UpToDate. www.uptodate.com. Published July 22, 2024. Accessed August 08, 2024.
2. American Clinical Neurophysiology Society. Guideline twelve: guidelines for long-term monitoring for epilepsy. *J Clin Neurophysiol*. 2008;25(3):170 to 180. doi:10.1097/WNP.0b013e318175d472
3. Cascino GD. Surgical treatment of epilepsy in adults. UpToDate. www.uptodate.com. Published June 24, 2024. Accessed August 06, 2024.
4. Park CJ, Seo JH, Kim D, et al. EEG Source Imaging in Partial Epilepsy in Comparison with Presurgical Evaluation and Magnetoencephalography. *J Clin Neurol*. 2015;11(4):319 to 330. doi:10.3988/jcn.2015.11.4.319
5. Bencizky S, Rosenzweig I, Scherq M, et al. Ictal EEG source imaging in presurgical evaluation: High agreement between analysis methods. *Seizure*. 2016;43:1 to 5. doi: 10.1016/j.seizure.2016.09.017
6. Staljanse W, Strobbe G, Van Holen R, et al. EEG source connectivity to localize the seizure onset zone in patients with drug resistant epilepsy. *Neuroimage Clin*. 2017;16:689 to 698. Published 2017 Sep 14. doi:10.1016/j.nicl.2017.09.011
7. Sharma P, Scherg M, Pinborg LH, et al. Ictal and interictal electric source imaging in pre-surgical evaluation: a prospective study. *Eur J Neurol*. 2018;25(9):1154 to 1160. doi: 10.1111/ene.13676
8. Lu Y, Yang L, Worrell GA, He B. Seizure source imaging by means of FINE spatio-temporal dipole localization and directed transfer function in partial epilepsy patients. *Clin Neurophysiol*. 2012;123(7):1275 to 1283. doi:10.1016/j.clinph.2011.11.007
9. Local coverage determination: special EEG tests (L34521). Centers for Medicare and Medicaid Services Web site. <http://www.cms.hhs.gov/mcd/search.asp>. Published October 01, 2015 (revised January 08, 2019). Accessed August 06, 2024.

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

CLINICAL POLICY

Digital EEG Spike Analysis

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/enrollees. This clinical policy is not intended to recommend treatment for members/enrollees. Members/enrollees should consult with their treating physician in connection with diagnosis and treatment decisions.

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

This clinical policy is the property of the Health Plan. Unauthorized copying, use, and distribution of this clinical policy or any information contained herein are strictly prohibited. Providers, members/enrollees and their representatives are bound to the terms and conditions expressed herein through the terms of their contracts. Where no such contract exists, providers, members/enrollees and their representatives agree to be bound by such terms and conditions by providing services to members/enrollees and/or submitting claims for payment for such services.

Note: For Medicaid members/enrollees, 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/enrollees, 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.

©2016 Centene Corporation. All rights reserved. All materials are exclusively owned by Centene Corporation and are protected by United States copyright law and international copyright law. No part of this publication may be reproduced, copied, modified, distributed, displayed, stored in a retrieval system, transmitted in any form or by any means, or otherwise published without the prior written permission of Centene Corporation. You may not alter or remove any trademark, copyright or other notice contained herein. Centene[®] and Centene Corporation[®] are registered trademarks exclusively owned by Centene Corporation.