Clinical Policy: Electromyography and Nerve Conduction Studies

Reference Number: CP.MP.211 Coding Implications
Last Review Date: 04/21 Revision Log

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

Description

The electrodiagnostic medicine (EDX) evaluation is considered to be an important extension of the clinical evaluation of patients with disorders of the peripheral and/or central nervous system. EDX is used to evaluate the integrity and function of the peripheral nervous system (most cranial nerves, spinal roots, plexi, and nerves, neuromuscular junction, muscles), and the central nervous system (brain and spinal cord). Complaints of clinical problems of weakness, loss of sensation, atrophy, pain, and paresthesias can be investigated by these methods. EDX encompasses a range of specialized tests, including nerve conduction studies (NCS) and needle electromyography (EMG). This policy addresses the medical necessity criteria for EMG and NCS.

Policy/Criteria

I. It is the policy of health plans affiliated with Centene Corporation® that nerve conduction studies and needle electromyography are **medically necessary** when all of the following criteria are met:

A. Any of the following indications:
   1. Localization of focal neuropathies, entrapment neuropathies, or compressive lesions/syndromes (e.g., carpal tunnel syndrome, ulnar neuropathies, or root lesions);
   2. Diagnosis and prognosis of traumatic nerve lesions;
   3. Diagnosis or confirmation of generalized neuropathies [e.g., diabetic, uremic, metabolic, toxic, hereditary or immune-mediated, motor system disease (amyotrophic lateral sclerosis), and myopathies (including endocrine)];
   4. Repetitive nerve stimulation in diagnosis of neuromuscular junction disorders (e.g., myasthenia gravis, myasthenic syndrome, or botulism);
   5. Symptom-based presentations [e.g., pain in limb, facial weakness (including trigeminal nerve (cranial nerve V) and facial nerve (cranial nerve VII), disturbance of skin sensation or paraesthesia] when appropriate pre-test evaluations are inconclusive and the clinical assessment unequivocally supports the need for the study;
   6. Radiculopathy: cervical, thoracic, lumbosacral;
   7. Plexopathy (e.g., brachial plexopathy, idiopathic, traumatic, inflammatory or infiltrative);
   8. Myopathy (i.e., polymyositis, dermatomyositis, myotonic disorders, and congenital myopathies);
   9. Identification of precise muscle location for injections such as botulinum toxin, phenol, etc.;

B. One of the following:
   1. NCS and needle EMG will be performed together on the same day;
   2. NCS without EMG, both of the following:
      a. Signs and symptoms of carpal tunnel syndrome, confirmed by NCS, without suspicion for other etiologies;
      b. Surgery is not contemplated;

Note: The extent of the needle EMG examination depends on the results of the NCS and the differential diagnosis considered in the individual patient. Additional testing with EMG is indicated in patients with a differential diagnosis which includes nerve compression, peripheral neuropathy, cervical radiculopathy, brachial plexopathy, or more proximal median neuropathy.

C. NCS and needle EMG are performed and interpreted by one of the following providers, properly trained and/or credentialed in EDX medicine: Physician with special training in the diagnosis and treatment of neuromuscular diseases (i.e., neurologist, physiatrist) or non-physician providers, (e.g., physical therapists, chiropractors, physician assistants, appropriately trained technologists), performed under direct supervision of a physician or a non-physician who has completed special training in the diagnosis and treatment of neuromuscular diseases;
D. Testing uses EDX equipment that provides assessment of all parameters of the recorded signals. Studies performed with devices designed only to screen patients for a specific illness are considered **not medically necessary;**
E. The number of tests performed are the minimum needed to establish an accurate diagnosis.

II. It is the policy of health plans affiliated with Centene Corporation® that NCS are **not medically necessary** for either of the following:
A. NCS performed for screening or monitoring disease intensity or treatment efficacy for diabetic polyneuropathy or end stage renal disease;
B. NCS performed with automated, noninvasive nerve conduction testing devices (e.g., NC-stat System, Brevio® nerve conduction monitoring system).

III. It is the policy of health plans affiliated with Centene Corporation® that needle EMG is **not medically necessary** for any of the following:
A. Exclusive testing of intrinsic foot muscles in the diagnosis of proximal lesions;
B. Definitive diagnostic conclusions based on paraspinal EMG in regions bearing scar of past surgeries (e.g., previous laminectomies);
C. Pattern-setting limited limb muscle examinations, without paraspinal muscle testing for a diagnosis of radiculopathy;
D. Testing shortly after trauma, before needle EMG abnormalities would have reasonable time to develop;
E. Surface and macro EMGs;
F. Multiple uses of needle EMG in the same patient at the same location for the purpose of optimizing botulinum toxin injections.

IV. In most all cases, repeat EDX testing should not be necessary in a 12-month period. Repeat NCS/EMG testing may be considered **medically necessary**, when the appropriate clinical documentation is provided, for any of the following:
A. New symptoms requiring further evaluation for a second diagnosis to guide treatment;
B. Results of the needle EMG/NCS are inconclusive (i.e., amyotrophic lateral sclerosis);
C. Follow-up testing to establish prognosis and monitor patient status in rapidly evolving disease (e.g. Guillain-Barré syndrome);

D. Monitor disease progression and therapeutic response to guide treatment decisions in the fluctuating course of disease (e.g., polymyositis, myasthenia gravis);
E. Management of unexpected progression of disease;
F. Second opinion evaluations;
G. Monitor recovery, assist to establish prognosis, determine the need for and timing of surgical intervention (e.g., traumatic nerve injury), and/or assess recovery over time following peripheral nerve surgery.

Background

NCS and needle EMG should be performed and interpreted at the same time in the majority of test situations. Performance of one does not eliminate the need for the other. This is particularly important in patients with suspected radiculopathy, plexopathy, myopathy, motor neuropathy, or motor neuron disease.

Nerve conduction studies

NCS are performed to assess the integrity and diagnose diseases of the peripheral nervous system. NCS assess action potentials resulting from peripheral nerve stimulation which are recordable over the nerve or from an innervated muscle, the speed (conduction velocity and/or latency), size (amplitude), and shape of the response. Pathological findings include conduction slowing, conduction block, or reduced response. Results of the NCS reflect on the integrity and function of the myelin sheath, and the axon of a nerve.[2]

Motor, sensory, and mixed NCS and late responses (F-wave and H-reflex studies) are frequently complementary and performed during the same patient evaluation:

- Motor NCS are performed by applying electrical stimulation at various points along the course of a motor nerve while recording the electrical response from an appropriate muscle. Response parameters include amplitude, latency, configuration, and motor conduction velocity.
- Sensory NCS are performed by applying electrical stimulation near a nerve and recording the response from a distant site along the nerve. Response parameters include amplitude, latency, configuration, and sensory conduction velocity.
- Mixed NCS are performed by applying electrical stimulation near a nerve containing both motor and sensory fibers (a mixed nerve) and recording from a different location along that nerve that also contains both motor and sensory nerve fibers. Response parameters include amplitude, latency, configuration, and both sensory and motor conduction velocity.
- Late Responses: H-Reflex and F-Wave Studies:
  - Late responses are performed to evaluate nerve conduction in more proximal portions of the nerve that are inaccessible to direct assessment using conventional techniques. Electrical stimulation is applied on the skin surface near a nerve site in a manner that sends impulses both proximally and distally.
  - F-wave and H-reflex studies provide information in the evaluation of radiculopathies, plexopathies, polyneuropathies (especially with multifocal conduction block, Guillain-Barré syndrome or chronic inflammatory demyelinating polyneuropathy), and proximal mononeuropathies.

Needle Electromyography
EMG is the clinical study of the electrical activity of motor units and their muscle fibers, individually and collectively. EMG typically evaluates electrical activity with the muscle at rest and during periods of voluntary muscle contraction.[5] EMG testing relies on both auditory and visual feedback, and is invasive in that it requires needle electrode insertion and adjustment at multiple sites, and at times anatomically critical sites. As in NCS, during EMG studies the electromyographer depends on ongoing real-time interpretation of clinical diagnoses being evaluated to decide whether to continue, modify, or conclude a test.

Frequency of Testing
The following table summarizes the American Association of Neuromuscular & Electrodiagnostic's (AANEM) recommendations regarding a reasonable maximum number of studies per diagnostic category necessary for a physician to arrive at a diagnosis in 90% of patients with that final diagnosis[2]

	Limbs studied by needle EMG	Nerve Conduction Studies (Total nerve studied, 95907-95913)	Neuromuscular Junction Testing (Repetitive Stimulation)
Indication	Number of Services (Tests)	Number of Services (Tests)	Number of Services (Tests)
Carpal Tunnel (unilateral)	1	7	N/A-
Carpal Tunnel (bilateral)	2	10	N/A-
Radiculopathy	2	7	N/A-
Mononeuropathy	1	8	N/A
Polyneuropathy/ Mononeuropathy Multiplex	3	10	N/A
Myopathy	2	4	2
Motor neuropathy (e.g. ALS)	4	6	2
Plexopathy	2	12	N/A
Neuromuscular Junction	2	2	3
Tarsal Tunnel Syndrome (unilateral)	1	8	N/A
Tarsal Tunnel Syndrome (bilateral)	2	11	N/A
Weakness, Fatigue, Cramps, or Twitching (focal)	2	7	2
Weakness, Fatigue, Cramps, or Twitching (general)	4	8	2
Pain, Numbness, or Tingling (unilateral)	1	9	N/A
Pain, Numbness, or Tingling (bilateral)	2	12	N/A

Coding Implications

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CPT® Codes That Support Coverage Criteria

CPT® Codes	Description
95860	Needle electromyography; 1 extremity with or without related paraspinal areas
95861	Needle electromyography; 2 extremities with or without related paraspinal areas
95863	Needle electromyography; 3 extremities with or without related paraspinal areas
95864	Needle electromyography; 4 extremities with or without related paraspinal areas
95865	Needle electromyography; larynx
95866	Needle electromyography; hemidiaphragm
95867	Needle electromyography; cranial nerve supplied muscle(s), unilateral
95868	Needle electromyography; cranial nerve supplied muscles, bilateral
95869	Needle electromyography; thoracic paraspinal muscles (excluding T1 or T12)
95870	Needle electromyography; limited study of muscles in 1 extremity or non-limb (axial) muscles (unilateral or bilateral), other than thoracic paraspinal, cranial nerve supplied muscles, or sphincters
95872	Needle electromyography using single fiber electrode, with quantitative measurement of jitter, blocking and/or fiber density, any/all sites of each muscle studied
95885	Needle electromyography, each extremity, with related paraspinal areas, when performed, done with nerve conduction, amplitude and latency/velocity study; limited (List separately in addition to code for primary procedure)
95886	Needle electromyography, each extremity, with related paraspinal areas, when performed, done with nerve conduction, amplitude and latency/velocity study; complete, five or more muscles studied, innervated by three or more nerves or four or more spinal levels (List separately in addition to code for primary procedure)
95887	Needle electromyography, non-extremity (cranial nerve supplied or axial) muscle(s) done with nerve conduction, amplitude and latency/velocity study (List separately in addition to code for primary procedure)
95907	Nerve conduction studies; 1-2 studies
95908	Nerve conduction studies; 3-4 studies
95909	Nerve conduction studies; 5-6 studies
95910	Nerve conduction studies; 7-8 studies
95911	Nerve conduction studies; 9-10 studies

CPT® Codes	Description
95912	Nerve conduction studies; 11-12 studies
95913	Nerve conduction studies; 13 or more studies

CPT® Codes That Do Not Support Coverage Criteria

CPT® Codes	Description
95905	Motor and/or sensory nerve conduction, using preconfigured electrode array(s), amplitude and latency/velocity study, each limb, includes F-wave study when performed, with interpretation and report

HCPCS Codes	Description
N/A	

ICD-10-CM Diagnosis Codes that Support Coverage Criteria

+ Indicates a code requiring an additional character

ICD-10-CM Code	Description
A05.1	Botulism food poisoning
G12.21	Amyotrophic lateral sclerosis
G50.0-G50.9	Disorders of the trigeminal nerve
G51.0-G51.2	Facial nerve disorders
G54.0-G54.9	Nerve root and plexus disorders
G54.0	Brachial plexus disorders
G54.1	Lumbosacral plexus disorders
G56.00-G56.03	Carpal Tunnel Syndrome
G56.10-G56.13	Other lesions of the median nerve
G56.20-G56.23	Lesion of ulnar nerve
G56.30-G56.33	Lesion of radial nerve
G57.00-G57.03	Lesion of sciatic nerve
G57.20-G57.23	Lesion of femoral nerve
G57.30-G57.33	Lesion of lateral popliteal nerve
G57.40-G57.43	Lesion of medial popliteal nerve
G58.9	Mononeuropathy, unspecified
G60.0	Hereditary motor and sensory neuropathy

ICD-10-CM Code	Description
G61.0	Guillain-Barre syndrome
G62.9	Polyneuropathy, unspecified
G65.0-G65.2	Sequelae of inflammatory and toxic polyneuropathies
G70.00-G70.01	Myasthenia gravis
G70.80	Lambert-Eaton syndrome, unspecified
G70.81	Lambert-Eaton syndrome in disease classified elsewhere
G71.20	Congenital myopathy, unspecified
G72.89	Other specified myopathies
G72.9	Myopathy, unspecified
H02.401-H02.409	Unspecified ptosis of eyelid
M21.371-M21.379	Foot drop (acquired)
M33.00-M33.99	Dermatopolymyositis
M54.12	Radiculopathy, cervical region
M54.16	Radiculopathy, lumbar region
M62.541-M62.549	Muscle wasting and atrophy, not elsewhere classified, hand
M62.81	Muscle weakness (generalized)
M79.2	Neuralgia and neuritis, unspecified

Reviews, Revisions, and Approvals	Date	Approval Date
Policy developed	03/21	04/21

References

1. American Association of Neuromuscular & Electrodiagnostic Medicine. AANEM Position Statement: Overview of Electrodiagnostic Medicine. Approved 1999. Revised and reapproved June 2013.
2. American Association of Neuromuscular & Electrodiagnostic Medicine Model Policy for Needle Electromyography and Nerve Conduction Studies. Feb 2010. Updated and reapproved January 2016.
3. American Association of Neuromuscular & Electrodiagnostic Medicine Position Statement. Who is Qualified to Practice Electrodiagnostic Medicine? Approved May 1999. Updated and reapproved November 2017. Endorsed by the American Academy of Physical Medicine & Rehabilitation: December 2019.
4. Henderson R, Gooch CL, Horowitz AH. Overview of nerve conduction studies. UpToDate Shefner JM (Ed) UpToDate. Updated January 25, 2021. Accessed March 9, 2021.
5. Gooch CL, Henderson R, Horowicz SH. Overview of electromyography. UpToDate. Shefner JM (Ed) UpToDate Updated February 21, 2021. Accessed March 9, 2021.

6. Kothari MJ. Carpal tunnel syndrome: Clinical manifestations and diagnosis. UpToDate. Shefner JM (Ed) UpToDate, Updated June 8, 2020. Accessed March 16, 2021.
7. Munin MC, Heman-Ackah YD, Rosen CA, et al. Consensus Statement: Using Laryngeal EMG for the Diagnosis and Treatment of Vocal Cord Paralysis. Muscle Nerve. 2016 Jun;53(6):850-5. doi: 10.1002/mus.25090. Epub 2016 Apr 9.
8. American Association of Electrodiagnostic Medicine. Practice Parameter for Electrodiagnostic Studies in Carpal Tunnel Syndrome: Summary Statement, Muscle Nerve 25: 918.922, 2002

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/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.

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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.