MASSACHUSETTS

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Medical Policy

Automated Point of Care Nerve Conduction Tests

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Policy Number: 222

BCBSA Reference Number: 2.01.77
NCD/LCD: NA

Related Policies

Quantitative Sensory Testing, #258

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity Medicare HMO Blue℠ and Medicare PPO Blue℠ Members

Automated point-of-care nerve conduction tests are considered **INVESTIGATIONAL**.

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	This is **not** a covered service.
Commercial PPO and Indemnity	This is **not** a covered service.
Medicare HMO Blue℠	This is **not** a covered service.
Medicare PPO Blue℠	This is **not** a covered service.

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.
The following codes are included below for informational purposes only; this is not an all-inclusive list.

The following CPT code is considered investigational for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

CPT codes:	Code 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

Description

Electrodiagnostic Testing
Nerve conduction studies (NCSs) and needle electromyography (EMG), when properly performed by a trained practitioner, are considered the criterion standard of electrodiagnostic testing for the evaluation of focal and generalized disorders of peripheral nerves. However, the need for specialized equipment and personnel may limit the availability of electrodiagnostic testing for some patients.

Carpal Tunnel Syndrome
Carpal tunnel syndrome is a pressure-induced entrapment neuropathy of the median nerve as it passes through the carpal tunnel, resulting in sensorimotor disturbances. This syndrome is defined by its characteristic clinical symptoms, which may include pain, subjective feelings of swelling, and nocturnal paresthesia.

Diagnosis
A variety of simple diagnostic tools are available, and a positive response to conservative management (steroid injection, splints, modification of activity) can confirm the clinical diagnosis.[1,] Electrodiagnostic studies may also be used to confirm the presence or absence of median neuropathy at the wrist, assess the severity of the neuropathy, and assess associated diagnoses. Nerve conduction is typically assessed before the surgical release of the carpal tunnel, but the use of EMG in the diagnosis of carpal tunnel syndrome is controversial. One proposed use of automated nerve conduction devices is to assist in the diagnosis of carpal tunnel syndrome.

Lumbosacral Radiculopathy
Electrodiagnostic studies are useful in the evaluation of lumbosacral radiculopathy in the presence of disabling symptoms of radiculopathy or neuromuscular weakness. These tests are most commonly considered in patients with persistent disabling symptoms when neuroimaging findings are inconsistent with clinical presentation. Comparisons of automated point-of-care (POC) NCSs with EMGs and standardized NCSs have been evaluated as alternative electrodiagnostic tools.

Peripheral Neuropathy
Peripheral neuropathy is relatively common in patients with diabetes, and the diagnosis is often made clinically through the physical examination. Diabetic peripheral neuropathy can lead to morbidity including pain, foot deformity, and foot ulceration.

Diagnosis
Clinical practice guidelines have recommended using simple sensory tools such as the 10-g Semmes-Weinstein monofilament or the 128-Hz vibration tuning fork for diagnosis.[2,] These simple tests predict the presence of neuropathy defined by electrophysiologic criteria with a high level of accuracy. Electrophysiologic testing may be used in research studies and may be required in cases with an atypical presentation. POC nerve conduction testing has been proposed as an alternative to standard electrodiagnostic methods for the diagnosis of peripheral neuropathy and, in particular, for detecting neuropathy in patients with diabetes.

Normative Values
NeuroMetrix (2009) published reference ranges for key nerve conduction parameters in healthy subjects.[3,] Data analyzed were pooled from 5 studies, including from 92 to 848 healthy subjects with data on the median, ulnar, peroneal, tibial, and sural nerves. Subject age and height were found to affect the parameters. In addition to providing reference ranges for clinicians to use (providing that NCS techniques are consistent with those described in the article), the authors stated that clinicians could use the same method to develop their reference ranges. At this time, the proposed reference ranges have not been validated in a clinical patient population.

Due to the lack of uniform standards in nerve conduction testing in the United States, the American Association of Neuromuscular & Electrodiagnostic Medicine (AANEM) identified 7 criteria that would identify high-quality NCS articles that would be appropriate for using as reference standards (2016).[4] AANEM identified normative criteria for nerve conduction velocity tests based on a review of high-quality published studies (see Table 1). In March 2017, the American Academy of Neurology affirmed AANEM's recommendations.[4,]

Table 1. Criteria for Evaluating Published Sources for Normative Standards

Criteria	Description
Year Published	Published during or after 1990, written in or translated from other languages into English
Sample Size	>100 normal subjects
Subjects	Inclusion and exclusion criteria must be methodologically sound and reflect a true "normal" group of asymptomatic individuals
Testing Factors	• Use of digital electromyographic equipment • Methods of temperature control stated • Testing techniques with electrode placement and distances between simulating and recording electrodes specified • Filter settings specified • Screen display parameters (milliseconds per division, microvolts/millivolts per division) specified
Age	Wide distribution of subject ages >18 years with adequate sampling of the elderly
Statistical analyses	• Data distribution should be described, and appropriate statistical methods used to account for non-Gaussian distributions • Cutoff values expressed and derived as percentiles of the distribution (the preferred method) • Percentage of subjects who have an absent response should be reported

Data presentation	Reference values and cutoff points for NCS parameters clearly presented in a useful format

Adapted from Dillingham et al (2016).[5,]

NCS: nerve conduction study.

Chen (2016) published reference values for upper and lower NCSs in adults, as a companion study to the Dillingham et al (2016) report (above), to address the need for greater standardization in the field of electrodiagnostic medicine.[6,]Using the consensus-based criteria developed by AANEM, a comprehensive literature search was conducted for 11 routinely performed sensory and motor NCS from 1990 to 2012. Over 7500 articles were found, but after review, a single acceptable study meeting all criteria was identified for the 11 nerves. Reviewers determined there were multifactorial reasons that so few studies met the criteria. Large-scale normative studies are time intensive, requiring significant resources and cost. Data from many studies did not address the non-Gaussian distribution of NCS parameters and often derived cutoff values using the mean and standard deviations rather than percentiles.

Summary

Portable devices have been developed to provide point-of-care (POC) nerve conductions studies (NCSs). These devices have computational algorithms that can drive stimulus delivery, measure and analyze the response, and report study results. Automated nerve conduction could be used in various settings, including primary care, without the need for specialized training or equipment.

For individuals who have entrapment carpal tunnel syndrome who received automated POC NCSs, the evidence includes studies on the diagnostic accuracy and clinical outcomes from industry-sponsored trials, nonrandomized trials, and registry data. Relevant outcomes are test accuracy and validity, symptoms, and functional outcomes. Four RCTs have reported on the diagnostic accuracy of automated POC nerve conduction testing to diagnose carpal tunnel syndrome. Sensitivity testing has suggested there could be diagnostic value in detecting carpal tunnel syndrome; specificity testing was inconsistent across trials. No reference ranges were validated, and normative values were not defined in these studies. No validation testing by trained medical assistants vs trained specialist was reported in the studies. The evidence on clinical outcomes is limited to a single nonrandomized clinical trial and NeuroMetrix registry data. Neither reported health outcomes assessing patient symptoms or changes in functional status. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with lumbosacral radiculopathy who received automated POC NCSs, the evidence includes industry-sponsored trials and a nonrandomized study of diagnostic accuracy. Relevant outcomes are test accuracy and validity, symptoms, and functional outcomes. The evidence on the diagnostic accuracy of POC NCS in this population has shown variable test results across reported trials. No normative values were defined. Weaknesses of the studies included lack of applicable or valid reference ranges for testing, and variable test results validating or confirming pathology. The results of the 2 studies on diagnostic performance were inconclusive, with high false-positive results in a single trial. No trials on health outcomes assessing patient symptoms or changes in functional status were identified. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with diabetic peripheral neuropathy who received automated POC NCSs, the evidence includes industry-sponsored observational trials and nonrandomized studies on the diagnostic accuracy. Relevant outcomes are test accuracy and validity, symptoms, and functional outcomes. Of 3studies reporting evidence on diagnostic accuracy, two used NC-stat DPN Check. Sensitivity testing has suggested there could be diagnostic value in detecting diabetic peripheral neuropathy in symptomatic patients; the evidence to detect patients who are suspected of disease but who have mild symptoms was inconsistent. No reference ranges were validated, and normative values were not defined in 2 of the3studies. No validation testing by trained medical assistants vs trained specialist was reported in the

studies. No trials on health outcomes assessing patient symptoms or changes in functional status were identified. The evidence is insufficient to determine the effects of the technology on health outcomes.

Policy History

Date	Action
8/2019	BCBSA National medical policy review. Description, summary and references updated. Policy statements unchanged.
7/2018	New references added from BCBSA National medical policy. Background and summary clarified.
9/2017	New references added from BCBSA National medical policy.
11/2015	Added coding language.
8/2015	New references added from BCBSA National medical policy.
4/2013	New references from BCBSA National medical policy.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
1/2011	Medical Policy Group – Neurology and Neurosurgery. No changes to policy statements.
10/18/2010	No changes to policy statements.
8/1/2010	Medical Policy 222 effective 8/1/2010 describing ongoing non-coverage.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:
Medical Policy Terms of Use
Managed Care Guidelines
Indemnity/PPO Guidelines
Clinical Exception Process
Medical Technology Assessment Guidelines

References

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