



BlueShield
of Northeastern New York

A Division of HealthNow New York Inc. An Independent Licensee of the BlueCross BlueShield Association

Protocol

Quantitative Sensory Testing

(20139)

Effective July 15, 2004

Contracts Affected:
All Community Blue HMO
Senior Blue/Medicare PPO
Traditional Blue

The following protocol contains medical necessity criteria for Quantitative Sensory Testing services rendered on or after July 15, 2004 for BlueShield of Northeastern New York (BlueShield) contracts. If these criteria are not met, reimbursement will be denied and the patient cannot be billed. Please note that payment for covered services is subject to the limitations noted in the above-referenced contracts and the patient's eligibility at the time the services are rendered.

Description

Quantitative sensory testing (QST) systems are used for the noninvasive assessment and quantification of sensory nerve function in patients with symptoms of or the potential for neurologic damage or disease. QST systems measure and quantify the amount of physical stimuli required for sensory perception to occur in the patient. Stimuli used in QST includes touch, pressure, pain, thermal (warm and cold), or vibratory stimuli. Depending on the type of stimuli used, QST can assess small or large fiber dysfunction. QST with touch and vibration can evaluate large myelinated A alpha and A beta sensory fibers. Thermal stimuli can assess small myelinated fibers and unmyelinated sensory nerve function.

QST is used to assist in the diagnosis and management of a variety of conditions such as diabetic neuropathy and other uremic and toxic neuropathies, as well as carpal tunnel syndrome and other nerve entrapment/compression disorders or damage. QST has not been established for use as a sole tool for diagnosis and management but has been used in conjunction with standard evaluation and management procedures (e.g., physical and neurological examination, monofilament testing, pinprick, grip and pinch strength, Tinel, Phalen and Roos sign) to enhance the diagnosis and treatment planning process and confirm physical findings with quantifiable data. As sensory deficits increase, the perception threshold of QST will increase, which may be informative in documenting progression of neurologic damage or disease.

Because QST combines the objective physical sensory stimuli with the subject patient response, it is psychophysical in nature and requires that it is used in patients who are alert, able to follow directions, and cooperative. Due to the subjective component of testing, psychological factors must be taken into consideration during testing and in evaluating test results, thus reducing the degree of objectivity QST can provide.

Two QST methods are highlighted in this policy: current perception threshold testing and pressure-specified sensory device testing.

Current Perception Threshold Testing

Electromyographic nerve conduction (EMG-NCV) tests are diagnostic studies designed to evaluate the function of large myelinated nerve fibers, i.e., the motor nerves, and thus do not evaluate the function of smaller myelinated and unmyelinated sensory nerves, which may show pathologic changes before the involvement of the motor nerves. Current perception threshold testing, also referred to as sensory nerve conduction threshold (sNCT) testing, involves the quantification of the sensory threshold to transcutaneous electrical stimulation and thus has been explored as a technique to evaluate the sensory nerves. In current perception threshold testing, typically 3 different frequencies are tested: 5 Hz, designed

to assess C fibers; 250 Hz, designed to assess A-delta fibers; and 2,000 Hz, designed to assess A-beta fibers. Results are compared with those of a reference population. Current perception threshold testing has been investigated for a broad range of clinical applications, including evaluation of peripheral neuropathies, detection of carpal tunnel syndrome, spinal radiculopathy, evaluation of the effectiveness of peripheral nerve blocks, quantification of hypoesthetic and hyperesthetic conditions, and differentiation of psychogenic from neurologic disorders.

The Neurometer® Current Perception Threshold (Neurotron, Inc) and the Medi-Dx 7000® (Neuro Diagnostic Associates) are 2 devices with 510(k) marketing clearance from the U.S. Food and Drug Administration (FDA) for the use of measuring the threshold for sensory nerve conduction.

Pressure-Specified Sensory Testing

Pressure-specified sensory testing is a method to assess nerve function by quantifying the thresholds of pressure detected with light, static, and moving touch. The Nk Pressure-Specified Sensory Device™ (Nk Biotechnical Engineering) consists of 1 or 2 blunt probes and sensitive transducers to measure and record the perception thresholds of pressure on the surface of the body in grams per square millimeter. The device has been used to aid in the diagnosis and assessment of nerve function, including diabetic peripheral neuropathy, carpal tunnel syndrome, and other nerve entrapment or compression syndromes, and postoperative assessment of sensory outcomes after liposuction, breast reduction mammoplasty, etc. The Nk Pressure-Specified Sensory Device™ received FDA 510(k) marketing clearance in August 1994 (K934368).

Reports noted during the 2006 literature review continue to describe various potential uses for this testing. Some potential uses being described include use in identifying diabetics at risk for foot ulceration, in identifying superimposed entrapment neuropathy in those with diabetes, and in detecting abnormalities in patients with reflex sympathetic dystrophy.

Corporate Medical Guideline

Quantitative sensory testing, including current perception threshold testing and pressure-specified sensory device testing, is considered **investigational** because it has not been proven to improve health outcomes.

For explanation of experimental and investigational refer to the Technology Assessment Protocol.

BlueShield fully expects that only appropriate and medically necessary services will be rendered. BlueShield reserves the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures.

References

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5. Yamashita T, Kanaya K, Sekine M, et al. A quantitative analysis of sensory function in lumbar radiculopathy using current perception threshold testing. *Spine* 2002; 27(14):1567-70.
6. Park R, Wallace MS, Schulteis G. Relative sensitivity to alfentanil and reliability of current perception threshold vs. von Frey tactile stimulation and thermal sensory testing. *J Peripher Nerv Syst* 2001; 6(4):232-40.
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8. Howard M, Lee C, Dellon AL. Documentation of brachial plexus compression (in the thoracic inlet) utilizing provocative neurosensory and muscular testing. J Reconstr Microsurg 2003; 19(5):303-12.
9. Palmer ST, Martin DJ. Thermal perception thresholds recorded using method of limits change over brief time intervals. Somatosens Mot Res 2005; 22(4):327-34.
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Last Review Date

Reviewed with literature search/March 2008

Next Review Date

Review with literature search/March 2009