Corporate Medical Policy

Quantitative Sensory Testing

File Name: quantitative_sensory_testing
Origination: 11/2017
Last Review: 10/2024

Description of Procedure or Service

Quantitative sensory testing (QST) systems are used for the noninvasive assessment and quantification of sensory nerve function in individuals with symptoms of, or the potential for neurologic damage or disease. Types of sensory testing include current perception threshold testing, pressure-specified sensory testing (PSST), vibration perception testing (VPT), and thermal sensory testing. Information on sensory deficits identified using QST has been used in research settings to better understand neuropathic pain. It could be used to diagnose conditions linked to nerve damage and disease, and to improve individual outcomes by impacting management strategies.

QST systems measure and quantify the amount of physical stimuli required for sensory perception to occur. As sensory deficits increase, the perception threshold of QST will increase, which may be informative in documenting progression of neurologic damage or disease. QST has not been established for use as a sole tool for diagnosis and management but has been used with standard evaluative and management procedures (e.g., physical, and neurologic examination, monofilament testing, pinprick, grip and pinch strength, Tinel sign, and Phalen and Roos test) to enhance the diagnosis and treatment-planning process, and to confirm physical findings with quantifiable data. Stimuli used in QST includes touch, pressure, pain, thermal (warm and cold), or vibratory stimuli.

The criterion standard for evaluation of myelinated large fibers is the electromyography nerve conduction study. However, the function of smaller myelinated and unmyelinated sensory nerves, which may show pathologic changes before the involvement of the motor nerves, cannot be detected by nerve conduction studies. Small fiber neuropathy has traditionally been a diagnosis of exclusion in individuals who have symptoms of distal neuropathy and a negative nerve conduction study.

Depending on the type of stimuli used, QST can assess both small and large fiber dysfunction. Touch and vibration measure the function of large, myelinated A-alpha and A-beta sensory fibers. Thermal stimulation devices are used to evaluate pathology of small myelinated and unmyelinated nerve fibers; they can be used to assess heat and cold sensation, as well as thermal pain thresholds. Pressure-specified sensory devices assess large myelinated sensory nerve function by quantifying the thresholds of pressure detected with light, static, and moving touch. Finally, current perception threshold testing involves the quantification of the sensory threshold to transcutaneous electrical stimulation. In current perception threshold testing, typically 3 frequencies are tested: 5 Hz, designed to assess C fibers; 250 Hz, designed to assess A delta fibers; and 2000 Hz, designed to assess A beta fibers. Results are compared with those of a reference population.

Because QST combines the objective physical sensory stimuli with the subject individual response, it is psychophysical in nature and requires individuals who are alert, able to follow directions, and cooperative. In addition, to get reliable results, examinations need to include standardized instructions to the individuals, and stimuli must be applied in a consistent manner

by trained staff. Psychophysical tests have greater inherent variability, making their results more difficult to reproduce.

QST has primarily been applied in individuals with conditions associated with nerve damage and neuropathic pain. There have also been preliminary investigations to identify sensory deficits associated with conditions such as autism spectrum disorder, Tourette syndrome, restless legs syndrome, musculoskeletal pain, and response to opioid treatment.

Regulatory Status
Devices cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process include:

1986: Neurometer® (Neurotron)
1994: Nk Pressure-Specified Sensory Device, Model PSSD (NK Biotechnical Engineering)
1997: AP-4000, Air Pulse Sensory Stimulator (Pentax Precision Instrument)
1997: Neural-Scan (Neuro-Diagnostic Association)
2003: Vibration Perception Threshold (VPT) meter (Xilas Medical)
2005: Contact Heat-Evoked Potential Stimulator (Cheps) (Medoc, Advanced Medical Systems)
2005: Modified Contact-heat Evoked Potential Stimulator (Cheps) (Medoc, Advanced Medical Systems
2006: Pathways-Ats/Cheps (Medoc, Advanced Medical Systems)
2009: Pain Vision, Model PS-2100 (Osachi Co., LTD)

******Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.***

Policy

Quantitative sensory testing is considered investigational for all applications. BCBSNC does not provide coverage for investigational services or procedures.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When Quantitative Sensory Testing is covered

Not applicable.

When Quantitative Sensory Testing is not covered

Quantitative sensory testing, including but not limited to current perception threshold testing, pressure-specified sensory device testing, vibration perception threshold testing, and thermal threshold testing, is considered investigational.

Policy Guidelines

For individuals who have conditions linked to nerve damage or disease (e.g., diabetic neuropathy, carpal tunnel syndrome) who receive current perception threshold testing, the evidence includes several studies on technical performance and diagnostic accuracy. Relevant outcomes are test accuracy and validity, symptoms, and functional outcomes. The existing evidence does not support the accuracy of current perception threshold testing for diagnosing any condition linked with nerve damage or disease. Studies comparing current perception threshold testing with other

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testing methods have not reported on sensitivity or specificity. In addition, there is a lack of direct evidence on the clinical utility of current perception testing and, because there is insufficient evidence on test performance, an indirect chain of evidence on clinical utility cannot be constructed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have conditions linked to nerve damage or disease (e.g., diabetic neuropathy, carpal tunnel syndrome) who receive PSST, the evidence includes several studies on diagnostic accuracy. Relevant outcomes are test accuracy and validity, symptoms, and functional outcomes. Current evidence does not support the diagnostic accuracy of PSST for diagnosing any condition linked with nerve damage or disease. A systematic review found that PSST had low accuracy for diagnosing spinal conditions. In addition, there is a lack of direct evidence on the clinical utility of pressure-specified sensory testing and, because there is insufficient evidence on test performance, an indirect chain of evidence on clinical utility cannot be constructed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have conditions linked to nerve damage or disease (e.g., diabetic neuropathy, carpal tunnel syndrome) who receive VPT, the evidence includes several studies on diagnostic accuracy. Relevant outcomes are test accuracy and validity, symptoms, and functional outcomes. A few studies have assessed the diagnostic performance of vibration testing using devices not cleared by the US Food and Drug Administration (FDA). In addition, there is a lack of direct evidence on the clinical utility of vibration perception testing and, in the absence of sufficient evidence on test performance, an indirect chain of evidence on clinical utility cannot be constructed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have conditions linked to nerve damage or disease (e.g., diabetic neuropathy, carpal tunnel syndrome) who receive thermal sensory testing, the evidence includes diagnostic accuracy studies. Relevant outcomes are test accuracy and validity, symptoms, and functional outcomes. Two studies identified evaluated the diagnostic accuracy of thermal QST using the same FDA-cleared device. Neither found a high diagnostic accuracy for thermal QST, but both studies found the test had potential when used with other tests. An additional study using a different device also supports the potential of thermal QST in combination with other tests. The optimal combination of tests is currently unclear. In addition, there is a lack of direct evidence on the clinical utility of thermal sensory testing and, because there is insufficient evidence on test performance, an indirect chain of evidence on clinical utility cannot be constructed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: *0106T, 0107T, 0108T, 0109T, 0110T*

This series of codes describes "psychophysical" testing of subjective feelings of sensation to assess endocrine and neurologic disorders such as neuropathies. These tests are more complex and standardized than physical examination services. QST is performed in the office or outpatient setting by physicians such as internists, geriatricians, family practitioners, neurologists, and endocrinologists. The codes are “per extremity,” so one could receive as many as 4 units per code. Previously, these tests

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would have been coded using 95999 (for other, unlisted neurological or neuromuscular diagnostic procedures). These stimuli are not electrical like those used in current perception threshold testing.

There is a HCPCS code (G0255) specific to the current perception threshold test. Another distinction between a nerve conduction test and the current perception threshold test is that the former is performed in a laboratory setting, while the latter is performed in an office setting.

Codes 95907-95913 might be incorrectly reported for these services.

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.39, 6/8/2017

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.39, 6/14/2018

Specialty Matched Consultant Advisory Panel – 10/2018

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.39, 6/13/2019

Specialty Matched Consultant Advisory Panel – 10/2019

Specialty Matched Consultant Advisory Panel – 10/2020

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.39, 10/15/2020

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.39, 6/10/2021

Specialty Matched Consultant Advisory Panel – 10/2021

Specialty Matched Consultant Advisory Panel – 10/2022

Specialty Matched Consultant Advisory Panel – 10/2023

Medical Director Review- 10/2023

Specialty Matched Consultant Advisory Panel – 10/2024

Medical Director Review- 10/2024

Policy Implementation/Update Information

11/28/17 New policy adopted. Quantitative Sensory Testing is considered investigational for all applications. Notification given 11/28/17 for effective date 2/9/2018. (sk)

8/24/18 Reference added. (sk)

11/9/18 Specialty Matched Consultant Advisory Panel review 10/24/2018. (sk)

8/27/19 Reference added. (sk)

11/26/19 Specialty Matched Consultant Advisory Panel review 10/16/2019. (sk)

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11/10/20 Specialty Matched Consultant Advisory Panel review 10/21/2020. (sk)

8/10/21 References added. Related policy removed. (sk)

3/31/22 Specialty Matched Consultant Advisory Panel review 10/20/2021. (sk)

5/2/23 Policy update. Specialty Matched Consultant Advisory Panel review 10/19/2022. (sk)

11/7/23 Updated FDA approved devices. Updated references. Medical Director review 10/2023. Specialty Matched Consultant Advisory Panel review 10/2023. (ldh)

11/13/24 Updated references. Medical Director review 10/2024. Specialty Matched Consultant Advisory Panel review 10/2024. (ldh)

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.

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