Medical Policy: Quantitative Sensory Testing (QST)			
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POLICY

- Not recommended. Quantitative Sensory Testing is considered experimental or investigational, as there are no quality published studies to support any conclusions regarding the effects of this testing on health outcomes. There are no clinical studies demonstrating that such tests improve the management and clinical outcomes of patients over standard qualitative methods of sensory testing.

- The gold standard for evaluation of large nerve fibers is electromyographic nerve conduction study (EMG-NCS). However, the function of smaller sensory nerves, which may demonstrate pathologic changes before the involvement of the motor nerves, cannot be detected by NCS.

Description: QST measures and quantifies the amount of physical stimuli required for sensory perception to occur in the patient. As sensory deficits increase, the perception threshold of QST will increase, which may be informative in documenting progression of neurologic damage or disease. QST uses a computerized system to measure how the nerves react to vibration and changes in temperature.

Types of QST include:

1. Current perception threshold testing,
2. Pressure-specified sensory device testing,
3. Vibration perception threshold testing, and
4. Thermal threshold testing.

SUPPORTING DOCUMENTATION

ODG Neck and Upper Back (updated 06/27/17) - Online version
Quantitative sensory threshold (QST) testing
See Current perception threshold (CPT) testing.

ODG Neck and Upper Back (updated 06/27/17) - Online version
Current perception threshold (CPT) testing
Not recommended. There are no clinical studies demonstrating that quantitative tests of sensation improve the management and clinical outcomes of patients over standard qualitative methods of sensory testing.
The American Academy of Neurology (AAN) and the American Association of Electrodiagnostic Medicine (AAEM) have both concluded that quantitative sensory threshold (QST) testing standards need to be developed and that there is currently insufficient evidence to validate the usage of current perception threshold (CPT) testing. The Centers for Medicare and Medicaid Services (CMS) conducted an independent review of 342+ published studies and reconfirmed their 2002 findings that there still exist conflicting data reports, lack of standards, and insufficient trials to validate the efficacy of any type of sensory nerve conduction threshold (sNCT) device. (CMS, 2004) (Cigna, 2005) (Aetna, 2006)

These tests provide a psychophysical assessment of both central and peripheral nerve functions by measuring the detection threshold of accurately calibrated sensory stimuli, and they are intended to evaluate and quantify function in both large and small caliber fibers in order to detect neurologic disease. This approach is different and distinct from assessment of nerve conduction velocity, amplitude and latency. It is also different from short-latency somatosensory evoked potentials. CMS concludes that the use of any type of sNCT device, including "current output" type device used to perform current perception threshold (CPT), pain perception threshold (PPT), or pain tolerance threshold (PTT) testing or "voltage input" type device used for voltage-nerve conduction threshold (v-NCT) testing, to diagnose sensory neuropathies or radiculopathies is not reasonable and necessary.

ODG Pain (updated 06/13/17) - Online version
Quantitative sensory threshold (QST) testing
Not recommended.
See also Current perception threshold (CPT) testing.
Quantitative sensory testing (QST) has been used to assist in the diagnosis and management of a variety of conditions such as diabetic neuropathy and other neuropathies, as well as carpal tunnel syndrome and other nerve entrapment/compression disorders or damage. Because QST combines the objective physical sensory stimuli with the subjective patient response, it is psychophysical in nature and requires that its use be 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. QST is considered experimental or investigational, as there are no quality published studies to support any conclusions regarding the effects of this testing on health outcomes. All the available studies of QST are poor quality, and the amount and consistency of evidence concerning QST for the diagnosis of neuropathy varies widely, depending on the type of QST and the indication for testing. Some evidence suggests that vibration QST has moderate to high accuracy for the diagnosis of neuropathy and that monofilament QST and vibration QST have moderate to high accuracy for the diagnosis of loss of protective sensation as reflected in susceptibility to foot ulcer and/or amputation because of neuropathy. There is insufficient evidence to evaluate monofilament QST for the diagnosis of neuropathy or to evaluate thermal QST, ball bearing QST, 2-point discrimination QST, or tactile circumferential QST for the diagnosis of neuropathy or susceptibility to foot ulcer and/or amputation. Four studies evaluated monofilament QST for the diagnosis of neuropathy in adult and pediatric patients with diabetes. One study found that monofilament QST had a relatively high AUROC of 0.88, which corresponded to a sensitivity of 75% and specificity of 89%. However, findings from 3 other studies were inconsistent and suggested that this technique does not have acceptable accuracy. In addition, 3 studies did not report the cutoff values used to interpret the results of monofilament QST. The only study that evaluated circumferential ball bearing QST found that it had 84% sensitivity and 100% specificity for the diagnosis of neuropathy in diabetic patients. The 2-point discrimination method was evaluated by a single research group in a small (n=30) and a large (n=240) study of neuropathy in patients who have HIV infection. The results were nearly identical for the 2 studies, and the larger study found that 2-point discrimination QST had an AUROC of 0.71, which corresponded to 75% sensitivity and 53% specificity. (Hayes, 2015)

REFERENCE(S)

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