



MASSACHUSETTS

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Medical Policy Autonomic Nervous System Testing

Table of Contents

- [Policy: Commercial](#)
- [Policy: Medicare](#)
- [Authorization Information](#)
- [Coding Information](#)
- [Description](#)
- [Policy History](#)
- [Information Pertaining to All Policies](#)
- [References](#)

Policy Number: 713

BCBSA Reference Number: 2.01.96

NCD/LCD: Local Coverage Determination (LCD): Autonomic Function Testing (L36236)

Related Policies

Neural Therapy, #914

Policy

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

Autonomic nervous system testing, consisting of a battery of tests in several domains may be considered **MEDICALLY NECESSARY** when the following criteria are met:

- Signs and/or symptoms of autonomic dysfunction are present; AND
- A definitive diagnosis cannot be made from clinical examination and routine laboratory testing alone; AND
- Diagnosis of the suspected autonomic disorder will lead to a change in management or will eliminate the need for further testing.

Although there is not a standard battery of tests that are part of ANS testing, a full battery of testing generally consists of individual tests in 3 domains.

- Cardiovagal function (heart rate [HR] variability, HR response to deep breathing and Valsalva)
- Vasomotor adrenergic function (blood pressure [BP] response to standing, Valsalva, and hand grip, tilt table testing)
- Sudomotor function (QSART, QST, TST, silastic sweat test).

At least 1 test in each category is usually performed. More than 1 test from a category will often be included in a battery of tests, but the incremental value of using multiple tests in 1 domain is not known.

Autonomic nervous system testing is considered **INVESTIGATIONAL** in all other situations when criteria are not met, including but not limited to the evaluation of the following conditions:

- Chronic fatigue syndrome
- Fibromyalgia
- Anxiety and other psychologic disorders

- Sleep apnea
- Allergic conditions
- Hypertension
- Screening of asymptomatic individuals
- Monitoring progression of disease or response to treatment.

Autonomic nervous system testing using portable automated devices is considered **INVESTIGATIONAL** for all indications.

Medicare HMO BlueSM and Medicare PPO BlueSM Members

Medical necessity criteria and coding guidance for **Medicare Advantage members living in Massachusetts** can be found through the link below.

[Local Coverage Determinations \(LCDs\) for National Government Services, Inc.](#)

Local Coverage Determination (LCD): Autonomic Function Testing (L36236)

Note: To review the specific LCD, please remember to click “accept” on the CMS licensing agreement at the bottom of the CMS webpage.

For medical necessity criteria and coding guidance for **Medicare Advantage members living outside of Massachusetts**, please see the Centers for Medicare and Medicaid Services website at <https://www.cms.gov> for information regarding your specific jurisdiction.

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)	Prior authorization is not required .
Commercial PPO and Indemnity	Prior authorization is not required .
Medicare HMO Blue SM	Prior authorization is not required .
Medicare PPO Blue SM	Prior authorization is not required .

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 above **medical necessity criteria MUST** be met for the following codes to be covered for **Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:**

CPT Codes

CPT codes:	
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	Code Description
95921	Testing of autonomic nervous system function; cardiovagal innervation (parasympathetic function), including 2 or more of the following: heart rate response to deep breathing with recorded R-R interval, Valsalva ratio, and 30:15 ratio
95922	Testing of autonomic nervous system function; vasomotor adrenergic innervation (sympathetic adrenergic function), including beat-to-beat blood pressure and R-R interval changes during Valsalva maneuver and at least 5 minutes of passive tilt
95923	Testing of autonomic nervous system function; sudomotor, including 1 or more of the following: quantitative sudomotor axon reflex test (QSART), silastic sweat imprint, thermoregulatory sweat test, and changes in sympathetic skin potential
95924	Testing of autonomic nervous system function; combined parasympathetic and sympathetic adrenergic function testing with at least 5 minutes of passive tilt
95943	Simultaneous, independent, quantitative measures of both parasympathetic function and sympathetic function, based on timefrequency analysis of heart rate variability concurrent with time-frequency analysis of continuous respiratory activity, with mean heart rate and blood pressure measures, during rest, paced (deep) breathing, Valsalva maneuvers, and head-up postural change

Description

The autonomic nervous system (ANS) has a primary role in controlling physiologic processes that are not generally under conscious control. These include heart rate, respirations, gastrointestinal (GI) motility, thermal regulation, bladder control, and sexual function. It is a complex neural regulatory network that consists of 2 complementary systems that work together to maintain homeostasis. The sympathetic nervous system is responsible for arousal, and sympathetic stimulation leads to increased pulse, increased blood pressure (BP), increased sweating, decreased GI motility and an increase on other glandular exocrine secretions. This is typically understood as the “fight or flight” response. Activation of the parasympathetic nervous system will mostly have the opposite effects; BP and pulse will decrease, GI motility increases, and there will be a decrease in sweating and other glandular secretions.

ANS Disorders

ANS disorders, also called dysautonomias, are heterogeneous in etiology, clinical symptoms, and severity. ANS disorders can be limited and focal, such as patients with isolated neurocardiogenic syncope or idiopathic palmar hyperhidrosis. At the other extreme, some ANS disorders can be widespread and severely disabling, such as patients with multiple systems atrophy, which leads to widespread and severe autonomic failure.

Symptoms of autonomic disorders can be varied, based on the etiology and location of dysfunction. Cardiovascular manifestations are often prominent. Involvement of the cardiovascular system causes abnormalities in heart rate control and vascular dynamics.³ Orthostatic hypotension and other manifestations of BP lability can occur, causing weakness, dizziness, and syncope. Resting tachycardia and an inability to appropriately increase heart rate in response to exertion leads to exercise intolerance. There is an approximately 2- to 3-fold higher incidence of major cardiac events in patients with diabetic autonomic neuropathy (myocardial infarction, heart failure, and resuscitation from ventricular arrhythmia, angina, or the need for revascularization). There is also an increase in cardiac sudden death and overall mortality for these patients.

Many other organ systems can be affected by autonomic neuropathy. Involvement of the bladder can lead to incomplete emptying, resulting in urinary retention and possible overflow incontinence. GI involvement is commonly manifested as gastroparesis, which is defined as slowed gastric emptying, and can cause nausea, vomiting, and a decreased tolerance for solid food and large meals. Constipation may also occur if the lower GI tract is involved. Impairment of sexual function in males can manifest as erectile dysfunction and ejaculatory failure. Dysfunction of thermal regulation and sweating can lead to anhidrosis

and heat intolerance. Paradoxically, excessive sweating can also occur as a compensatory mechanism in unaffected regions.

A classification of the different types of autonomic dysfunction, adapted from Freeman et al ⁵ and Macdougall et al, ⁶ can be made as follows:

- Diabetic autonomic neuropathy
- Amyloid neuropathy
- Immune-mediated neuropathy
 - Rheumatoid arthritis
 - Systemic lupus erythematosus
 - Sjögren syndrome
- Paraneoplastic neuropathy
- Inflammatory neuropathy
 - Guillain-Barré syndrome
 - Chronic inflammatory demyelinating polyneuropathy
 - Crohn disease
 - Ulcerative colitis
- Hereditary autonomic neuropathies
- Autonomic neuropathy secondary to infectious disease
 - HIV disease
 - Lyme disease
 - Chagas disease
 - Diphtheria
 - Leprosy
- Acute and subacute idiopathic autonomic neuropathy
- Toxic neuropathies.

A variety of other chronic diseases may involve an imbalance of the ANS, without outright dysfunction of the nerves themselves. Approximately 40% of individuals with essential hypertension will show evidence of excess sympathetic activity.⁷ Sympathetic overactivity is also a prominent feature of generalized anxiety, panic disorder, and some types of depression, as well as certain cardiac disorders such as chronic heart failure. These types of ANS imbalances are not usually classified as ANS disorders.

Much of the treatment of autonomic disorders is nonpharmacologic and supportive. However, there are specific actions that can be taken to improve symptoms in patients with specific deficits. For patients with orthostatic hypotension, this involves adequate intake of fluids and salt, moving to an upright position slowly and deliberately, use of lower extremity compression stockings, and keeping the head of the bed elevated 4 to 6 inches.² In severe cases, treatment with medications that promote salt retention, such as fludrocortisone, is often prescribed. Patients with symptoms of hyperhidrosis may benefit from cooling devices and potent antiperspirants such as drysol, and patients with decreased tearing and dry mucous membranes can use over the counter artificial tears or other artificial moisturizers.²

ANS Testing

ANS testing consists of a battery of individual tests. Any one test may be performed individually, or the entire battery of tests may be ordered. Individual components of testing may include:

- Cardiovascular function testing
 - **Heart rate variability.** Beat-to-beat variability in the heart rate can be measured at rest, or in response to provocative measures, such as deep breathing or the Valsalva maneuver. Reduced, or absent, heart rate variability (HRV) is a sign of autonomic dysfunction.
 - **Baroreflex sensitivity.** Baroreflex sensitivity is measured by examining the change in pulse and HRV in response to changes in BP. A medication such as phenylephrine is given to induce a raise in blood pressure, and baroreflex sensitivity is calculated as the slope of the relationship between HRV and BP.

- Sudomotor function (sweat testing). Sweat testing evaluates the structure and function of nerves that regulate the sweat glands.
 - **QSART test.** The Quantitative Sudomotor Axon Reflex Test (QSART) is an example of a semiquantitative test of sudomotor function that is commercially available.⁸ The test is performed by placing a color sensitive paper on the skin, which changes color on contact with sweat. Measurement of the amount of color change is a semiquantitative measure of sudomotor function.
 - **Silastic Sweat test.** In this test, a silastic material is placed on the skin, and the sweat droplets form indentations on the silastic surface, allowing quantitation of the degree of sweating present. The Neuropad® test is an example of a commercially available silastic sweat test.
 - **Thermoregulatory Sweat test.** A more complex approach in some centers is the use of a thermoregulatory laboratory.⁹ This is a closed chamber in which an individual sits for a defined period of time under tightly controlled temperature and humidity. An indicator dye is brushed on the skin, which changes color when in contact with sweat. Digital pictures are taken and projected onto anatomic diagrams. Computer processing derives values for total area of anhidrosis, and the percent of anhidrotic areas.
 - **Sympathetic skin response.** These tests use an electric current to stimulate sympathetic nerves. The tests measure the change in electrical resistance, which is altered in the presence of sweat. In general these tests are considered to be sensitive, but have high variability and the potential for false-positive results.⁹
 - A variant of sympathetic skin response testing is electrochemical sweat conductance measured by iontophoresis (eg, Sudoscan®). In this test, a low level current is used to attract chloride ions from sweat glands. The chloride ions interact with stainless-steel plate electrodes to measure electrochemical resistance.
- **Salivation test.** The protocol for this test involves the subject chewing on a preweighed gauze for 5 minutes. At the end of 5 minutes, the gauze is removed and reweighed to determine the total weight of saliva present.
- **Tilt table testing.** Tilt table testing is intended to evaluate for orthostatic intolerance. The patient lies on the table and is strapped in with a foot rest. The table is then inclined to the upright position, with monitoring of the pulse and BP. Symptoms of lightheadedness or syncope in conjunction with changes in pulse or BP constitute a positive test. A provocative medication, such as isoproterenol can be given to increase the sensitivity of the test.

Summary

For individuals who have signs and symptoms of ANS dysfunction who receive ANS testing, the evidence includes studies of diagnostic accuracy. Relevant outcomes are test accuracy, symptoms, functional outcomes, and quality of life. The evidence base is limited. There is a lack of a criterion standard for determining autonomic dysfunction, which limits the ability to perform high-quality research on diagnostic accuracy. Also, numerous tests are used in various conditions, making it difficult to determine values for the overall diagnostic accuracy of a battery of tests. Scattered reports of diagnostic accuracy are available for certain tests, most commonly in the diabetic population, but these reports do not specify estimates of accuracy for the entire battery of tests. Reported sensitivities and specificities are high for patients with clinically defined distal symmetric polyneuropathy using a symptom-based score as a reference standard, but these estimates are likely biased by study designs that used patients with clinically diagnosed disease and a control group of healthy volunteers. The evidence is insufficient to determine the effects of the technology on health outcomes.

Policy History

Date	Action
7/2018	New references added from BCBSA National medical policy. Summary clarified.
7/2017	New references added from BCBSA National medical policy.
1/2016	New references added from BCBSA National medical policy.
4/2015	New medical policy describing medically necessary and investigational indications. Effective 4/1/2015.

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](#)

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