

Subject: Vestibular Function Testing
Guideline #: CG-MED-94
Status: New

Publish Date: 01/03/2024
Last Review Date: 11/09/2023

Description

This document addresses the use of selected tests of vestibular function. Specifically, this document addresses the use of electronystagmography (ENG) and videonystagmography (VNG), caloric testing, and rotational chair testing.

Clinical Indications

Medically Necessary:

Vestibular function testing (that is, electronystagmography, videonystagmography, caloric testing, or rotational chair testing) is considered **medically necessary** under the following circumstances:

1. There are symptoms of a vestibular disorder (for example, dizziness, vertigo, imbalance); **and**
2. Diagnosis by clinical exam could not be established.

Not Medically Necessary:

Vestibular function testing is considered **not medically necessary** when the above criteria have not been met.

Coding

The following codes for treatments and procedures applicable to this guideline are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

When services may be Medically Necessary when criteria are met:

CPT	
92537	Caloric vestibular test with recording, bilateral; bithermal (ie, one warm and one cool irrigation in each ear for a total of four irrigations)
92538	Caloric vestibular test with recording, bilateral; monothermal (ie, one irrigation in each ear for a total of two irrigations)
92540	Basic vestibular evaluation, includes spontaneous nystagmus test with eccentric gaze fixation nystagmus, with recording, positional nystagmus test, minimum of 4 positions,

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	with recording, optokinetic nystagmus test, bidirectional foveal and peripheral stimulation, with recording, and oscillating tracking test, with recording
92541	Spontaneous nystagmus test, including gaze and fixation nystagmus, with recording
92542	Positional nystagmus test, minimum of 4 positions, with recording
92544	Optokinetic nystagmus test, bidirectional, foveal or peripheral stimulation, with recording
92545	Oscillating tracking test, with recording
92546	Sinusoidal vertical axis rotational testing

ICD-10 Diagnosis

H81.01-H81.93	Disorders of vestibular function
H82.1-H82.9	Vertiginous syndromes in diseases classified elsewhere
H83.01-H83.09	Labyrinthitis
H83.2X1-H83.2X9	Labyrinthine dysfunction
R11.0-R11.2	Nausea and vomiting
R26.81-R26.89	Other abnormalities of gait and mobility
R27.0-R27.9	Other lack of coordination
R42	Dizziness and giddiness
R55	Syncope and collapse

When services are Not Medically Necessary:

For the procedure codes listed above when criteria are not met or for all other diagnoses not listed.

Discussion/General Information

The vestibular system creates our senses of balance and equilibrium. This system works with other sensorimotor systems in the body, such as the visual system and skeletal system, to monitor and maintain the position of the body at rest or in motion. The vestibular system includes peripheral and central components. Peripherally, semicircular canals in the inner ears sense rotational movement of the head. The utricles and saccules, also in the inner ears, provide us with sensation of linear acceleration. Central components of the vestibular system include the cochlear nerve, brainstem, cerebellum, and several cerebral areas.

A common symptom of vestibular system dysfunction is vertigo – a sensation of spinning often associated with dizziness, nausea, and vomiting. Many people have difficulty describing the symptoms of vertigo, and the lack of a reported spinning sensation does not exclude vertigo as a possible cause.

The cause of vertigo can usually be determined by history and physical examination. The medical history can often distinguish vertigo from syncope, pre-syncope, orthostasis, or simple disequilibrium which does not have a spinning component. Important historical information includes the time course, provoking and palliative factors, and associated symptoms. The physical examination should include standard evaluations of the head and neck, office hearing and balance tests, and bedside tests.

Benign paroxysmal positional vertigo (BPPV) is common and causes about 50% of peripheral vertigo. A cross-sectional, nationally representative neurotological survey of the general adult population in Germany estimated a

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lifetime BPPV prevalence of 2.4% (von Brevern, 2007). Incidence rates increase with age. Vertigo in BPPV is caused by movement of small calcium carbonate crystals (otoconia) in the semicircular canals. Although often idiopathic, BPPV can be a sequella of trauma, Meniere disease, or infectious or inflammatory conditions affecting the inner ear. BPPV can be diagnosed and treated with maneuvers that reposition the inner ear particles such as the Dix-Hallpike maneuver or supine head roll maneuver (see definitions).

Vestibular function tests evaluate the vestibular part of the brainstem and inner ear. If there are problems with the inner ear or other parts of the balance system, symptoms can include dizziness, vertigo, and imbalance. Vestibular tests are tests of function which are designed to identify causes of balance problems. The cause of vertigo can be peripheral (caused by pathology in the inner ear) or central (caused by pathology in the brainstem or cerebellum).

ENG is a test which looks at eye movements to determine how well nerves in the brain are working. Electrodes are placed near the eyes then cold and warm water or air is sprayed into each ear canal. The electrodes record the eye movements that occur when the nerves are stimulated by the water or air. Similar to ENG, VNG measures a type of eye movement using video cameras instead of electrodes. These tests record and quantify spontaneous and induced nystagmus.

A battery of tests along with ENG and VNG can differentiate central and peripheral etiologies. Another test, the caloric stimulation test, is done by injecting cold or warm water or air into the ear canal and tracking eye movements to look for damage to the acoustic nerve. A similar nystagmus-based assessment method is rotational chair testing. This involves tracking eye movements in response to movements of a rotating chair and moving lights projected on a wall.

A 2023 study by Saha and colleagues reported on the applicability of ENG to assist in the diagnosis of vertigo (either central or peripheral etiology). Included were 84 participants with an initial complaint of vertigo. Vertiginous symptoms varied among participants - 75% complained of instability, 50% complained of rotatory objective vertigo, 29.76% complained of a tendency to fall, 22.62% complained of blackout, and 2.38% complained of a sinking sensation. Two or more symptoms were reported by 63% of the participants. Evaluation without ENG allowed categorization of vertigo for 68 participants (80.95%) with 46 (54.76%) diagnosed with peripheral vertigo and 22 (26.19%) diagnosed with central vertigo. Vertigo for 16 participants (19.05%) could not be categorized without an ENG. A subsequent ENG distinguished between central and peripheral vertigo for all participants, finding that that 48 (57.14%) had peripheral, 27 (32.14%) had central, and 9 (10.71%) had mixed lesions.

Definitions

Dizziness: The sensation of weakness or unsteadiness often described as feeling “woozy”, unsteady, or faint.

Disequilibrium: A sensation of imbalance, loss of equilibrium, or unsteadiness.

Dix-Hallpike maneuver (also known as the Baranay test): a test of vestibular function in which a seated individual is rapidly placed in a supine position with the head turned to one side and the neck is extended 30 degrees below the horizontal plane. The test is repeated with the head turned to each side. In a positive test, the individual will be seen to have nystagmus in the supine position or on returning to the seated position.

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Nystagmus: Involuntary rhythmic, repetitive eye movements. Nystagmus has a fast component in which the eyes quickly deviate to one side. This is followed by a slow component in which the eyes return to the neutral position. Nystagmus can also involve rotational movement of the eyes. The direction of these nystagmus components has diagnostic significance.

Orthostasis: A fall in blood pressure due to changes in position.

Supine roll test: A test of vestibular function in which the individual is placed supine with the neck flexed to 30 degrees in order to bring the lateral semicircular canals into the horizontal position. The examiner turns the head quickly 90 degrees to one side and observes for nystagmus.

Vertigo: A sensation of rotation or spinning either of the self or the surrounding environment. This may be accompanied by nausea or vomiting.

References

Peer Reviewed Publications:

1. Moideen A, Konkimalla A, Tyagi AK, et al. Cross-sectional analysis of videonystagmography (VNG) findings in balance disorders. *Cureus*. 2023; 15(2):e34795.
2. Saha S, Haldar A, Mondal H. Evaluation of types of vertigo with electronystagmography: an experience from a tertiary care hospital in West Bengal, India. *Cureus*. 2023; 15(2):e35496.
3. von Brevern M, Radtke A, Lezius F, et al. Epidemiology of benign paroxysmal positional vertigo: a population based study. *J Neurol Neurosurg Psychiatry*. 2007; 78(7):710-715.

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History

Status	Date	Action
New	11/09/2023	Medical Policy & Technology Assessment Committee (MPTAC) review. Initial document development.

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