



**BlueCross BlueShield
of Alabama**

Name of Policy:

Vestibular Autorotation Test (VAT)

Policy #: 329
Category: Medical

Latest Review Date: October 2010
Policy Grade: **Active Policy but no
longer scheduled for
regular literature
reviews and updates.**

Background/Definitions:

As a general rule, benefits are payable under Blue Cross and Blue Shield of Alabama health plans only in cases of medical necessity and only if services or supplies are not investigational, provided the customer group contracts have such coverage.

The following Association Technology Evaluation Criteria must be met for a service/supply to be considered for coverage:

- 1. The technology must have final approval from the appropriate government regulatory bodies;*
- 2. The scientific evidence must permit conclusions concerning the effect of the technology on health outcomes;*
- 3. The technology must improve the net health outcome;*
- 4. The technology must be as beneficial as any established alternatives;*
- 5. The improvement must be attainable outside the investigational setting.*

Medical Necessity means that health care services (e.g., procedures, treatments, supplies, devices, equipment, facilities or drugs) that a physician, exercising prudent clinical judgment, would provide to a patient for the purpose of preventing, evaluating, diagnosing or treating an illness, injury or disease or its symptoms, and that are:

- 1. In accordance with generally accepted standards of medical practice; and*
- 2. Clinically appropriate in terms of type, frequency, extent, site and duration and considered effective for the patient's illness, injury or disease; and*
- 3. Not primarily for the convenience of the patient, physician or other health care provider; and*
- 4. Not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient's illness, injury or disease.*

Description of Procedure or Service:

Impairment of the vestibular-ocular reflex (VOR) may result in chronic dizziness and imbalance. The VAT is a high frequency, active head rotation (AHR) test to subjectively evaluate the VOR and its function. Patients wear a lightweight head-strap with a velocity sensor on the back. They follow instructions to shake their head, first side-to-side, and then up-and-down. Conventional electro-olfactogram electrodes placed around the eyes measure patients' eye movements.

Although some published studies have suggested that the VAT may be useful in evaluating patients with vestibular disorders/diseases, there are few studies that examined the sensitivity and specificity of the VAT in evaluating patients with suspected vestibular abnormalities. Furthermore, there is a lack of data supporting the value of the VAT in the management of patients with vestibular disorders/diseases.

Additional drawbacks of the VAT include (i) slippage of the head velocity sensor at high frequencies and accelerations during testing, (ii) contribution of the cervico-ocular reflex to the compensatory eye movement response, and this contribution may be increased significantly in the presence of bilateral, peripheral vestibular pathology, (iii) results of different head autorotation tests may not be directly comparable, and (iv) poor test-retest reliability.

Policy:

Vestibular autorotation test (VAT) does not meet Blue Cross and Blue Shield of Alabama's medical criteria for coverage and is considered **investigational** for the diagnosis of individuals with vestibular disorders or any other indications because its sensitivity, specificity, reproducibility, and clinical utility have not been demonstrated.

Blue Cross and Blue Shield of Alabama does not approve or deny procedures, services, testing, or equipment for our members. Our decisions concern coverage only. The decision of whether or not to have a certain test, treatment or procedure is one made between the physician and his/her patient. Blue Cross and Blue Shield of Alabama administers benefits based on the members' contract and corporate medical policies. Physicians should always exercise their best medical judgment in providing the care they feel is most appropriate for their patients. Needed care should not be delayed or refused because of a coverage determination.

Key Points:

In an assessment on vestibular testing techniques in adults and children, the American Academy of Neurology (Fife et al, 2000) stated that AHR testing is not an established technique. This type of testing does not appear useful in detecting unilateral vestibular loss (e.g., as a consequence of unilateral acoustic neuroma, Meniere's disease or vestibular neuritis). Furthermore, a recent study (Tirelli et al, 2004) reported that the test-retest of the Vorteq system, a head-autorotation test is not sufficiently reliable and hence cannot be used in clinical practice.

Ozgirgin and Tarhan (2008) noted that the head autorotation tests can be affected with the dynamic changes within the semicircular canals caused by benign paroxysmal positional vertigo (BPPV). The VAT is a method of examining the VOR (especially the VOR that develops at higher frequencies like those that occur in the everyday environment). In this study, 20 patients who had been diagnosed as having posterior semicircular canal BPPV were evaluated with head autorotation tests before and after Epley maneuver. The head autorotation tests were performed just before the use of the Epley maneuver and after the resolution of symptoms and the typical nystagmus pattern. The mean gain values for horizontal rotation tests during the pre-treatment period were 0.823, 0.844, and 0.840 for the frequencies 1, 2, and 3 Hz, respectively. The mean gain values increased by 0.095 (95 % confidence interval) with Epley maneuver. But this difference between the pre-treatment and post-treatment values was not statistically significant. All patients were also evaluated with vertical active tests. The differences between the pre-treatment and post-treatment values were not statistically significant in the vertical autorotation group. The phase values were within normal range in the horizontal and vertical rotation tests and remained so after the Epley maneuver. The stimulation of the VOR caused by BPPV did not affect gain and phase values to a statistically significant degree, and the values noted after the resolution of the patient's symptoms improved slightly but without statistical significance.

October 2010 Update

Blatt and colleagues (2008) established intra-rater and inter-rater reliability of the VAT in a clinical sample of individuals reporting dizziness. A total of 98 patients with reports of dizziness referred for vestibular function testing performed repeated trials of horizontal VAT. A sub-sample of 49 individuals repeated the test for a second rater. About 66% of subjects were unable to meet the performance criterion of 6 consecutive trials where data was displayed at frequencies greater than or equal to 3.9 Hz with coherence values held constant trial to trial. There was a good level of intra-rater reliability for gain independent of the effects of practice (intraclass correlation coefficient [ICC] = 0.78 [95% confidence interval [CI]: 0.69 to 0.87] to 0.95 [(95% CI: 0.93 to 0.97])). A significant difference in intra-rater reliability was found when the first 3 trials were compared to the last 3 trials for phase (ICC ranged from 0.04 [95% CI: 0.00 to 0.31] to 0.96 [95% CI: 0.93 to 0.97]) and asymmetry (ICC ranged from 0.39 [95% CI: 0.17 to 0.56] to 0.73 [95% CI: 0.32 to 0.81]) particularly at frequencies greater than or equal to 4.3 Hz. Inter-rater reliability was good to excellent across all variables at frequencies less than or equal to 3.9 Hz. The authors concluded that many patients had difficulty performing the VAT. The reliability estimates for phase and asymmetry, but no gain, were significantly affected by practice. They stated that careful attention to patient preparation, instruction, and test monitoring including sufficient patient practice before data collection are likely to critical factors to ensure quality data.

Key Words:

Vestibular autorotation test (VAT), vestibular ocular reflex (VOR), Vorteq system, Epley maneuver, active head rotation (AHR).

Approved by Governing Bodies:

Not applicable

Benefit Application:

Coverage is subject to member's specific benefits. Group specific policy will supersede this policy when applicable.

ITS: Home Policy provisions apply

FEP contracts: FEP does not consider investigational if FDA approved. Will be reviewed for medical necessity.

Pre-certification requirements: Not applicable

Current Coding:

CPT Codes:

There is no specific code for the vestibular autorotation test (VAT).

92541	Spontaneous nystagmus test, including gaze and fixation nystagmus, with recording
92542	Positional nystagmus test, minimum of 4 positions, with recording
92543	Caloric vestibular test, each irrigation (binaural, bithermal stimulation constitutes four tests), 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
92547	Use of vertical electrodes (list separately in addition to code for primary procedure)
92548	Computerized dynamic posturography

Effective for dates of service on or after January 1, 2010:

92540	Basic vestibular evaluation, includes spontaneous nystagmus test with eccentric gaze fixation nystagmus, with recording, positional nystagmus test, minimum of 4 positions, with recording, optokinetic nystagmus test, bidirectional foveal and peripheral stimulation, with recording, and oscillating tracking test, with recording
--------------	--

References:

1. Blatt PJ, Schubert MC, roach KE and Tusa RJ. *The reliability of the Vestibular Autorotation Test (VAT) in patients with dizziness.* J Neurol Phys Ther, June 2008; 32(2): 70-79.
2. Cheung B, Money K, Sarkar P. *Visual influence on head shaking using the vestibular autorotation test.* J Vest Res. 1996; 6(6): 411-422.

3. Della Santina CC, Cremer PD, Carey JP, et al. *Comparison of head thrust test with head autorotation test reveals that the vestibulo-ocular reflex is enhanced during voluntary head movements*. Arch Otolaryngol Head Neck Surg, 2002; 128(9): 1044-1054.
4. Fife TD, Tusa RJ, Furman JM, et al. *Assessment: Vestibular testing techniques in adults and children: Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology*. Neurology, 2000; 55(10): 1431-1441.
5. Furman JM, Durrant JD. *Head-only rotational testing in the elderly*. J Vest Res. 1998; 8(5): 355-361.
6. Furman JM, Durrant JD. *Head-only rotational testing: Influence of volition and vision*. J Vest Res. 1995; 5(4): 323-329.
7. Guyot JP, Psillas G. *Test-retest reliability of vestibular autorotation testing in healthy subjects*. Otolaryngol Head Neck Surg. 1997; 117(6): 704-707.
8. Hirvonen TP, Aalto H, Pyykko I, Juhola M. *Comparison of two head autorotation tests*. J Vest Res. 1999; 9(2): 119-125.
9. Kasai T, Zee D. *Eye-head coordination in labyrinthine-defective human beings*. Brain Res. 1978; 144: 123-141.
10. López Escámez JA, Molina MI, et al. *Oculomotor response to the vertical cephalic autorotatory test in patients with benign paroxysmal positional vertigo of the posterior canal*. Acta Otorrinolaringol Esp. 2006; 57(5): 210-216.
11. Nachum Z, Gordon CR, Shahal B, et al. *Active high-frequency vestibulo-ocular reflex and seasickness susceptibility*. Laryngoscope, 2002; 112(1): 179-182.
12. Ozgirgin ON, Tarhan E. *Epley maneuver and the head autorotation test in benign paroxysmal positional vertigo*. Eur Arch Otorhinolaryngol, 2008 Mar 26. [Epub ahead of print].
13. Tirelli G, Bigarini S, Russolo M, et al. *Test-retest reliability of the VOR as measured via Vorteq in healthy subjects*. Acta Otorhinolaryngol Ital, 2004; 24(2): 58-62.

Policy History:

Medical Policy Group, October 2008 **(3)**

Medical Policy Administration Committee, November 2008

Available for comment October 23-December 8, 2008

Medical Policy Group, October 2010 **(1)** Key points updated, no policy statement change

Medical Policy Group, September 2012 (3): Effective September 14, 2012 this policy is no longer scheduled for regular literature reviews and updates.

This medical policy is not an authorization, certification, explanation of benefits, or a contract. Eligibility and benefits are determined on a case-by-case basis according to the terms of the member's plan in effect as of the date services are rendered. All medical policies are based on (i) research of current medical literature and (ii) review of common medical practices in the treatment and diagnosis of disease as of the date hereof. Physicians and other providers are solely responsible for all aspects of medical care and treatment, including the type, quality, and levels of care and treatment.

This policy is intended to be used for adjudication of claims (including pre-admission certification, pre-determinations, and pre-procedure review) in Blue Cross and Blue Shield's administration of plan contracts.