AMERICAN ACADEMY OF NEUROLOGY®

Summary of Practice Guideline for **Clinicians**

# Cervical and Ocular Vestibular Evoked Myogenic Potential Testing

This is a summary of the American Academy of Neurology (AAN) practice guideline, "Cervical and ocular vestibular evoked myogenic potential testing," which was published in *Neurology*® online on November 1, 2017, and appears in the November 28, 2017, print issue.

**Please refer to the full guideline at *AAN.com/guidelines* for more information, including definitions of the classifications of evidence and recommendations.**

## Does cervical vestibular evoked myogenic potential (cVEMP) accurately identify patients with superior canal dehiscence syndrome (SCDS)?

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| **Weak Evidence** | Clinicians may use cVEMP threshold values to distinguish patients with SCDS from controls (**Level C**). Corrected cVEMP amplitude may also be used to distinguish patients with SCDS from controls (**Level C**). |

## Does ocular vestibular evoked myogenic potential (oVEMP) accurately identify patients with SCDS?

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| **Weak Evidence** | oVEMP testing using either specific thresholds or amplitudes may be used in patients to aid in making an SCDS diagnosis (**Level C**). |

## Clinical Context for VEMP Testing for SCDS

Both cVEMP and oVEMP in SCDS may show an abnormal response that is actually hyperactive. That is, SCDS requires a less intense sound stimulus than normal (i.e., lower threshold) to induce the response, and the response amplitude is abnormally increased on the affected side. No other vestibular disorder has yet demonstrated hyperactive VEMP responses to such a degree.

The false appearance of dehiscence by CT of the temporal bone can sometimes be seen in patients without SCDS.[38–40] In some cases, a negative CT of the temporal bone but abnormal VEMP is due to dehiscence in a canal other than the superior canal.[24,e1] To confirm SCDS, cVEMP and oVEMP provide a physiologic correlate to the clinical symptoms and the temporal bone CT findings. Hence, VEMP studies serve a complementary role in conjunction with temporal bone CT and clinical history in SCDS diagnosis. Normalization of VEMP amplitudes and thresholds after successful surgical repair of SCDS is further confirmation that VEMP studies correlate with the presence of a physiologically significant degree of dehiscence.[33]

## For patients with suspected vestibular symptoms, does cVEMP/oVEMP accurately identify vestibular dysfunction related to the saccule/utricle?

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| **Insufficient Evidence** | cVEMP and oVEMP have unknown efficacy in accurately identifying vestibular function specifically related to the saccule/utricle (**Level U**). |

## Clinical Context for cVEMP as a Measure of Saccular Dysfunction and oVEMP as a Measure of Utricular Dysfunction

Historically, animal studies have been essential in understanding the vestibular system.[e2] For example, animal studies were a critical part of determining that caloric testing is a measure of horizontal semicircular canal function, which is now accepted.[6,e3] In the case of VEMP, animal studies suggest that cVEMP is most closely tied to function of the saccule and oVEMP to the utricle, although with some possible contribution from the semicircular canals.[9,26,28,e4,e5]

## For patients with vestibular symptoms, does cVEMP/oVEMP accurately and substantively aid diagnosis of any specific vestibular disorder besides SCDS?

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| **Insufficient Evidence** | Evidence is insufficient to determine whether cVEMP/oVEMP use would clarify which vestibular structures are affected in vestibular neuritis (VN) (**Level U**). |

## Clinical Context

VN remains a clinical diagnosis with symptoms of acute vestibular dysfunction, normal hearing, and typical signs.[e10] Use of VEMP to parse out which parts of the nerve or labyrinth are affected is predicated on the notion that cVEMP is indicative of saccular function and oVEMP of utricular function. Although this notion is biologically plausible and supported by animal studies, and studies of VN have found that caloric loss correlates strongly with absence of oVEMP responses, direct evidence in humans of the type acceptable within the AAN guideline process is currently absent.

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| **Weak Evidence** | cVEMP may be used as an ancillary test in Ménière's disease for vestibular dysfunction (**Level C**). |
| **Insufficient Evidence** | There is insufficient evidence that either cVEMP or oVEMP may be used to diagnose Ménière's disease. (**Level U**). |

## Clinical Context

The diagnosis of Ménière's disease has long been a clinical one,[e19] and only recently has audiometry been added to the diagnostic criteria.[e20] There is no demonstrable role of VEMP in diagnosis of Ménière's disease.

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| **Weak Evidence** | cVEMP may not be used to make a benign paroxysmal positional vertigo (BPPV) diagnosis (**Level C**). |

## Clinical Context

Diagnostic criteria for BPPV have been published.[e23] No role for VEMP in the diagnosis of BPPV has been established.

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| **Weak Evidence** | Although an absent VEMP response in one or both ears appears to occur more often in patients with vestibular migraine (VM) than in normal controls, VEMP may not be used to assist in VM diagnosis or management (**Level C**). |

## Clinical Context

VM is a clinical diagnosis with established clinical criteria.[e26] No vestibular test makes the diagnosis of VM, but vestibular tests, including VEMP, may clarify the status of vestibular function when needed to exclude other conditions.

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| **Insufficient Evidence** | Data are insufficient to make recommendations regarding use of VEMP in diagnosis of other specific vestibular disorders besides SCDS (**Level U**). |

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