

IN BALANCE

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VESTIBULAR INVESTIGATION UNIT

A collaborative service provided by the Royal Victorian Eye & Ear Hospital and University of Melbourne Department of Otolaryngology
<http://www.medoto.unimelb.edu.au/oto/vestibular.html>

EDITORS NOTE

In the last edition of 'In Balance' we spoke of a self assessment study we had underway, to assess our Vestibular evoked myogenic potential (VEMP) test procedure and parameter settings. We strive to adhere to evidence-based best clinical practice, and to do this, we remain up to date with current publications. The results of a normative data study using modified VEMP parameters will be shown in this edition. We wish all our readers a Merry Christmas and prosperous New Year.

- Rebecca Verhoef

In the last six months (since Nick and Katie have joined our team) we have

assessed **646** patients in the VIU!!!!

This means we are now on track to

assess over **1300** patients with inner ear dizziness and balance problems per year. This service has steadily grown from very humble beginnings when we originally assessed only 52 patients per year in 1998.

VESTIBULAR EVOKED MYOGENIC POTENTIALS (VEMP)

A literature search of current recording parameters for VEMP allowed some simple modifications to our test set-up to align our testing with these new findings. Brantberg and colleagues (2007), Tamaki (2006) and Hain (2007) described replacing click stimuli with tone-bursts as well as increasing the stimulus intensity. A test protocol was developed and tested in a normative data study at the VIU. Results were obtained 66% of the time with 'old' test set-up compared with now 90% of the time with the 'new' protocol, which demonstrates an improvement of test reliability. The findings of the normative data study (minimum and maximum results) are displayed in the box above.

P13 – N24 (μ V)	VEMP threshold (dBnHL)
84.9 – 1042.3	70 – 95
N = 33	N = 10

The results show a very large range of normal amplitudes. Under the 'old' protocol, we would screen for superior canal dehiscence if the amplitude of the P13-N24 complex was greater than approximately 330 μ V, however under the 'new' protocol, amplitudes of this degree are within the normal range. This has resulted in us changing our procedure for when VEMP threshold seeking is performed. Rather than having a fixed amplitude to trigger the need for further testing, the patient's symptoms and other test findings will guide this decision.

ELECTROPHYSIOLOGICAL TESTING & INTERFERENCE

Currently, we are reviewing the way we monitor and reduce electrical interference in our clinical recordings. Sources of electrical interference are ubiquitous in the evoked response recording environment and have the potential to contaminate our test results. Interference emanates from several sources: the patients' myogenic activity, the electrode-patient interface, and from electric and magnetic fields. We utilise various strategies to combat interference, such as filtering, averaging, differential recording, utilising control recordings, and reducing myogenic interference through patient education. Our goal is to achieve interference free recordings by understanding how interference occurs and then developing evidence based clinical procedures for detecting, preventing, and resolving interference.

INTERIM REPORTS

Do you have access to email? Would you like an 'interim' report of your patient emailed to you?

We would like to encourage our referrers to provide us with their email contact address to shorten the time taken for a report to reach its recipient and to save some trees! Only 'interim' reports will be emailed, and a paper copy along with the results will be mailed once read by our expert neurologist, Dr Mark Paine. To take part in this, email your address to enticott@unimelb.edu.au



Quirky Patient story!

For all patients referred to the VIU, information is sent along with their appointment letter, explaining some of the tests that will be performed on the day of testing, to help reduce anxiety. Recently, Cathryn had a 16 year old boy come for vestibular testing. After reading the information we sent, he imagined the testing to be similar to the astronaut testing, and thought it all sounded very exciting. At the conclusion of the tests, he was very disappointed, stating that "we should get some better (less boring and faster perhaps?) tests!" He was especially disappointed that the seatbelt on the rotational chair was not required. Watch out NASA, here is a boy who is destined for a career in space expedition.

Progress of Research within the Department...

VESTIBULAR REHABILITATION

Planning for another vestibular rehabilitation study is underway as a follow on from our Pilot study which investigated vestibular exercise in individuals with inner ear problems. The pilot study examined the difference between common strengthening exercises and exercises that were designed to help the vestibular system adapt and compensate, showing a significant improvement in the vestibular rehabilitation group. The new study aims to compare patients who are given 2 different sets of vestibular rehabilitative exercises. More details will follow.

VESTIBULAR MIGRAINE

Over the past 12 months, Jessica Vitkovic (for her PhD) has been conducting a significant amount of new research into vestibular migraine, which to date, has focused on categorising each patient with migraine and examining their vestibular response as well as performing numerous questionnaires (e.g. motion sickness questions). The next phase will involve investigating if patients with Definite Vestibular migraine and Probable Vestibular migraine have improved patient outcomes after performing vestibular rehabilitation.

COCHLEAR IMPLANTS & VESTIBULAR SYMPTOMS

In a randomised clinical drug trial we are investigating if the use of a steroid administered into the cochlea at the time of the CI electrode insertion, can reduce the incidence of postoperative inner ear dizziness and imbalance. This project forms the basis for Joanne Enticott's PhD project. Adult CI candidates having CI surgery in Melbourne will be invited to participate. This two year study begins in January 2008 and will involve 102 subjects.

TINNITUS

A study within the RVEEH audiology department, is examining the outcomes of a group of subjects who report tinnitus as their primary concern, who undergo a 2 hour tinnitus information session. This session provides a comprehensive 'tutorial' about the aspects of tinnitus and community resources are discussed. It also provides patients with an opportunity to meet with others with the same problem and discuss what helps them to reduce the impact of their condition. If you would like to refer a patient for this study, please contact Brooke Paisley on 9929-8270.

Reference List for change of VEMP parameters:

1. Brantberg K. et al (2007). Age-Related Changes in Vestibular Evoked Myogenic Potentials. *Audiology and Neurotology* 12:247-253
2. Tamaki C. PhD from Washington University. ASHA Convention Presentation 2006
http://convention.asha.org/2006/handouts/855_0108Tamaki_Chizuko_091357_111506055753.pdf
3. Hain T. C. Website last updated June 2007
<http://www.dizziness-and-balance.com/testing/vemp.html>

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