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Karen Pullar
The Oticon Foundation in New Zealand
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Dear Karen

Oticon Foundation Hearing Education Centre Report 2012

Enclosed is the report on the activities of the Oticon Foundation Hearing Education Centre at the University of Auckland.

The Section of Audiology is very grateful to the Foundation for its support through the funding of the Oticon Foundation Hearing Education Centre, which enhances the Section's ability to contribute to public education around hearing loss and training of audiology professionals.

My apologies for supplying this report so late.

Yours sincerely

Peter R Thorne

Oticon Foundation Hearing Education Centre, Section of Audiology, University of Auckland

Report on activities in 2012

The Oticon Foundation Hearing Education Centre was active hosting research seminars and the annual Spring Symposium. Funding from the Centre also supported tutors in the Master of Audiology programme, book purchases for the Section of Audiology and hosting visitors. These activities are highlighted below.

1. Seminar programme for 2012

a. OFHEC Hearing Research Seminars

These seminars were held at the School of Population Health, University of Auckland Tamaki Campus. They are popular and well received by the research and clinical communities and have about 30-50 regularly attending. They not only provide an opportunity for the community to hear from various speakers but also the chance to network with each other.

Tuesday 24th April 2012

Dr Michel Neeff, Meniere's Disease - Medical and Surgical Management

Dr Neeff is a Paediatric and Adult Neurotologist and Skull Base Surgeon.

Meniere's disease is a condition that affects the balance and hearing organs in the inner ear, causing balance problems and transient or permanent hearing loss. He graduated from the University of Auckland and completed his training in Otolaryngology, Head and Neck Surgery with the Royal Australasian College of Surgeons in 2005, and then spent a fellowship year at the Skull Base and Auditory Implant Unit in Manchester, UK in 2006. He is an ENT consultant at Starship Children's Hospital, Auckland City Hospital, and Green Lane Hospital and is a Surgeon for the Northern Cochlear Implant Programme. He is an Honorary Lecturer at the Auckland Medical School and is enrolling in an MD at the University. In this seminar, Dr Neeff described some of the latest views on the cases and treatments of Meniere's disease from a clinician's perspective. He presented an overview of the condition of Meniere's disease and the disabling aspects of this distressing condition and talked about the new thoughts on the mechanisms and treatments.

Tuesday 7th August, 2012

Dr Michael Bergin: Middle Ear Surgery and Inner Ear Injury – Exploring the Associations

Dr Bergin is an Otolaryngology, Head & Neck Surgery trainee who is currently undertaking PhD research at the University of Auckland. He graduated MBChB from the University of Otago in 2004 and completed a MMedSci (Surgery) thesis also through Otago in 2011. He was awarded the inaugural Sir Patrick Eisdell Moore Clinical Research Fellowship from the University in support of his current research. Dr Bergin gave a detailed account of his research on the influence of middle ear surgery on the inner ear and the potential deafness that can occur. Less than 1% of middle ear surgery patients wake with a dead ear post-operatively, however, over 30% have a permanent measurable sensorineural hearing loss when the most sensitive definition is applied. This loss is most evident in the Extended High Frequency (EHF) spectrum up to 16 kHz. This EHF hearing is important for temporal integration of sound and for understanding speech in background noise. The cause of post-operative injury is not clear in every case, but one hypothesis is that forces associated in manipulating middle ear structures are so grossly unphysiological that they injure the cochlea when transmitted down the ossicular chain. This seminar discussed the evidence around SSNHL and middle ear surgery and his research which is exploring this concept by: measuring the forces applied during middle ear manipulations; determining which displacements of the stapes footplate are injurious in an animal model; and investigating potential interventions to protect the cochlea during middle ear surgery.

Wednesday 19th September. Presentations by current PhD students at The University of Auckland.

This carried on from a successful seminar in 2011 in which we showcased the excellent PhD students and their research in the field of hearing across the University. This was once again an outstanding set of presentations and revealed the superb research and quality of the graduate students at the University. The topics and departmental affiliations of the students also reveal the broad, and interdisciplinary nature of much of the hearing related research being undertaken at the University.

Areej Asad – Speech Sciences: *Speech errors in children with hearing loss in New Zealand.*

Children with hearing loss have developmental and non-developmental “unusual” phonological processes even with early identification and intervention. This project aims to identify speech characteristics which are prevalent in speech of NZ school age children with hearing loss. The findings will inform decisions about speech therapy needs for children with hearing loss and will form the basis for a controlled intervention study that will compare two speech therapy approaches.

Giriraj Singh Shekhawat – Audiology: *Transcranial Direct Current Stimulation (tDCS): Effects on Tinnitus Suppression.* This pilot study examined tDCS dose (current intensity and duration) and response effects for tinnitus suppression in 25 participants with chronic tinnitus. Current intensity of 2mA for 20 minutes was the most effective stimulus parameter for anodal tDCS of Left Temporoparietal Area. tDCS could be a potential clinical tool for reduction of tinnitus, although longer-term trials are needed.

Daniel Stevenson – Engineering and Audiology: *Multiple venting configurations for hearing aid applications.* This project looks at alternative venting design approaches to universally fitting hearing aids. Multiple venting was investigated to manage acoustic feedback and the occlusion effect. Studies were conducted using a 2cc coupler to see the effect of vent diameter and number as well as incident sound pressure level on acoustic transmission. Shape modelling was also conducted to investigate the variation in size of the ear canal and spatial constraints on venting.

Ravi Reddy – Audiology: *Hearing protection use in New Zealand manufacturing workers.*

Hearing protection devices (HPDs) are used inconsistently and improperly in industry. This project uses an ecological model for health promotion to determine factors that influence use of HPDs and to develop interventions aimed at promoting HPD usage. This model can help in identifying gaps and developing interventions aimed at preventing NIHL. Multi-level research models may be useful to identify personal and environmental factors for development of effective NIHL interventions.

b. *Oticon Foundation Hearing Education Centre Spring Symposium*

The annual OFHEC Spring Symposium was held at the Owen Glenn Building on the University of Auckland campus on Monday 3rd September 2012. The symposium covered the topic of Translational Research in Audiology and Communication Sciences: *the interface between the clinic and research*. The meeting once again received a lot of support and attracted about 80 registrants covering Audiology, Otolaryngology and other health professionals. The Symposium looked at translational research or the way in which basic and applied research can be transferred to clinical applications. The purpose was to encourage greater interaction between clinicians and researchers to develop new and better treatments for hearing disorders. It considered the principles of translational research and drew on successful examples, especially in sensory systems, to identify the pathways for translational research. The symposium was very stimulating and provided interesting ideas and models for researchers to consider in attempting to develop a more translational focus to their research.

The symposium began with an introductory talk by Professor Peter Thorne on translational research and how it applies to audiology and communication sciences. This was followed by presentations by:

- Distinguished Professor Bill Denny, Auckland Cancer Society Research Laboratories, gave a keynote address and spoke on the processes for translating basic science research and how it can be moved to commercial application, drawing on the examples from their research on anticancer drugs.
- Dr Ben Thompson, from the Department of Optometry, spoke on a new approach to treating amblyopia ('lazy eye').
- Dr Trevor Sherwin, also from the Department of Optometry presented a fascinating talk on the application of stem cells to the treatment of corneal injury in the eye.
- Dr Srdjan Vlajkovic, Department of Physiology spoke on the work he is leading on the development of pharmacological treatments for noise-induced hearing loss
- Professor Peter Thorne, spoke on work that is being undertaken in Physiology and Audiology into the use of MRI for the development of new diagnostic approaches for inner ear disease
- Dr Grant Searchfield, Department of Audiology spoke on his team's work on the development of new approaches using transcranial stimulation of brain plasticity as a treatment for tinnitus
- Professor Suzanne Purdy, from the Speech Sciences in the Department of Psychology spoke on her research on the approaches to diagnosing and treating Auditory Processing Disorders.
- Dr Bill Keith, from SoundSkills, presented on the SoundSkills Project which is working to integrating APD research into clinical service delivery.
- Dr David Welch from the Section of Audiology concluded the presentations by a talk on population health approaches to preventing hearing loss, with a focus on the Listen Up primary schools education programme.

2. Tutoring Support and other activities

The OFHEC funding provided essential tutoring support to the Master of Audiology programme at the University of Auckland. Dr Michael Sanders and Dr Kim Wise were employed part-time to provide clinical tutoring and supervision for students in the clinical papers within the programme. The clinical training is an essential and key part of the Audiology programme, preparing students for clinical practice. The access to highly qualified and experienced clinical teachers at the University is very important to provide good quality clinical instruction in a safe and supportive environment. This is in addition to the clinical instruction in private and public practice. But having tutors available within the department and clinic at the University offers a strong, consistent mentoring environment compared with the public and private clinics where there can be high staff turnover and lack of clinical time to provide feedback. Although some tutoring is supported by the university the funds are always limited and the opportunity to bolster this through OFHEC funding is greatly appreciated.

The OFHEC funding also provided textbooks and reference books for the Section library.

Staff in the Section also engaged in community talks and seminars, to the public through the Hearing Association and National Foundation for the Deaf and University departments. All these recognise the sponsorship of the Oticon Foundation Hearing Education Centre. Staff are also engaged in community groups, such as the National Foundation for the Deaf, Hearing Association and tinnitus groups.

In summary, the year has been very busy for the Centre achieving its goals of public education and supporting the training of audiology professionals. We will be looking to have discussions with the

Oticon Foundation in 2013 about plans to form a Centre for Hearing and Deafness at the University of Auckland, which would raise the profile of the work which is being undertaken across the spectrum from basic to applied and clinical sciences. The OFHEC would be an outreach, community arm of this Centre.

Peter Thorne
Professor

On behalf of the OFHEC Management Group