

Sound Matters

NCIP

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Northern Cochlear Implant Programme

Introducing Derek Hadfield, Audiologist University of Auckland



Derek Hadfield

Derek Hadfield joined The University of Auckland Hearing and Tinnitus Clinic in June 2011. He carries out adult diagnostic and rehabilitative work, with a focus on tinnitus management for tinnitus patients, and rehabilitation for the profoundly hearing impaired. He conducts the audiology component of the adult cochlear implant assessments, and will be getting involved with post implant rehabilitation in the near future. He graduated from the Masters of Audiology programme at The University of Auckland in 2010. Outside of work he enjoys writing music on piano and guitar, working out, tramping, and going out with friends.

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Research into whether babies with Auditory Neuropathy Spectrum Disorder develop speech differently to non-ANSD cases *by Lydia O'Connor*

This semester I have started my MSc (Master of Science) in Speech Science, at The University of Auckland. I am looking at the early speech development of babies with hearing loss. The main assessment tool I will use is the IMP (Infant Monitor of vocal Production). This assessment tool is completed by the therapist in conjunction with the parent/caregiver, it looks at babies' vocalisations, and can be used to monitor them and ensure that they are making progress with their vocalisations during their first year of hearing. The research will look at whether babies with auditory neuropathy spectrum disorder develop speech differently to non-auditory neuropathy cases. The cohort will include babies on caseload at The Hearing House, and hopefully, from some of the District Health Boards as well. Suzanne Purdy and Andrea Kelly are my supervisors.



Who's on the NCIP Audiological Team?

ADULT

Ellen Giles - CI Rehabilitationist
Gayle Watson - Hearing Therapist
Caroline Selvaratnam - Audiologist
Derek Hadfield - Audiologist

PAEDIATRIC

Leigh Martelli - Audiologist
Ruth Lin - Audiologist
Claire Spence - Audiologist

Paediatric & Adult Programme Updates

UPDATE ON PAEDIATRIC NUMBERS

Age (years)	Implants received in the past 6 months (01/4/13 - 31/09/2013)			
	Public	Private	Re-implant	Total
0-2	6	2	-	8
3-5	3	1	-	4
6-12	3	2	-	5
13-19	4	1	2	7

Twenty two children have received cochlear implants over the past six months, since the previous publication of Sound Matters. Two of the children have opted to have simultaneous bilateral implantation with their families fundraising for their private ear. Four of the school-aged children also underwent implantation for their second ear, with the amount of time elapsed since their first implant ranging between eight months to ten years. There is still a steady influx of referrals for children under the age of three years, with a large number of these referrals from the Newborn Hearing Screening programme. However, a large number of teenagers with progressive sensorineural hearing loss were also implanted over the past 6 months. There are still eight children currently under assessment for CI candidacy within the paediatric programme at the time of this publication.

UPDATE ON ADULT NUMBERS

During the last financial year (to end of June 2013) a total of 38 new adults received implants (34 fully funded and four subsidised). To date 10 implants have been allocated between July and December 2013:

Implants completed 01/07/13 - 31/08/13	
Number of adults implanted with full funding	4
Number of adults scheduled for surgery with full funding	6

Adult numbers 2013-2014 year (as of 31/08/2013)	
Number of adults in assessment	14
Number of adults referred but not yet ready to start the assessment (referred to Hearing Therapists or ENT departments in the local area for further testing)	9
Number of adults on eligibility list	69
Number of adults 'on review' - not yet in criteria but close to meeting the criteria	23

The new adult referral template continues to work well; enabling adults to be booked for assessment within a few weeks of the completed referral being received. It would be appreciated if the complete diagnostic information being submitted included the Real-Ear Measurements (REMs) of August 2013. The referral rate for the period from April 2013 to August 2013 was an average of six adults per month; this is a slight drop from our usual rate of seven per month (in 2012-13 financial year)

ADULTS WITH COCHLEAR IMPLANTS

Young people continue to transfer to the adult programme from the paediatric programme; seven transferred in each of the years 2010-11 and 2011-12 and last year, five children transferred across to the adult programme. This year a total of ten young people with CIs are anticipated to join the adult programme. A total of 258 publicly funded adults are being supported by the programme as at the end of August 2013

Cochlear Implantation in Patients with Auditory Neuropathy Spectrum Disorder

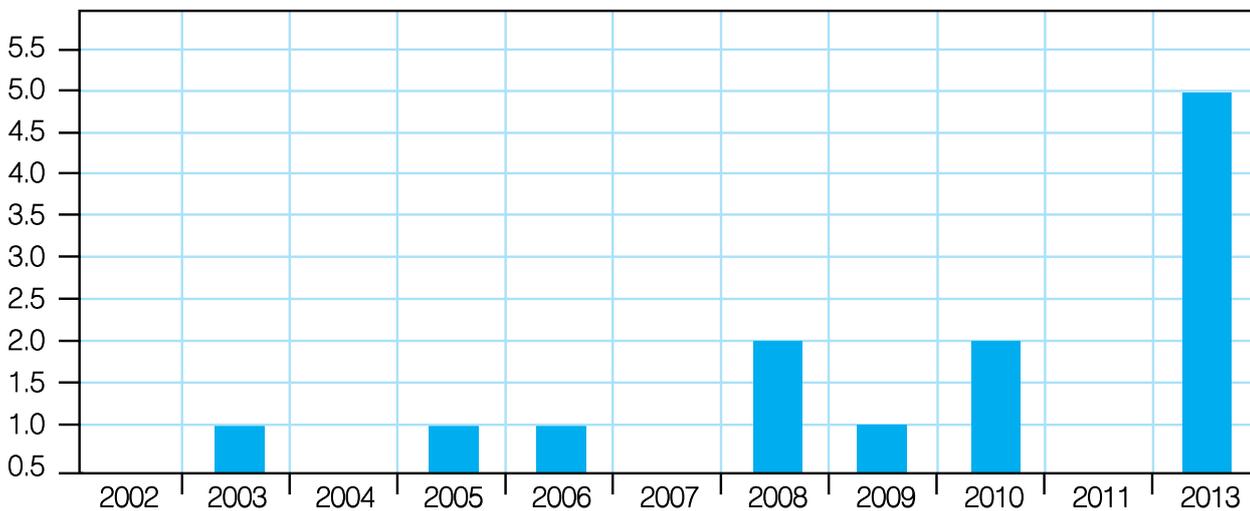
Auditory Neuropathy Spectrum Disorder was collectively termed by a panel of experts in 2008, describing the range of symptoms resulting from the loss of inner hair cells, the auditory nerve fibres and the connection between these structures of the auditory pathway. A degraded auditory signal can result in a range of speech perception outcomes ranging from speech perception scores that are consistent with auditory thresholds, to scores that are much poorer. An impairment of the synchronous firing of the auditory nerve fibres can often also functionally present as fluctuating auditory thresholds. Hence targets for hearing aid fittings in these patients are often conservative, and settings are based on the patient's most recent behavioural thresholds. The implication therefore is that the fluctuations in hearing thresholds can result in periods of inadequate amplification which may hinder a child's speech and language development.

Cochlear implantation has been considered as a recommendation for the patients who do not receive enough benefit for speech perception from their hearing aid. Extensive counselling needs to be considered, to set appropriate expectations for the outcomes of implantation. In paediatric cases, parental questionnaires, early speech perception tests and Cortical Auditory Evoked Potentials can be used in combination to monitor the progress of speech and language assessment. Involvement of speech and language professionals and a multidisciplinary team approach is also recommended in the assessment of the child's progress with hearing aids before considering cochlear implantation.

Numbers from NCIP children

The NCIP Paediatric programme currently has 17 cases of diagnosed ANSD, with three of those children still under assessment for CI candidacy.

- Six of these children have additional disabilities such as cerebral palsy, mitochondrial disorder, Down Syndrome Five of the children also use NZSL or key signs in combination with their CI
- Five of the children are old enough and capable of doing open-set word discrimination testing with CNC words. Their scores currently range between 60-80% for word scores and 80-92% for phoneme scores.



Graph 1: Shows the increase in cochlear implantation in ANSD cases over the recent year

Referral considerations for Paediatric ANSD cases:

- Poor or slow progress of speech and language development after appropriate hearing aid fitting Speech and language assessment of ANSD cases can be arranged upon discussion with the team
- Children with multiple issues as well as diagnosed ANSD are also considered
- Any severity of hearing loss can be considered in cases where hearing thresholds fluctuate due to ANSD
- Repeat Click ABR may be considered during the assessment for CI candidacy

It is often difficult to assess progress in an early-diagnosed ANSD child. If in doubt, please consider a referral or discussion with the CI team.

Cochlear Implant Recipients



KESHIA UELE

Keshia was referred to Audiology at almost three years old. Her Grandmother noticed she had no response to a fire alarm going off while eating breakfast. Her Kindergarten teachers also raised concerns regarding her hearing. Eventually, she was diagnosed with a normal precipitously sloping to profound high frequency hearing loss in both ears and was fitted with hearing aids. Auditory Brainstem Response testing at the time also diagnosed Keshia with Auditory Neuropathy Spectrum Disorder.

To help with speech clarity and language development Keshia began attending The Hearing House for Auditory-Verbal Therapy. Keshia made progress with her speech and language development initially, but was soon referred for CI assessment due to concerns from her habilitationist. Her severe hyper-nasality and poor clarity of speech, made it difficult for peers to understand her. Cortical Auditory Evoked Potential testing also showed that she had poor access to a high frequency speech phoneme. Keshia's right ear was also implanted as she did not have adequate access across the speech spectrum.

Since her Cochlear Implant switch-on, Keshia has made excellent progress in her speech and language skills. Improvements in her behaviour were also noticed by everyone. With the support of her grandparents, Keshia has worked hard to improve the intelligibility of her speech. She started school at Auckland's Sunnyvale Primary earlier this year in a mainstream classroom. The reports have been positive; reinforcing how well-adjusted she is and how much she is enjoying school. Keshia's grandparents are thrilled with her progress and look forward to seeing her continue through her CI journey.



DIANE CUNNINGHAM

I did not know for sure that I had hearing problem until I took my children to play centre. All the mums kept asking me if I had a hearing problem. At our daughter's two-year check-up I mentioned it to the nurse, who said she would organise an appointment for me. That was the start of many tests at the hospital and audiology clinics. There were many times when I tried to join in a conversation to have everyone look at me as if to say "what are you talking about?" I was given a hearing aid, but it did not work for me; it made everything sound louder but did not make things clear. I was thinking "what now?" I went back to no hearing aid and the struggle.

On the 1st of February 2011 I had my implant operation. After about four weeks I was back for switch on. Zara, my daughter, was the first to speak "what's for lunch? I'm starving". Those were the first clear words I had heard in one sentence for I don't know how long. It brought tears to my eyes. Outside things were a bit different. People talking, traffic going by, the wind. It was good to hear the grandkids even if I couldn't understand them, I could hear them.

It is two and half years since I got my cochlear implant. I still have problems, understanding the TV most of the time, but I can see and have the captions. I still have trouble with some voices when people talk too quickly but I can hear what's going on around me much better. No one tells me I'm yelling now. Thank you so much to my family, to my cochlear team, Gillies Hospital, the audiology team, you have all made my life worth living again.

REFERRALS & FEEDBACK

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