

# Sound Matters

NCIP



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Northern Cochlear Implant Programme

## Introducing Amy Waite, Habilitationist

### Amy Waite

Amy joined the Hearing House in October of this year. Amy graduated from the University of Otago in 2006 with an Honours degree in Psychology. Following this, she spent 16 months teaching English and travelling throughout South Korea. Amy then returned to Auckland in 2008 to begin her Masters of Speech and Language Therapy Practice (MSLTPrac). After graduating in 2010, Amy worked as a Speech and Language Therapist with the Ministry of Education (MoE), Auckland District team. During her time with the MoE, Amy particularly enjoyed working alongside parents and teachers, helping them learn how they can support children's speech and language development through everyday interactions. This included facilitating *It Takes Two to Talk* – the Hanen Program for Parents of Children with Language Delays. Amy is currently working towards becoming a LSLC Cert. Auditory-Verbal Therapist.



## IN THIS ISSUE

[Paediatric & Adult Programme Updates](#) **2**

[Update on Adult Numbers](#)

[Update on Paediatric Numbers](#)

[Bilateral Cochlear Implants](#) **3**

[Where are we now? Bimodal hearing, the use of both a Cochlear Implant and a Hearing Aid](#)

[Cochlear Implant Recipients](#) **4**

[Keshia Uele  
Lorna Murray](#)

[Contact Details](#) **4**

## Clinic shutdown over Christmas & New Years

	ADULT PROGRAMME	PAEDIATRIC PROGRAMME
<b>LAST DAY</b>	4pm, 23rd December 2015	2pm, 24th December 2015
<b>REOPEN</b>	8am, 5th January 2016	Audiology 8am, 4th January 2016 Therapy 8am, 11th January 2016
<b>EMERGENCY PHONE</b>	021 492 241 (text only). Texts will be checked twice daily (excluding public holidays) and only emergencies will be actioned	Call or text 021 579 210 for staff assistance with technical emergencies. Staff are not available on statutory holidays and will make contact as soon as possible after these days.
<b>PARTS</b>	Requests for batteries, dry bricks or other non-essential equipment will be actioned after 5th January.	Families are asked to ensure they have sufficient batteries and spare parts to cover the shutdown period, and to contact Donna before 11th December if an order is required.

## Who's on the NCIP Audiological Team?

### ADULT

Ellen Giles - CI Rehabilitationist  
Caroline Selvaratnam - Audiologist  
Derek Hadfield - Audiologist

### PAEDIATRIC

Leigh Martelli - Audiologist  
Claire Spence - Audiologist  
Laura Le Roux - Audiologist  
Megan Levi - Audiology Assistant

## Paediatric & Adult Programme Updates

### UPDATE ON PAEDIATRIC NUMBERS

Age (years)	Implants received in the past 6 months (01/05/2015-31/10/2015)				
	Public	Private	Acc	Re-implant	Total
0-2	5	0	0	0	5
3-5	3	0	1	0	4
6-12	5	0	0	0	5
13-19	1	0	0	1	2

16 children have received cochlear implants over the past six months, since the last publication of Sound Matters. One child received their second cochlear implant through ACC. The patient who was re-implanted had both implants re-implanted due to migration of the internal arrays. There are still 11 children currently under assessment for cochlear implantation at the time of this publication.

### UPDATE ON ADULT NUMBERS

The financial year commenced (July 2015) with 20 implants being allocated for the year. 15 of these implants were allocated in the July-December time frame.

Progress to date is detailed below:	
Number of adults to be implanted with full funding	20
Number of adults scheduled for surgery with full funding	15
Still to allocate surgery date	5

Adult assessments for CI 2015-2016 year (as of 30/10/2015)	
Number of adults in assessment	14
Number of adults referred but not yet ready to start the assessment (referred to Hearing Therapists in the local area for further testing)	9
Number of adults on eligibility list	61
Number of adults 'on review' - not yet in criteria but close to meeting the criteria	32

The new adult referral template continues to work well; we appreciate receiving the complete diagnostic information with the referral included the Real-Ear Measurements (REMs) so we can schedule adults for assessment within a few weeks of the completed referral being received. The **referral rate** for April 2015 to October 2015 was an average of six adults per month; this is close to our usual rate of seven per month (in the last four years)

### ADULTS WITH COCHLEAR IMPLANTS

Young people transfer to the adult programme from the paediatric programme at age 19 years. Eight young adults with CIs are anticipated to join the adult programme in this financial year. Last year 11 children transferred across to the adult programme. The CI clinical teams (adults and paediatrics) continue to look at ways of developing service delivery to this group so the transition to the adult programme for young adults is made as smoothly as possible. A total of 364 publically funded adults are being supported by the programme as of w30/10/2015.

### DEVICE UPDATES

The N6 processor for N22 recipients has recently been launched by Cochlear Ltd. Many of the N22 recipients have been funded to replace their old generation processors now that the N6 is compatible for them. The N6 processor offers many the opportunities to use dual microphone technology, rechargeable batteries, and automatic programmes with latest algorithms for hearing in noise.

## Bilateral Cochlear Implants

In April 2014 the New Zealand government announced that it would fund bilateral cochlear implants for any newly referred child under the age of 19 years. They also announced funding for a second cochlear implant for any child currently under six years of age who already had an existing cochlear implant. The move came from evidence that children with bilateral cochlear implants out-perform children with unilateral cochlear implants on a range of speech perception tests. (Lovett, 2010; Scherf, 2009; Forli, 2011)

### Where are we now?

The Hearing House now has 104 children with bilateral cochlear implants. Table 1 shows a summary of the total number of children with unilateral or bilateral cochlear implants currently with The Hearing House. It is interesting to note that sometimes even though a child is potentially eligible for bilateral cochlear implants, only a unilateral cochlear implant is given. The reason for this could include absence of an auditory nerve on one side, presence of Auditory Neuropathy Spectrum Disorder, or other conditions that may have a functional impact on the child. At The Hearing House we currently have five children under the age of six who have been given only one cochlear implant. Above the age of six a much larger number of 112 children have a unilateral cochlear implant. Many of these children wear a hearing aid in the contralateral ear.

Table 1 - Table showing the number of unilateral and bilateral cochlear implant users in different age ranges at The Hearing House.

Age	Total Number of Bilateral CI Wearers	Total Number of Unilateral CI Wearers
Under 6 Years	40	5
From 6 Years to 19 Years	57	112

### Bimodal Hearing - The use of both a Cochlear implant and a hearing aid.

For a lot of our older children and adults who have only had one cochlear implant funded, use of a contralateral hearing aid can help improve speech perception, sound localisation and their ability to function in their day to day lives. With cochlear implants it is widely known that they do not represent the low-frequencies as well as we would hope, and is often why CI wearers find their ability to appreciate music substantially hindered. There is research to support that low-frequency information also contributes to speech performance in background noise (Chang, 2006). Further studies have looked at the performance of bimodal users to investigate the benefit of wearing a contralateral hearing aid with a cochlear implant (Illg et al, 2014), as a particular example, found from their large cohort study, that there was a significant advantage with bimodal compared to CI alone for all four tests performed. This is shown in Fig 1.

It is theorized that patients who have a greater amount of residual hearing in the contralateral ear will perform better. However it does appear that there is discrepancy among studies as to whether better residual hearing thresholds in the hearing aid ear constitutes better outcomes for bimodal speech perception (Chang, 2006; Ching, 2004; Illg, 2014). Overall though it is recommended that for anyone with thresholds above 80dBHL in the low frequencies, that a bimodal fitting is trialled (Ching, 2004; Illg, 2014).

For any audiologist looking for guidance on a bimodal fitting there is a comprehensive guide from Advanced Bionics titled "Bimodal Fitting Quick Guide" which is a great starting point. You can contact David Crowhen at Phonak or Laura Dixon at Advanced Bionics for a copy of this.

#### References

- Illg, A.I., Bojanowicz, M., Lesinski-Schiedat, A., Lenzw T., & Buchner, A. (2014). Evaluation of the bimodal benefit in a large cohort of cochlear implant subjects using a contralateral hearing aid. *Otology & Neurotology*, 35(9), e240-244
- Forli, F., Arslan, E., Bellilelli, S., Burdo, S., Mancini, P., Martini, A., Berrettini, S. (2011). Systematic review of the literature on the clinical effectiveness of the cochlear implant procedure in paediatric patients. *ACTA Otorhinolaryngologica Italica*, 31(5), 281-298
- Chang, J.E., Bai, J.Y., & Zeng, F.G. (2006). Unintelligible low-frequency sound enhances simulated cochlear-implant speech recognition in noise. *IEEE Transactions on Biomedical Engineering*, 53(12pt 2), 2598-2601
- Lovett, R.E., Kitterick, P.T., Hewitt, C.E., & Summerfield, A.Q. (2010). Bilateral or unilateral cochlear implantation for deaf children: An observational study. *Arch Dis Child*, 95(2), 107-112
- Scherf, F.W., van Deun, L., van Wieringen, A., Wouters, J., Desloovere, C., Dhooge, I., Offeciers, E., Deqqouj, N., De Raeve, L., De Bodt, M., Van de Heyning, P.H., (2009). Functional outcome of sequential bilateral cochlear implantation in young children: 36 months postoperative results. *Int J Pediatr Otorhinolaryngol*, 73(5), 723-730
- Ching, T.Y., Incerti, P., & Hill, M. (2004). Binaural benefits for adults who use hearing aids and cochlear implants in opposite ears. *Ear and Hearing*, 25(1), 9-21.

Graph showing performance of unilateral CI wearers compared to bimodal wearers. (Illg et al. 2014)

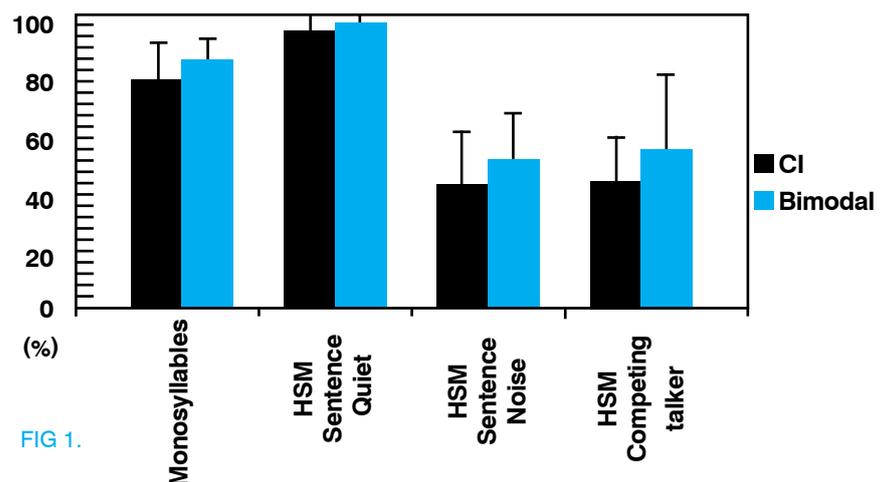


FIG 1.

## Cochlear Implant Recipients



### KESHIA UELE

Keshia was first diagnosed with hearing loss when she was approximately two years old.

Her grandmother Jody became concerned when she noticed that Keshia didn't respond to a smoke alarm that went off in the kitchen while she was having breakfast.

Shortly after she was diagnosed with a normal sloping to profound hearing loss bilaterally and was subsequently fitted with hearing aids.

In early 2011, Keshia first saw us at the Hearing House for assessment for a cochlear implant. At this time, there was concern about her language development, but assessment revealed that Keshia was doing quite well with her hearing aids, and the decision was made to have Keshia continue to wear the hearing aids, but attend habilitation through the Hearing House.

Keshia was also found to have Auditory Neuropathy Synchrony Disorder bilaterally.

Later that year however, her habilitationist Estelle raised concern that although Keshia had made progress, her speech and language were not where she had hoped it would be.

At this second assessment, it was found that Keshia was not getting adequate access to the speech spectrum, and it was recommended that Keshia have a cochlear implant in her right ear. Keshia progressed well with her cochlear implant, and her grandmother Jody reported that Keshia seemed to hear much better with her cochlear implant ear compared to her hearing aid ear.

In 2013, we saw a drop in Keshia's hearing thresholds in her left ear and it was determined that she could benefit from a cochlear implant in this ear. Keshia's family decided to proceed and privately funded the cochlear implant for Keshia's left ear. Keshia was implanted with a CI422 array in

the left ear which is designed to better allow the chance of hearing preservation.

Keshia was fortunate to have retained a good portion of her residual hearing in the left ear and now wears a hybrid device. This hybrid device is both a cochlear implant and a hearing aid. This means that Keshia has amplification for the low-frequency hearing that remains intact, but has the cochlear implant replacing the high-frequency hearing that she is missing.

Keshia is making amazing progress with both her cochlear implants and is always a pleasure to have visit at the Hearing House.

She is about to receive a remote microphone to use with her left ear, which she plans on using to hear Jody in the car, as well as for streaming music through to her cochlear implant. We are looking forward to hearing how she finds the remote mic and to seeing her future progress.



### LORNA MURRAY

I started to lose my hearing in my late teenage years, gradually deteriorating until eventually being implanted aged 50. I chose to fund a second implant to go bilateral because understanding speech was so important to me, and the research seemed to show that bilateral implants would give me the biggest gains.

My implants were switched on four months ago. On the day of switch on, I was able to clearly hear speech where there was no background noise. That afternoon I participated in a video conference. I had my usual writer alongside, but was able to hear all

participants clearly.

As the months have passed, my hearing abilities have developed significantly. I can now hear clearly on telephones, locate the direction of sound, discern single voices in noisy environments, hear clearly while driving, hear speech in the movies and on TV, and hear increasingly quiet and subtle sounds.

Life is so much less tiring, communication straightforward, and there has been a huge change in my ability to follow and participate in what is going on. My only limitation continues to be music, particularly electronic

music, which is distorted and tinny. This is problematic where there is music in the background which is often the case.

I was implanted one week before a good friend who had a single implant.

Of course, all recipients are different, but it appears that we have a different ability to locate direction of sound, discerning single voices in noisy environments, and processing more complex and delicate sounds.

Benefiting from the implant has been life-changing, helping relationships with family and friends, work-life and my whole wellbeing.

## REFERRALS & FEEDBACK

### ADULT CI PROGRAMME

**Silvia Rosioru**  
Clinical Coordinator  
Private Bag 92019  
Auckland  
T: 09 373 7956  
F: 09 303 5978  
E: [adult@ncip.org.nz](mailto:adult@ncip.org.nz)

### PAEDIATRIC PROGRAMME

**Gurdeep Singh**  
Clinical Services Coordinator  
Private Bag 74022  
Greenlane, Auckland  
T: 09 579 2333  
F: 09 579 2310  
E: [child@ncip.org.nz](mailto:child@ncip.org.nz)

