

Professional Update

Issue 3 | November 2012 | South of England Cochlear Implant Centre

National Paediatric Bilateral Audit

Before 2009, most people only received one cochlear implant in this country. However in January 2009, the National Institute for Health and Clinical Excellence suggested that all suitable children could receive simultaneous bilateral cochlear implants, and those who had previously had just one implant could have a second device if appropriate. This was very exciting news. Following this guidance, a multi-centre audit started in 2010 to follow the outcomes of all children receiving two cochlear implants and this project is managed by SOECIC. Fifteen UK cochlear implant centres are now involved (Figure 1). Having two implants rather than one may give improvement in localisation (finding where a sound comes from) and listening in background noise, so these measures were audited. In addition, assessments of the children's speech, language and listening are being included, as well as parental perception and quality of life.

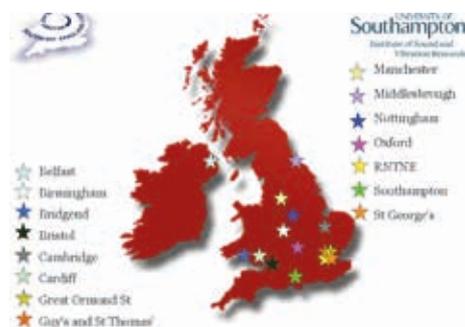


Figure 1. Cochlear implant centres participating in the audit

At this point (September 2012) more than 900 children are included in the audit. Around half had their implants

simultaneously (at the same surgery); the others had intervals of a few months to 16 years between their surgeries. So far the results from sequentially-implanted children are suggesting an improvement in localisation and speech understanding in noise after one year of use of the second device. Many of the children receiving simultaneous cochlear implants have been too young to participate in the testing, but their scores on listening and speech have improved with each year of use of their implants (Figure 2). The participating centres will continue data collection

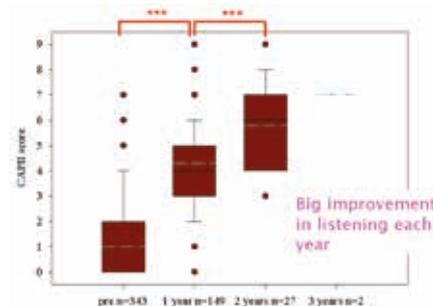


Figure 2. CAPTI scores show a big improvement in listening skills each year for children receiving simultaneous bilateral cochlear implants

until the end of 2012, in order to see more longterm data, especially in the very young children. An audit of the surgical data on all children receiving two cochlear implants has suggested the procedure is safe.

This is likely to be the largest bilateral outcome study of children with implants ever reported. It has the benefit of not selecting subjects; all children were eligible to be included. Well done to all our children



Figure 3. The new audit website: www.bilateralcochlearimplants.co.uk

and young people who have taken part in the testing so far!

We are holding a conference on 11 April 2013 to reveal the results of the audit.

Please look at our website or e-mail us for further details of the audit. bilateralci@southampton.ac.uk

See page 6 of this brochure for more information about the conference.

Helen Cullington



Interdisciplinary Auditory Processing Disorder Service at the University of Southampton

What is an Auditory Processing Disorder (APD)?

APD is 'characterised by poor perception of speech and non-speech sounds, has its origins in impaired neural function, and impacts on everyday life primarily through a reduced ability to listen, and so respond appropriately to sounds' (British Society of Audiology APD Special Interest Group (BSA APD SIG))¹

Simply stated, APD refers to difficulty processing what we hear.

The BSA APD SIG has recently published two key documents, namely a Position Statement and Practice Guidance Document¹. These documents provide an overview of the UK position on APD, its diagnosis and management, citing evidence levels, to inform clinicians of current best practice whilst simultaneously guiding further research.

There are three different types or categories of APD (BSA APD SIG)¹:

- 1. Developmental APD:** Cases presenting in childhood with normal hearing (that is normal audiometry) and no other known aetiology or potential risk factors. Some of these individuals may retain their APD into adulthood.
- 2. Acquired APD:** Cases associated with a known post-natal event (for example, neurological trauma, infection) or ageing.
- 3. Secondary APD:** Cases where APD occurs in the presence, or as a result, of peripheral hearing impairment. This includes transient hearing impairment after its resolution (for example, glue ear or surgically corrected otosclerosis).

Much of the focus is on Developmental APD, primarily because of concerns that it may lead to learning difficulties, especially affecting language and literacy, and hence to poor school performance.

In most cases hearing is normal but sometimes APD can occur in the presence of a hearing impairment. Diagnosing APD is more challenging when there is a hearing impairment as most current tests of APD require normal hearing.

Individuals with APD frequently present with one or more of the following difficulties:

- Difficulty localising and 'tracking' sounds
- Difficulties hearing in noisy and reverberant environments
- Hearing when signal is not clear or 'degraded' (for example, accents, telephone)
- 'Mishears' auditory information (for example, lethal / legal)
- Takes longer to respond to and process auditory information
- Poor listening skills and auditory attention
- Poor auditory memory
- Music perception difficulties

Additionally, in children there may also be reports of:

- Delayed auditory milestones
- Difficulty with learning songs and nursery rhymes
- Difficulty with multiple auditory commands
- Possible speech and language delay/disorder
- Phonological and phonemic awareness, reading, spelling, and academic difficulties.

Figure 1: Difficulties associated with APD

APD Service offered at the University of Southampton

We offer an interdisciplinary service as there is an overlap between Developmental APD and other conditions such as specific language impairment and dyslexia, as well as Acquired/Secondary APD and higher order processes such as language and cognition. An interdisciplinary approach allows for integrated assessment and management, where primary versus secondary concerns can be prioritised to best meet the patient's need and ensure a cost-effective service. The immediate team comprises of audiologists, speech-language therapists and teachers

of the deaf/educational audiologists. The wider team can offer guidance on sensory integration, cognition, written language and medical issues, specifically relating to the ear, nose and throat.

A two tier system is provided which allows for flexibility and is more cost-effective. Tier 1 (see Figure 2) entails a screening assessment and interdisciplinary guidelines for the individual, their parents/family and school/workplace. Tier 2 offers a more in-depth assessment and management, if required. A referral can be made for either the Tier 1 or Tier 2 service. For individuals who progress from Tier 1 to Tier 2, tests already done will not be repeated.

Tier 1: Screen and guidelines (Contact time: ± 2.5 hours)

- Consultation following questionnaires completed prior to appointment
- Educational Audiology screen as part of consultation, for children
- Audiological: Puretone audiology, tympanogram and speech perception in quiet and noise
- Speech and Language screen
- Interdisciplinary report and guidelines for individual, their parents/family and school/workplace

Tier 2: In-depth assessment and management (Contact time: ± 6-8 hours, usually done over 2 days)

- Procedures covered in Tier 1, if this has not already been done
- Further audiological testing: ABR and audiological APD test battery
- Speech and Language assessment
- Interdisciplinary report and individually tailored home-programme. We are unable to offer one-to-one sessions
- School/place-of-work visits and trial with appropriate FM technology, if indicated

Figure 2: Outline of Tiers 1 and 2

Our management is based on the primary presenting complaint/s, case history and

Adolescents with cochlear implants: bridging the gap between child and adulthood

interdisciplinary assessment results. The management offered is individualised, with the ultimate target to improve the individual's primary complaints and everyday functioning. We are unable to offer one-to-one therapy sessions but do offer guidelines and home-programmes, liaising with schools, tertiary training institutions, employers and other professionals, as appropriate. School/place-of-work visits can be arranged and referrals are made, where appropriate.

APD management typically focuses on one or more of the following areas:

– **Modifying the listening environment**

Acoustic changes to the environment to reduce noise and reverberation, consideration of assisted listening FM systems (a trial period is offered) and recommendations for adaptations that the speaker can make to improve access to auditory information.

– **Auditory training**

Neuroplasticity underpins auditory training and requires that activities are sufficiently challenging (i.e. at the 'edge of competence') and repeated over extended periods of time (for example, 30 minutes, 3–4 times a week for 6 weeks) to be effective. Activities may include worksheets, computer software and other programmes.

– **Compensatory strategies**

Compensatory strategies are used to overcome residual dysfunction and maximize the use of auditory information.

Nicci Campbell

References:

¹The BSA APD SIG Position Statement and Practice Guidance Document are available on www.thebsa.org.uk

Contact

For more information about our APD service, please contact:

Ms Helen Bolton (APD Administrator),
Dr Nicci Campbell (APD Coordinator) or
Mrs Julie Brinton (Director)

Tel: +44 (0)23 80 59 4956

Adolescence is a time of rapid physiological, psychological and social development. It is an exciting time but one that can pose challenges. Adolescents with severe-profound sensorineural hearing loss (SNHL) and cochlear implants may face additional challenges. Professionals working with this group need to be sensitive and adaptable to the changing needs of the adolescent and their families.

In a recent study Moog et al (2011)¹ reported psychosocial characteristics in students who had used a cochlear implant (CI) since preschool. 112 CI students (aged 15.0 to 18.6 yrs) were evaluated in their study and compared with a control group of hearing teenagers (N = 46) and age-appropriate hearing norms. The results showed positive self-image throughout the school years. Seventy percent of the adolescents expressed either strong identification with the hearing community (32%) or mixed identification with both deaf and hearing communities (38%). Almost all CI students (95%) were mainstreamed for more than half of the day, and the majority of students (85%) were in the appropriate year for their age. Virtually all CI students (98%) reported having hearing friends, and a majority reported having deaf friends. More than 75% of CI students reported that they used primarily spoken language to communicate and that good spoken language skills enabled them to participate more fully in all aspects of their lives. Identification with the hearing world was not associated with personal or social adjustment problems but was associated with better speech perception and English language skill. Ninety-four percent were active participants in high school activities and sports. The authors concluded that the majority of these early-implanted adolescents reported strong social skills, high self-esteem, and at least mixed identification with the hearing world.

While encouraging, the authors acknowledge that their findings may not be representative of the characteristics of the entire population of children receiving CIs. For example, not all teenagers with CI receive their implant(s) prior to entering school. Children may have been implanted at a later age or indeed may have received a second implant at a later age. Children with

additional disorders may also differ in their experiences. Each individual is unique and professionals working with adolescents with CI need to be sensitive to individual differences and needs.

Some considerations specific to adolescents with CIs are that they increasingly take greater ownership in the use and maintenance of their processors – a role previously carried by their parents or caregivers. They may ask questions about what an implant is and how it works, or be interested in further adjustments that can be made to processor settings to enhance performance and enjoyment, i.e. listening in noisier environments or enjoying music. In becoming more technologically aware and proficient, they may enquire about use commercially available equipment with their processors, e.g. mobile phones and iPods.

More delicate questions may arise about the cause of their deafness, genetic issues, cosmetic concerns and device failure. Roles and relationships within families change during adolescence and this may be difficult for both adolescents and parents/caregivers. Professionals need to manage these issues with sensitivity and also recognise when further referral may be appropriate, e.g. counselling.

Although the internet is an invaluable source of information teenagers need to be aware of the reliability of different sources and also the value and pitfalls of media platforms and chat rooms.

In summary, professionals working with adolescents with cochlear implants need to be sensitive and adaptable to the changing needs of the adolescent and their families. Bridging the gap between child- and adulthood can be a positive one with appropriate support.

Nicci Campbell

Reference

Moog, J.S., Geers, A.E., Gustus, C and Brenner, C. 2011. Psychosocial Adjustment in Adolescents Who Have Used Cochlear Implants Since Preschool. *Ear and Hearing*. 32(1 Suppl): 75S–83S. doi:10.1097/AUD.0b013e3182014c76.

SOECIC Training Programme for Professionals

SOECIC have now run several locality based training sessions for different regions and these have proved to be very successful. We have tailored the course content according to staff needs, and several areas have decided to run them as an annual event for their staff.

We continue to run training events here at SOECIC and details of these can be found on our website www.soecic.org. We have tried to keep the cost of this training to a minimum to make them more accessible. Some courses here at SOECIC are entirely free or as little as £25 per day including lunch. A half day training session for a whole team in a locality convenient to you can be as little as £100.

It is vital that the people working in local services receive training in order to ensure that implanted children get the most from their implant. Delegates regularly feedback to us that the courses give them the knowledge and confidence they need to help children in the classroom more effectively.

“The course has been brilliant, well presented with useful resources provided. I have learnt a lot and will now feel more confident in the classroom”

(Quote from delegate attending N5 troubleshooting workshop, May 2012).

Please feel free to contact me directly should you wish to find out further information (Sue White sr1@isvr.soton.ac.uk or 023 8059 2522) or ask a member of the SOECIC team for more information.

Music Rehabilitation for Adult Users

Development of a New Music Resource for Cochlear Implant Users

The university's music department has joined forces with the hearing and balance centre and cochlear implant centre to develop a new interactive music resource in conjunction with cochlear implant users.

Over the last 2 years a series of consultation meetings and music workshops have been held and this has been rounded off with a concert at the Turner Sims concert hall on September 29th. In addition, 23 adults have trialled the new software which has been developed. As a result of the project, adults who attended the workshops reported listening to music more often. For those who took part in the trial, an improvement in their ability to identify different musical instruments was found.

We have received further funding to fine tune the resource and make it available online.

Please see the Music Focus Group website for further details.

www.soton.ac.uk/mfg



Technology Update



New equipment from Med-el

Opus 2XS battery pack

Med-el has brought out a new smaller battery compartment for the Opus 2 speech processor. It takes 2 batteries and is therefore both smaller and lighter than the Standard 3 battery pack or the DaCapo rechargeable system. It is not compatible with accessories such as radio aids or personal audio cables so it would not be suitable for all situations. SOECIC will not be providing them as standard but they may be purchased privately. Call the MED_EL office on 01226 242874 or e-mail enquiries to orders@medel.co.uk.



Mini Battery Pack for Opus 2 Processors

The mini battery pack is a new body worn option which can use a rechargeable DaCapo battery or an AAA battery. It can be used to connect assistive listening devices. It may be particularly useful for young children using radio aids as there would be less weight on the ear as the FM lead would be plugged into the Mini Battery Pack worn on the body rather than being directly connected into the Opus 2 FM battery pack cover. This option is available for new patients and for existing patients for whom it is appropriate.

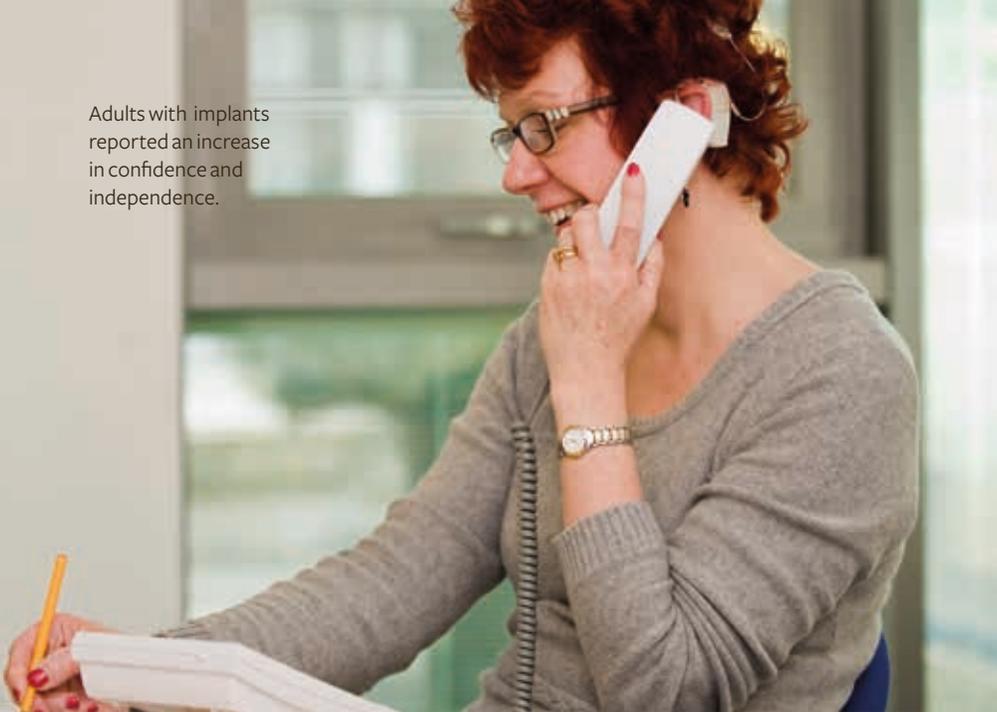


Windshield for Advanced Bionics T-mic

One of our patients has found a brilliant solution to the wind noise being picked up by her T-mic on her Harmony processor. The microphone wind shields can be found on the following link:

www.amazon.co.uk/gp/product/Boo4TGOUCK/ref=sr_1_6?ie=UTF8&m=ATJDIQ7XQXXYZ&qid=1318153155&s=generic&sr=1-6

Adults with implants reported an increase in confidence and independence.



Quality of Life for Adults with Bilateral Cochlear Implants

Roberta Buhagiar has recently completed a PhD investigating the changes in quality of life in adults who received bilateral cochlear implants sequentially.

- A single CI (unilateral) has been shown to improve quality of life (QoL) substantially and clinical practice is evolving towards two per patient (bilateral), although the incremental benefit for QoL has not yet been established definitively.
- Questionnaires and face to face interviews were carried with participants who had received 2 CI sequentially.
- Responses from the participants gave an insight into the changes that they experienced as a result of receiving a second CI. Increase in confidence and independence were themes that were most frequently mentioned by the participants when they were speaking about the perceived benefits of having two implants instead of one. Sixty-nine per cent of the participants also mentioned that they felt that their social life benefited as a result of the second implant.
- The majority of participants (92%) mentioned that they were able to locate a sound more easily with two implants. This helped with listening to environmental sounds and also speaking to more than one person.
- Improvement in listening in a group situation was mentioned by sixty-nine per cent of respondents. The same percentage of people mentioned that it was easier to have a conversation with a car passenger.
- Participants also mentioned that having two implants was helpful in situations where they could lip-read the person who was speaking
- Changes in social and role functioning are not seen through clinical tests so it is good to get first hand experience from patients which help build a picture for the future
- Better understanding of changes in QoL after receiving a second CI will help professionals to understand the benefits of bilateral implantation in adults from the users' perspectives. This is considered to be important when deciding whether patients should be advised to opt for unilateral or bilateral CI in the future. This knowledge will also help prospective patients understand the practical benefits and limitations of one or two cochlear implants.



SOECIC has been trialling a new FM system - the Comfort Audio Digisystem currently on loan from P. C. Werth Ltd. Initial trial results with older children/teenagers who can report reliably, are very encouraging.

They seem to be interference free (with only one exception so far) and have a good range. They work on a neck loop principle which has always been regarded with some suspicion in the past but on this system seem to be trouble free, and frequency response curves obtained with many implant processors over the last six months have shown a high degree of fidelity. Because the neck loop will activate the tele-coil in any hearing instrument they are ideal for bi-modal users (one processor and a hearing aid), or users with two different processors without the need for complicated splitters.

They can (and must) be balanced using very similar techniques to the current balancing methods. For further information on this contact SOECIC, which has produced information leaflets and video clip

SOECIC Staff

There have been quite a few new faces this year. Ewa Guscott has joined the team as a Teacher of the Deaf and Kirsty Carey, Speech and Language Therapist came back to us after having her second daughter. We said goodbye to Sarah Baumann and Helen Lakeman who have both taken maternity leave. We have also said goodbye to Margie Harriot who has retired. We welcome Katrina Faulds, Suzanne O'Gara and Ellen Joos as Audiological Scientists. Samantha Johnson as a Hearing Therapist and Anna Lyford has joined us as a Rehabilitationist for Adults. Both are cochlear implant users themselves. Finally Ed Heard has joined us as the Clinical Support Assistant.

A Note to Schools and Teachers of the Deaf

Has the child you work with had an upgrade? Do you have spare equipment for processors and radio aids which is now out of date? Please return the equipment to SOECIC or hand to your Rehabilitationist.

Bilateral Cochlear Implants in Children: Safe & Effective



Bilateral Cochlear Implants have been shown to help children reach their full potential.

11 April 2013 | Turner Sims, Highfield Campus

Do you work with or support families with deaf babies and children? Do you want to know the best advice to give them about cochlear implants? This conference is for you!

Cochlear implants have been available in the UK for over 20 years. In 2009, a report by the National Institute for Health and Clinical Excellence recommended that children

receive bilateral cochlear implants. Fifteen UK cochlear implant centres formed a consortium to evaluate the safety and multi-disciplinary outcomes for these children. The papers to be presented at this conference by members of the consortium will report the exciting findings from around 900 children. Results indicate that bilateral implantation for severely to profoundly deaf children is safe and helps them achieve their full potential.

Follow the link on the website for further information and online registration.

www.bilateralcochlearimplants.co.uk/conference2013

There is no conference fee if you are a cochlear implant user or parent/s of a child with a cochlear implant.



Assessing Expressive Language

Sarah Worsfold, Speech and Language Therapist has recently completed a PhD investigating expressive language in school age children with hearing impairment.

- Detailed linguistic analysis was made of expressive language used in re-telling the Renfrew Bus Story by 120 7-9 year olds with permanent childhood hearing impairment (PCHI) and a comparison group of 63 age-matched children with normal hearing.
- The majority of children with PCHI had begun to use complex grammatical constructions, important for social and academic tasks.
- The group whose PCHI had been confirmed by 9 months used more sentences and sentences containing multiple clauses, more high pitched morphological (e.g. plural) markers and their stories had superior content and structure. They also used fewer phonological simplifications, compared with the later-confirmed group.
- These aspects of language are not often measured by language tests developed for children with normal hearing, and a second study on a sub-group of 11-13 year olds with moderate-severe hearing loss investigated use of tense in 3 test settings: traditional language test (CELF-4 UK), Narrative Assessment (Peter and the Cat) and conversation.
- All the children used a number of ways to mark past and present tense in all 3 test settings. However, although all used future tense in conversation, this was not reflected in the CELF or Narrative scores of some of the children with PCHI, indicating that these tests may have underestimated those children's expressive language abilities.

Contact us

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