

Her Majesty the Queen opened new Royal National Ear Nose and Throat Auditory Implant Centre on 19 February 2020



Following the move of the RNENT Auditory Implant Centre from Grays Inn Road in London to Huntley Street nearby in September 2019 the Queen formally opened the new centre having been received by Her Majesty's Lord-Lieutenant of Greater London, Sir Kenneth Olisa. The Queen toured the Centre and met clinicians and staff and cochlear implant users. In this photograph Wanda Aleksy, hearing therapist, introduces a young CI user to the Queen.

The University College Hospital Cochlear Implant Programme was set up in 1984 by Graham Fraser with John Graham and Jonathan Hazell. It moved to Grays Inn Road and, as more auditory implants emerged, became known by its present name RNENT Auditory Implant Programme.

DIARY DATES

6th June 2020 AGM and Summer Meeting at Birbeck College, London has been cancelled due to the coronavirus situation.

24th October 2020 Technology Day will be held at the Medical Research Centre, Cambridge

British Cochlear Implant Group Conference 2020

The BCIG conference held at Nottingham on 11th and 12th March, was hosted by the Nottingham Adult and Paediatric implant programmes. The NCIUA is a subscribing member of BCIG, and I attended this year's event to allow the Association to keep a finger on the pulse of what is going on in the implant industry.

There were around 150 participants, representing all the CI Centres in the UK and in Ireland, together with sizeable teams from all four of the implant manufacturers. Due to logistic issues we were unable to display the NCIUA banner at this year's event, but the Cochlear Implanted Children's Society and the Cued Speech Association both had displays. Unfortunately the team from Cochlear had to withdraw shortly after the Conference opened: a recent visitor to their offices had tested positive for Coronavirus, and the team were on their way to self-quarantine.

There were 20 technical presentations, plus updates from the manufacturers, together with about 40 posters on display in the foyer areas in which CI teams were reporting on their internal research studies etc. With such a surfeit of high quality material on offer I can only mention a handful of stand-out items:

- Professor Karen Gordon of the Hospital for Sick Children in Toronto had been invited to offer a North American perspective, focussed on her work on the auditory development of children. Many of the basic results were unsurprising - e.g. that providing a child with two implants simultaneously rather than delaying the fitting of the second one for a year or so nearly always gives better results, what was interesting was to see scans of the development of the auditory cortex which explain how this happens.
- Professor Christine Yoshinaga Itano of the University of Colorado at Boulder had been invited to give this year's Graham Fraser lecture, in which she

reported on her experience of providing implants to children from disadvantaged backgrounds or who had other disabilities. The take away message was that you can't catch them too young: currently they aim to provide the implants by the time the child is 6 months old, but going forwards she referred to intervention by 3 months as being the gold standard. There is a major gap between these aspirations and current UK practice!

- Professor Marcelo Rivolta of the University of Sheffield gave an update on the world leading work his team are doing on the use of stem cell technology to restore cochlear hair cells - supported by amongst others Action on Hearing Loss - and which was the subject of a Graham Fraser lecture a few years ago. In recent years their work has focussed on gerbils, who have hearing covering a very similar frequency range to humans. They have been able to take gerbils who have been artificially deafened with an ototoxic drug and fit them with a miniature CI, then use stem cell techniques to get new hair cells to bond with the implant, and thence get an auditory signal through to the brain. Years of work lie ahead to convert this into a viable form of treatment, nevertheless it is an incredible achievement.

Paul Tomlinson



Electro-tactile stimulation

Carl Verschurr, Director of University of Southampton Auditory Implant Service

What does the title of this talk – electrohaptics – mean. The term haptics simply means using touch to communicate, to send a signal. It could be communication between two people such as shaking someone's hand or a hug. The sensation of touch is giving you some information about that other person. In fact, we all use touch more than we are aware of, perhaps, to interact with the world around us. We do it automatically, we integrate it with our other senses and it is there very much as something that is part of the way we deal with the world.

The term haptics has recently been used with some forms of technology such as computer games, mobile phones, robotics and also for example surgical training or surgery. You can have a surgeon in one location putting her hand in a glove and operating somewhere. The machine does the movements for them and sends feedback to the glove giving them a sensation as if they were in the operating theatre. This works remarkably well and is now actually very sophisticated technology. Haptic technology has developed a great deal in the last ten to twenty years but, apart from one or two things like surgery, has not been applied to the medical field particularly.

In the 1980s there was an attempt to let people have an experience of sound by causing a sensation of vibration on the skin. This was an option for people too deaf to benefit from hearing aids before cochlear implants became available and were obviously far more effective than tactile stimulation. However, some results were obtained with tactile aids with some people even understanding words without lipreading. It was impressive but it required a huge amount of input and training to be able to do anything with it. Cochlear implants change people's lives but they also have limitations such as the problems of understanding speech in difficult listening situations where there is background noise. If you only have one implant this is more difficult and it is not possible to locate where the sound is coming from. The listening effort, especially with music, is much greater than it is for someone with normal hearing.

There have been two successful enhancements



to cochlear implants. One of those is, of course, having two implants rather than one. The other is for those who have some residual hearing in the low frequencies and supplementing this with an implant. This is referred to as electro-acoustic stimulation. Not many people have these. The reason for this is that in the case of electro-acoustic stimulation the low frequency hearing needs to be sufficient to use without hearing aids and bilateral cochlear implants are not normally funded through the National Health Service. So there are reasons why these two interventions are not widely available, at least to adults.

Can we reproduce some of these enhancements through some other means? Can we get these additional benefits through tactile or haptic stimulation? Your sensation of touch is more sophisticated and able to do more than you are aware of. In fact, the frequencies you can perceive through the sensation of touch is not as much as with hearing but it is still quite a big range from 10 to 1,000 hertz or cycles per second. You can perceive things through the sensation of touch and you can tell the difference between two sounds of very, very similar frequencies which you cannot do through a cochlear implant. Your range from the lowest vibration you can feel to the biggest vibration you can tolerate is quite big depending on which part of the body you are stimulating.

. It is a bigger range than a lot of people have with implants. The question is can we make use of some of these abilities and the touch sense to enhance the cochlear implant experience? So rather than thinking either/or, because cochlear implants are vastly superior to the old tactile aids, we should be thinking along the lines of can we use it to enhance the cochlear implant listening particularly given that technology has improved enormously in what we call haptics, stimulating the sense of touch.

So, the idea is to use haptic stimulation to add to the cochlear implant to improve either the performance or experience of the cochlear implant user. Some of the preliminary work done has been very exciting and promising and we have received a grant from the Oticon Foundation to develop this more fully over the next three years.

With speech in noise we wanted to improve the performance of cochlear implant users listening in a noisy environment. It was necessary to ensure that the tactile or haptic stimulation occurs in realtime and is synchronised with the cochlear implant so that the device can be taken home and used. Some training for about 20 or 30 minutes is needed using an interactive computer programme called 'real speech'. Ten volunteers were recruited. The speech signal used was really noisy as in a noisy environments and the tactile device was worn on the wrist.

After some training nobody got worse, some people got better and some people lot better. On average the improvement was about 8%. It is weird thing to ask people to start listening through a device on their wrist so we asked people how they felt about it. Almost everyone said I kind of got used to it or it was alright after a while. The volunteers were using MED-EL, Cochlear and Advanced Bionics devices and were a range of ages.

The next question is can we improve the location of sound when people have only one implant? Can people locate sound through tactile or haptic stimulation in the same way even if they only have one implant. Relatively simple techniques can be used to measure how well people can locate sound. Sound is played from loudspeakers and the person has to say where they thought the sound was coming from and the accuracy of their responses is

measured. The level of vibration on the wrists is proportional to where the sound is coming from. If the sound is to the right of the person the right wrist gets a very high vibration. If the sound is on the left the left wrist gets a high vibration and there is only a little on the right. If the sound is in front the vibration on the wrists is equal. Only a small amount of training was needed as it is quite easy to do.

When volunteers were asked to do the test without wrist stimulation those with hearing aids in addition to their cochlear implant were better than those not using a hearing aid but not much. On average they were little better than chance. When the test was done with the haptic or wrist stimulation the cochlear implants and hearing aids did not make much difference. They seemed to be relying on wrist stimulation and not much else. With added training of about 40 minutes they improved a little further.

The performance of the electro-haptic users, those with cochlear implants and wrist stimulation, was compared with other groups. People with normal hearing had about 5 to 10 degrees error and age did not make much difference. People with two hearing aids did quite well and those with two cochlear implants did a lot better. People with only one cochlear implant with the aid of haptic stimulation did as well as those with two implants. The tests were done in a laboratory situation but nevertheless they showed that haptic stimulation could be used to locate the location of sound really accurately and may have some potential for improving speech perception in background noise for people with only one implant.

More research has been funded and the official project starts next month. People will be able to use the device at home and be trained remotely. Research is also going on in Denmark and Iceland using haptic stimulation to improve the enjoyment of music.

Manufacturer's News

From Advanced Bionics

Celebrating 10 years of the Bionic Ear Association (BEA)

In February 2010, AB launched the Bionic Ear Association (formerly known as the Contact Network) in the UK. Working together with colleagues in the United States, we sought to expand our Community to better support not just existing recipients of AB technology, but those who continue to seek a solution to their hearing loss.

So, this month, we are celebrating ten FANTASTIC years of the Bionic Ear Association (BEA). The BEA is comprised of volunteers or 'BEA Mentors', who go above and beyond to support anyone considering cochlear implants and their families as they navigate their hearing journey. As a result of receiving this life-changing mentoring, some cochlear implant candidates who later went on to be implanted have now also become mentors, wanting to help others in the way they were supported.

Over the last ten years, our mentors have contributed enormously not only to the raising of awareness of the innovative cochlear implant technology available from AB, but have directly impacted upon the lives of hundreds of families. They do this simply by sharing their story and relying on others within the Community so that not only those considering cochlear implants and their families feel supported, but so they can also get maximum benefit from their cochlear implant system.

We have over 50 volunteers throughout the UK and Ireland which is a great support network. They have so many initiatives; social media groups and social events, one-to-one networking, supporting professional development at local audiology and cochlear implant centres, the list goes on. Yvonne Noon, BEA Coordinator for UK and Ireland told us: "It is a privilege to be part of this group, who continue to enrich, guide and support the lives of all they come into contact with - their dedication and commitment drives my passion and motivation to deliver the best support possible."

We would like to thank our army of volunteers for every effort. Every text you answer, every email you respond to, every event you organise, all the meetings you support changes lives. Thank you.

For more information on the BEA or how to connect with a BEA mentor email hear-uk@advancedbionics.com or chat directly to an AB mentor online at www.hearingjourney.com.

From Cochlear

Collaboration with Google brings direct Android streaming to Nucleus® 7

You deserve to always hear your best. That's why Cochlear leads the way with innovations to support your hearing performance now and for the years to come. Since Cochlear launched the Nucleus 7 Sound Processor, people have been enjoying the freedom to stream directly from their Apple devices. Now it's time for Android lovers to join the party.

With its latest release, Nucleus 7 allows even more people to connect with others, music, audiobooks, movies and more. Yes, integrated direct streaming is now possible from compatible Apple AND Android devices! The Nucleus 7 Sound Processor is the world's first to offer direct streaming and control from a smartphone. It makes it easier to stay in touch with a phone call or video call with friends and family, watch your favourite TV show or listen to music or an audiobook. The possibilities are endless. If you currently have a Kanso® or Nucleus® 6 sound processor you can still enjoy wireless streaming from your Bluetooth enabled devices, via Cochlear™ True Wireless™ devices such as the Cochlear Wireless Phone Clip, which permits hands-free listening.

To find out if your Apple or Android device is compatible with the Nucleus 7 Sound Processor, visit www.cochlear.com/compatibility. It is anticipated that additional Android devices will be added to the verified list shortly, subject to device manufacturers' updates and release timings.

Want to get your beat back?

Do you find that listening to music is not what it used to be or is a disappointing experience? You're not alone. The good news is research shows that focused training and practice can improve music appreciation.¹ Listening to music should be enjoyable; therefore, the necessary process of learning to listen to music ought to be enjoyable too, so we began work on a smartphone game. And we created **Bring Back the Beat™**, our free interactive app featuring fun activities specifically designed to help people with cochlear implants reconnect with music. The app uses gaming to bring to life five different 'zones' centered around music appreciation and pitch perception. The activities start with simple notes and individual instruments and build up to more complex melodies and musical activities, and you can even have a go at staging your own concert! Bring Back the Beat has been designed in collaboration with experts in the field of music appreciation and pitch perception for cochlear implant users. We also took input from recipients to ensure it supports real life issues, and that the games within the app are easy to use.

Get started now!

Search 'Bring Back the Beat' in the Apple® App Store or on Google Play.

- Download the app for free
- Log in using your Cochlear account details or follow the in-app instructions to create an account

Visit www.cochlear.com/uk/music for more help with music appreciation.

¹ Looi V, Gfeller K, Driscoll V (2012). Music appreciation and training for Cochlear implant recipients: a review. *Semin Hear*, Nov 1, 33(4), pp. 307–334.

From MED-EL

AudioKey

Have you heard about the AudioKey app? Your phone can do many things, and now it can connect to your audio processor too! With the AudioKey app, you can change settings, locate your audio processor, and check your hearing stats all directly from your phone. Hear your Way Leave your remote control at home and control your audio processor from your phone. Change the volume, switch between programs, and configure your connectivity settings with ease. Find My Processor Lost your audio processor? Let AudioKey help you find it again with the "Find My Processor" function to show you where you last used AudioKey with your audio processor! Guardian Control only with

MED-EL Check your child is hearing their best. With the "Guardian Role" function, you can adjust the settings on your child's audio processor from your phone and keep a record of their hearing stats. AudioKey is also the only app that allows you to pair more than one audio processor with your phone, which is ideal if you have multiple children with cochlear implants. Check your Stats Ever wondered how many hours you wear your audio processor, which programmes you use the most or how often you connect to other devices use? The "My Stats" on AudioKey has the answer. To find out more visit www.medel.com

AudioKey



Have you heard about AudioLink? AudioLink is our brand-new connectivity device, designed especially for the SONNET and SONNET 2 audio processor. It helps you talk on the phone, listen to music, watch TV, or just hear what's going on at the other end of the table. One tiny device, four great ways to use it. Talking on the Phone You can connect AudioLink to your iPhone or Android smartphone via Bluetooth, and wirelessly send the sound straight to your ears, without any disturbing background noise. Watching TV Using AudioLink's docking station, you can stream the sound from your TV directly to your audio processor. Simply plug the docking station into the TV and place AudioLink inside. That way, you'll never miss a moment of your favourite show again! "I love

to use it when playing role-playing games in multiplayer mode on my computer. I can hear the tiny little noises as footsteps now as well – such noises other players almost never hear." "I love it for watching TV. Even after I tried it out for the first time, I didn't need to have the captions on." Listening to Music From the latest sound systems to that old record player in the attic, AudioLink lets you access the music that you love. Stream music wirelessly from your phone or tablet using a range of apps available such as BT Mono (for Android) or Blue2car (for iPhone). Alternatively, use an audio cable connecting the AudioLink with the headphone jack of your device and stream the sound wirelessly to your audio processors. "When testing AudioLink for the first time, Florian started dancing. It really works great for music and also on the phone – he understands speech much better." Using the Remote Microphone AudioLink's secret: it's also a remote microphone making it perfect to put it in the middle of the table at dinner or in a meeting, or as a device that your child's teacher can wear in a busy classroom. To find out more visit www.medel.com

Robert Mandara - 1st Vice-President of Euro-Cochlear Implant Users

I was born in Ilford in 1968 with severe genetic hearing loss. I moved to Essex as a toddler and then got my first beige chest-worn hearing aid before progressing to BTE hearing aids. In spite of the difficulties of mainstream school, I left with a good number of O levels. Following an electronic engineering apprenticeship with GEC Marconi, I attended Surrey University. Hearing-wise that was a huge mistake; I had to study in huge lecture theatres and even if I sat in the front row and still couldn't hear! Nevertheless, I met my Finnish wife, enjoyed a year of work experience in France, and earned a degree. We relocated to Finland in 1996. I hoped to find that a new line of work in a new place might prove easier on my ears. In Finland I have worked as a technical writer for many companies including Nokia, KONE and ABB. My work requires me to communicate with many kinds of people, and email has been my lifeline.

On visiting the ENT department of my local hospital for the first time in 1996, the doctor announced that I should have an implant. I was shocked. I had gone there asking for adjustment of my hearing aids. Implants were still in their infancy so I was unwilling to contemplate them. Subsequently my hearing worsened until I was in a very isolated and angry place. I began to learn sign language and got a hearing dog. In the end, I had two choices: implants or sign. The very last time I declined the doctor's offer of implants she said "A lot of people are very happy with them!" With that seed in my mind, I set about meeting the happy people for myself. In fact, I hardly needed to ask them questions. Just walking into a room full of CI users and seeing their relaxed body language told me most of what I needed to know. Everyone contemplating cochlear implants should meet CI users face-to-face so that they can see the wide range of outcomes.

After making my mind up, the whole process took around 6 months including evaluation and operation. My first operation was in 2014. I was well-prepared for the operation and had realistic expectations.

In Finland adults can get bilateral implants without a second disability, so my other ear was implanted in 2016. I strongly advocate bilateral implants for all adults who want them. The UK sadly lags behind many other countries in this respect.

It has been a long, rewarding journey to learn to hear with implants. They have given me my life back and I feel like a lottery winner; I would not swap even one of my implants for £1 billion! Five years ago, I was angry, exhausted and depressed. Now I am alive and engaged with the world. The implants make the lives of everyone around me easier too. Perhaps I should have embraced implants sooner. However, without experiencing the lows of deafness first, maybe I wouldn't appreciate them so much.

Following implantation, I became active in the Finnish cochlear implant users' association (CITO) and its peer support network. I attended the annual EURO-CIU Symposia and Workshops in Helsinki (2017) and Barcelona (2018). At last year's Symposium in Wroclaw, Poland, I was honoured to be elected 1st Vice-President and the only CI user on the board.

EURO-CIU is the umbrella association of associations across Europe, representing about 170000 cochlear implant users. It sponsors the annual European Friendship Week. Last year I attended as a volunteer. I was blown away by the amazing youngsters at the camp! Cochlear implants have transformed their lives more than they will ever know or fully appreciate. To see that transformation in my lifetime is simply incredible.

So, what do I want to achieve while on the board of EURO-CIU? In short, as much as I can! But perhaps these are my highest priorities:

- Ensuring that users are in sharp focus at the front and centre of everything we do. At the moment, I feel that there is too much focus on the periphery: doctors, surgeons, audiologists, speech therapists, parents, manufacturers,



neonatal screening programmes etc. As well as getting better access to implants (especially bilateral implants), users need lifelong support to ensure that their processors are maintained and upgraded. Access to assistive devices, disability benefits and other support is still challenging.

- Harmonising rules. The rules for cochlear implants vary hugely across Europe without much rhyme or reason. While Finland is great for bilateral implantation, the renewal situation is far better in the UK. Wouldn't it be better if all of our countries offered the same very high standard of implant provision and aftercare?

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Disclaimer

Whilst the Association uses its best endeavours to provide accurate information on the subject of cochlear implants it does not provide medical advice or make recommendations with regard to any particular implant or equipment and no article in this newsletter should be construed as doing so.

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