

**Canadian HARD of HEARING Association's 8th Annual Meeting
of the CI Recipients of the Ontario South West Regional Cochlear Implant Club**

Notetaker: Wendelin (Temmer Enterprises Ltd)

WELCOME -- Linda Baine

Linda: Can everyone hear me? We are having a PROBLEM IN PROJECTING THE NOTES: The cord is not working, so we've gone to the store to buy a new one.

Good afternoon and welcome. For those of you who don't know me, my name is Linda Baine, a long-time member of the Hamilton Branch of the Canadian Hard of Hearing Association (CHHA).

My own hearing loss did not begin till my middle years. I wore hearing aids for several years and became increasingly deaf. I have had my Cochlear Implant since 2003. I've never regretted it. I know some of you have one, some are waiting for surgery dates, and some are here for information.

I'd like to call on Levi, our President, to say a few words.

WORDS FROM LEVI JANOSI, CHHA Branch President

Levi: Thank you for coming, I've been trying to get the captioning going. Hopefully we can get a new cord for the projector before we get to the main presentation. A few announcements.. I'm pretty sure we have a good agenda, representation from Sunnybrook. A doctor talking on cochlear implants and brain function.

CHHA HAMILTON UPCOMING EVENTS:

We'd like to invite everyone to go to our web site and check out details. **September 16** -- NINE and DINE GOLF TOURNAMENT in Ancaster. We've had that event for a number of years, this year will be the same. Please come out, register, and we'll set it up for a foursome. Or come on out and put together a foursome yourself. The price is very, very reasonable -- cart, golfing, dinner afterwards, all for \$70.

Second event I would like to mention: Because of Canada's 150th Birthday, we are putting on an event that we're working out location and details. Go to CHHA's web site and look for the details, coming shortly. That will be **September 28**. The event will focus on Hearing and Communication in Canada for the past 150 years. Details are being worked out, but there will be a whole bunch of Hard of Hearing folks, telling you stories you can relate to, and making presentations about accessibility and important details on how to live with our disability.

**GUEST SPEAKER: DR. DAVID SHIPP, Audiologist, Sunnybrook Health Science Centre
& Director, Cochlear Implant Program**

Dr. Shipp: I am an audiologist and Coordinator of Sunnybrook's Cochlear Implant (CI) Program, and an Assistant Professor at University of Toronto.

Here is our **CURRENT STAFF** [Powerpoint slides].

Our **AUDIOLOGISTS** include myself, Amg Ng, Kari Smilsky, Rebecca Vanderelst. Kassandra Kaminskas is on maternity leave until February 2018, and Anna Leung is filling in for her.

Our **SURGEONS** include Dr. Joseph Chen, Dr. Trung Le, and Dr. Vincent Lin.

Clinical Staff



D. Shipp



A. Ng



K. Smilsky



R. Vanderelst



K. Kaminskas



J. Chen



V. Lin



T. Le

– **Anna Leung** is filling in for **Kassandra**



Our **RESEARCHERS** in the **COCHLEAR IMPANT RESEARCH LAB** include Dr. Andrew Dmitrijevic, who is here today, Leah Smith, Varia Sajeniouk and Nils Gritters. Dr. David Low is a Clinical Fellow from Singapore for 1 year. Dr. Maya Rivero is coming from Chile.



If you need to write down any of this information, I will put this up for a moment, so you can write it, if you don't have it already. Some people were looking for Luana's information.

Current Staff



Program Assistants

- Luana Mickle (Cochlear Implant Program audiologists)
 - luana.mickle@sunnybrook.ca; 416-480-6751
- Cheryl Dunham (Dr. Chen)
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- Jennifer Nguyen (Dr. Le)
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June 7th, we got together for our ANNUAL PICTURE -- a few people didn't have individual photos on earlier slides that are on this photo.



CABLE TO THE RESCUE! We will be able to get our captioning up in a moment...

TO CONTACT US -- DIFERRENT PEOPLE:

I will share this slide with Levi, if you need this information, you can contact CHHA HAMILTON and get it from him.

As I was saying, depending on what kind of information you need, there are various people to contact.

LUANA -- if you need an audiologist appointment, adjustments, equipment, update processor. Those kinds of appointments. She is the one to contact to find out where you are on the waiting list. If you have questions or concerns on equipment, she is good first contact, though she is not an audiologist. She can certainly refer you on to someone who can help.

MEDICAL INQUIRIES: Pain, dizziness, infection, tinnitus, vaccination questions. Contact the MEDICAL SECRETARY, not Luana. Some people have asked about dental procedures, if it is safe to do this or that. That is a question for the Medical Secretary.

DENTAL PROCEDURES: Some people have asked about dental procedures, if it is safe to do this or that. That is a question for the Medical Secretary. Most inquiries -- someone who has a Cochlear Implant and needs an MRI. It can be done, but there are precautions to take. Call your SURGEON -- it is best to do it at Sunnybrook, the Radiologists know how to do it.

INQUIRIES ABOUT OTHER MEDICAL / DENTAL PROCEDURES: Questions about dental x-rays, should I have antibiotics before a filling in my tooth, etc.

ANY CHANGE IN YOUR HEALTH STATUS: If you are on the WAITING LIST and have a new medication that wasn't on the form, let us know. Or a new health condition --a stroke, heart issues, cancer diagnosis, etc. You can let us know, but the doctor's office will be in a better position to know what to do.

BIG NEWS -- IF YOU'VE BEEN ON THE WAITING LIST FOR A LONG TIME:

The Waiting List is, and was, very long. People were waiting more than 2 years from the time they signed consent. In full part, because we have more people who need this than funding from Ministry of Health. Ministry of Health has transferred money each year for a certain number of implants. If there are more people that need it than funds, there is a waiting list. It was a year, then 1 1/2 years, then 2 years.

In the Fall, we started asking patients to contact their MPP to complain. A number of you did. I thank you. Those on the Waiting List can thank everyone, as well. It was SUCCESSFUL!

The last 3 years, there has been funding for 108 Cochlear Implants a year. We went up 67% to 180! Over a \$3 million increase over funding. I'm sure the election next year had something to do with it. Pressure from constituents always helps. A few years ago, we did exactly the same thing. You can influence your government.

We're doing 72 extra surgeries. Our year goes April to March. We found out in late May we got this funding. Now we have to play CATCH-UP. We have to do 72 extra surgeries between now and next March! We have to do lots. Those of you on the Waiting List won't wait as long. People who go on the Waiting List today, will probably still wait a year, at least.

But those of you told 2 years, it will be less than that. We're not sure how much, we'll see how long it takes to affect things. This will shorten the list, and amount of time people wait.

It probably will allow us to increase our staff. We have a certain number of people that work in the program, used to working at this particular level, now a 60% increase. We've started talks to increase our staff, and positive there will be some increase, not sure how much.

Since April 1st, our budget year, we've done 40 surgeries. Currently have 15 scheduled between now and end of July / early August. Because of the funding increase, probably more, it will be increased.

In 1984, the program began, 1,008 people implanted. Once you become a Cochlear Implant patient, you are one for life. We cover 1,842 people now. You can see our waiting list -- 295 on the list still!

We'll have a slide in the moment that shows where people live. 592 in this region have a Cochlear Implant, a little more than half female, average current age just over 56. 18 to 96!

Implant company -- 44% have Cochlear Corporation device, 33% Advanced Bionics, 23% Med-El, one person has one from a company when it was known by Neurelec, and now under Oticon Medical.

Where were you implanted? --Almost all of you at Sunnybrook. 89 were implanted at Hospital for Sick Children -- under 18, you go to Sick Kids, over 18, you go to Sunnybrook.

10 implanted in USA. 3 India, 3 Ottawa, 2 each for BC, Columbia, London (Ontario) and Pakistan, 1 each in the other countries... Australia, Korea, Malaysia, Sweden and United Arab Emirate.

People tend to move to Montreal, Toronto, Vancouver. We follow people from all over the world, from where they were originally implanted.

The largest number live in Peel and Halton, almost two-thirds of you. Down to Niagara, City of Hamilton, a handful in southwest Ontario, closer to the Windsor area. All over west of the Toronto area.

UPDATE ON MANUFACTURERS:

We'll go alphabetically. Originally, someone from Cochlear was coming today, but couldn't make it.

ADVANCED BIONICS:

Their most recent processor -- most of you have what is called **NAIDA**. The **NAIDA Q90** is the more recent model. If you still are wearing the **HARMONY**, the predecessor, it will become obsolete in the next little while. You might have to get an upgrade.

Phonak Naída™ Link Hearing Aid



Once a processor is in obsolescence, if a problem, the company can't repair or replace.

If you've had **ADVANCED BIONICS**, you were dealing with **GLOBAL HEARING AIDS** -- no longer the distributor for Canada. Now it is **CONNECT HEARING CANADA**: North York Clinic, 4849 Leslie St. (just north of Sheppard), Nymark Plaza, Toronto M2J 2K8. 1-888-272-7440. absupport@connecthearing.ca Open Mon-Fri 9 am - 5 pm.

CONNECT is a chain of hearing centres, 140 locations across Canada. One is pretty close to the hospital, they deal with Cochlear Implant equipment. NORTH YORK -- north on Leslie from 401, just past Sheppard, there is a little strip mall to your right. They can deal with replacement batteries, cords, cables. They can do troubleshooting for you. They can do a lot, other than program your device. AVP Upgrade -- that's where you'd go to order your equipment.

Fairly new, **ADVANCED BIONICS** has developed a hearing aid that communicates with the processor. If you can still use a hearing aid, you can get **PHONAC LINK HEARING AID** -- it will communicate using palm pilot and other ways, can stream to both ears. if you have hearing in opposite ear, you can stream to both sides simultaneously. They work together. In the car, if your implant is on right and hearing aid on left, you can switch so hearing aid doesn't pick up so much, such as road noise.

If you have enough hearing in your other ear, and considering getting another hearing aid, this is something to consider. We can give you the prescription and help with your hearing aid dealer.

That's what they look like. Processor on left, new hearing aid is on the right. That's the most recent update for ADVANCED BIONICS.



Naída Bimodal Hearing Solution

COCHLEAR CORPORATION:

No new developments with their behind-the-ear processor. This model has been on the market for a few years N6, CP910 or CP920. Nothing really new to report for that processor.

Cochlear "Nucleus" Cochlear Implant Systems

Kanso Speech Processor •Similar features to the N6

CP910 & 920 Speech Processors "Nucleus 6"

This complex block contains several images related to Cochlear hearing aids. On the left, there are two black behind-the-ear hearing aids with white ear hooks, labeled 'CP910 & 920 Speech Processors "Nucleus 6"'. In the center, there is a top-down view of a circular, light-colored processor labeled 'Kanso Speech Processor'. Below that is a photograph of a woman's head in profile, wearing a small, round, gold-colored processor behind her ear. On the right, there is a diagram of a human head in profile, showing the location of a processor behind the ear. Labels with arrows point to the processor, indicating 'Button/light facing up' and 'Battery compartment facing down'.

Another new processor you may not be aware of. **KANSO** is a processor, all-in-one, nothing over your ear. On the side of your head where your current coil goes. Same functionality as behind the ear processor.

Quite a number of people wear it, seem to quite like it, as good as their old one. For many getting surgeries now, this is often what they opt for.

Unlike Advance Bionics, Cochlear doesn't have a similar hearing aid. But they have a partnership with **RESOUND**, another hearing aid company. The advantage -- you can use many of your same assistive devices.

If you have a **COCHLEAR** device, you have a **mini clip**, a **TV Streamer** -- you can use those for both implant side and hearing aid side. At some point, they will work on something similar to PHONAC LINK, so they will work together.

SOMETHING QUITE NEW, A BIT HUSH HUSH:

Another **COCHLEAR** behind the ear processor, hopefully released by this fall. The one before N6 was N5. We're assuming this will be N7.

I don't know much about it, not yet approved by Health Canada. When implant manufacturers develop a new product, can't share much till approved. A regulatory thing. Our understanding: it looks very similar to **NUCLEUS 6** -- pretty much identical, smaller. Some new features -- we have an idea what they *might* be, but are not sure.

If you have a Cochlear device, thinking of upgrading -- YOU MAY WANT TO WAIT!

If you wanted to get **KANSO**, all-in-one piece, you could. If you want **N7**, we're hoping by the Fall it will be available.

MED-EL GmbH:

Again, not much in terms of current equipment that is new. If you have a **MED-EL** device from a few years ago, behind-the-ear style. **RONDO** -- some of you may be wearing that.



What is different: For new patients getting a **MED-EL** device now: **ROGER PEN** -- a wireless system, looks like this. I have a slide with a live one. It will come with a kit. **PERSONAL FM SYSTEM.**



You can see it a bit better on the slide. I have 2 people in the audience who have given me their ROGER PEN -- it's transmitting my voice wirelessly directly to them in the audience, hear me more clearly, don't worry that I am 15-20 feet away.

You can get a **ROGER PEN** even without a **MED-EL** device, you have to pay for it. You might get some government funding. It's compatible with SONNET with a special battery cover to allow it to receive the signal from **ROGER PEN**.

OTICON MEDICAL:

This is another company, I've talked about them a bit. **OTICON** is being used, not a big market across Canada. We actually did 10, to help them do an FDA Clinical Trial. It's been very recent, so I can't tell you the long-term outcomes.

From the European trials, pretty much just as good as any other device. I think it will be player in Canada, as well. Not a lot of penetrance to the market yet.



Thank you! I hope you understood what I was talking about. This is a chance to ask me some QUESTIONS.

Q&A:

Don't ask me, please -- "*where am I on the waiting list?!*" --I don't know!

If you are having a very specific, individual problem, this is not the best forum -- email me, or Luana, or your audiologist that follows you.

Q: Formation of the Waiting list -- who is doing the modelling that says what the waiting list will look like 2 years, 5 years, 20 years from now? It eventually drives down to staffing. Who does the modelling, what is it based on?

A: An interesting question! I would say: we do it on the fly! You have to remember -- the staffing we need is not only need based on number of new surgeries we do, but the number of people we are following. It almost increases exponentially. We do this many surgeries, and then have this many we're already following. Kids from Sick Kids get transferred to us. People from Canada and other parts of the world move to Toronto and we start following them. There are people that die each year, people that move, and believe it or not, some that stop using their device. But the number of new people is bigger than the ones we stop following.

It's hard... we can plan amongst ourselves, "this is our need 5 years from now." But we have to deal with our hospital administration. They are reasonable, but don't have an endless supply of money. Like all hospitals, dealing with deficits, never have enough money for all they need for different programs.

When they decide to increase our program, this time, it is based on this enhancement of money, increase our staff and equipment. A slightly evasive answer, probably the most honest one.

Linda: ANY QUESTIONS?

Q: Thank you, I really enjoyed the presentation. Over 5 years ago, I had surgery, 18-100. Letter from Cochlear, service no longer provided, parts not available, last July. Am I into another \$5,000 for another unit? Or is there another facility in Canada to provide service and repair?

A: You have the "BA?" --You can get ADP to help replace a processor. The piece he wears on outside, with his device, like some CI devices -- company can no longer support them, parts are no longer manufactured. Linda has had her implants since 2003. 14 years out. What she started with has not been available for many years. Eventually, you have to upgrade. You've always come to Sunnybrook?

Q: I'm hoping it is not a \$1,000 per year investment!

A: No. If you get a new processor, hopefully some government assistance to buy it, and hopefully will be good for a few years.

Q: My question -- who matches the patient's requirements with which manufacturer? What is implanted under the skin -- is it adaptable to any and all manufacturers?

A: Your 2nd question -- no! That is an easy one! Once you have an implant from a particular manufacturer, you are married to that one for life. Very sophisticated tech to allow the internal and external parts to communicate. It is not something that you can use with other manufacturers. Sorry -- did you or I use the term "marrying"? It was me.

Trying to decide the device: First, depending on who we are using. There are 4 manufacturers. At this time, we are only using 2. It is based on RFP -- Request for Proposal. Approximately every 5 years, hospital undergoes a process, they have proposals from Manufacturers, and ultimately a decision is made, these 2 or 3 have most favourable terms, and enter into contracts with those. About 3 years ago, we went through this process. Cochlear and Med-El, stopped using Advanced Bionics. Not because it was "not good."

One and a half years from now, we'll go through this process. It takes about a year. Requires lawyers, etc, all the usual required of contract negotiations.

Once we have our **SUPPLIERS**: In our program, we tend to see people that have hearing, not completely deaf in both ears. Reasonably good hearing in low tones, and very quickly lose hearing. By the time, high frequencies, almost nothing there.

Med-El has designed electrodes that are very good at preserving that hearing. When surgeon puts in that electrode, a chance they'll damage the delicate structure. Doesn't matter if your hearing is gone. But if you have some hearing, we tend to go to Med-El. Everyone else tends to get Cochlear.

That could change with our next RFP, if we deal with 2 new companies.

Comment: I appreciate that. Professionals make that decision for you. Thank you.

Q: Clinical study that Rebecca mentioned last time I saw her, hearing aid with Cochlear. Is that going forward? Or still waiting for approval? Am I allowed to talk about that? She wanted to fit me with an external ?key? to get me the frequencies that were left on the implant side.

A: Okay. If I could get the microphone... She's talking about, for patients I was just describing, who have some reasonable level of lower frequency hearing, after the implant, if we preserve it, they can use a combination regular implant processor and also a hearing aid.

We actually do it clinically, and a manufacturer has asked to get some formal data. That is still going on.

Q: Sometimes my hearing is good. Other days, my hearing is very bad. Would that have something to do with air pressure? What can I do about it? Thank you.

A: It's a good question. The reason I say that? People do tell us that. It doesn't make sense logically, something like changing weather, barometric pressure, etc, should affect a Cochlear Implant. We hear it often enough, we wonder if something goes on no one really understands.

If you use your regular system, a cold, a bit of a plug in your ear, don't hear as well. Eventually goes back to normal.

With a Cochlear Implant, you are not really hearing with your ear drum any more, so why should a cold affect you? But for some people, it does seem to be the case. Not hearing as well, not focusing as well. We hear it from people that are older, that are younger. Something is going on. We can't give a good answer. But something is going on. You are still early, had processor less than 2 months.

Comment: 6 weeks.

A: Hopefully that won't be the case forever!

Q: Cochlear American company, any consideration of making a new rechargeable? That was the drawback with my wife.

A: Yes. It's not available yet. We don't know exactly when. Even once we get a date, we take it with a grain of salt, when it comes from a manufacturer. Often a glitch, FDA or Health Canada, "Want you to look at this before we release it to the public." Yes, but we don't know when.

Linda: We will have a 15 MINUTE BREAK for coffee, then we'll have our next speaker. There will be lots of time to ask more questions at the end of the session.

Jacque: Thank you, David, you've given us another great presentation. You always let us know what is going on, and we appreciate that.

Linda: Please help yourselves to refreshments at the back of the room, and we'll see you back in 15 minutes for the next presentation.

15-MINUTE REFRESHMENT BREAK

Linda: PLEASE TAKE YOUR SEATS! We're going to start with our next speaker.

Dr. Dimitrijevic is Research Director at Sunnybrook's Cochlear Implant Program. His lab studies the psychology of human hearing in both hearing and hearing impaired populations. They look at the neuromechanisms of how hearing proceeds. I will let Dr Andrew tell you about it, rather than me!

GUEST SPEAKER: DR. ANDREW DIMITRIJEVIC, Research Director, Sunnybrook Cochlear Implant Program

Dr. Dimitrijevic: Thank you ! I am the Research Director at Sunnybrook. My lab, we just finished construction, maybe 4 or 5 months ago. Now the lab is up and running, lots of exciting experiments. It's good to share what types of work we do. The ultimate goal: to better the lives of those with Cochlear Implants. If you have questions, feel free to ask.

I am a Neuroscientist by training, I study how the brain works. How we do that: There are lots of types of NEURO IMAGING TOOLS and TECHNIQUES that we use.

I use EEG, electro-encephalogram. This photo happens to be my daughter! We place electrodes on top of the head, measure the electrical signals the brain is generating. It is very similar to an EKG, a heart monitor. Instead of on your chest, it is on your head.

We do EEG. It turns out, people with CI -- there is a metallic object in the head, so certain types of neuro-diagnostic tools are not really possible. Things like MRI.

So EEG is becoming a very popular method to study brain function with cochlear implants. Very non-invasive. Measure the brain response to a speech sound, a stimulus. Anything the brain interprets, we can record. Let's try to relate this to behaviour.

One of the big things in cochlear research in general: A variability in outcome after surgery.

Some are superstars -- can talk on the phone, play instruments, doing really, really well. And others struggle more.

What is causing this?

We can explain a certain percentage of the variance -- how much things vary. But by far, we cannot predict who will and will not do well.

And also children vs adults. Different research questions looking at kids, versus adults.

Anecdotally: two people, audiograms are the same, duration of deafness, but some people do well, some do not. That is what I am talking about.

Outcomes are variable. It turns out: if we apply certain types of scientific models to predict how well you do, it's good about 20% of the time, or the variance.

Lots of variability we can't explain.

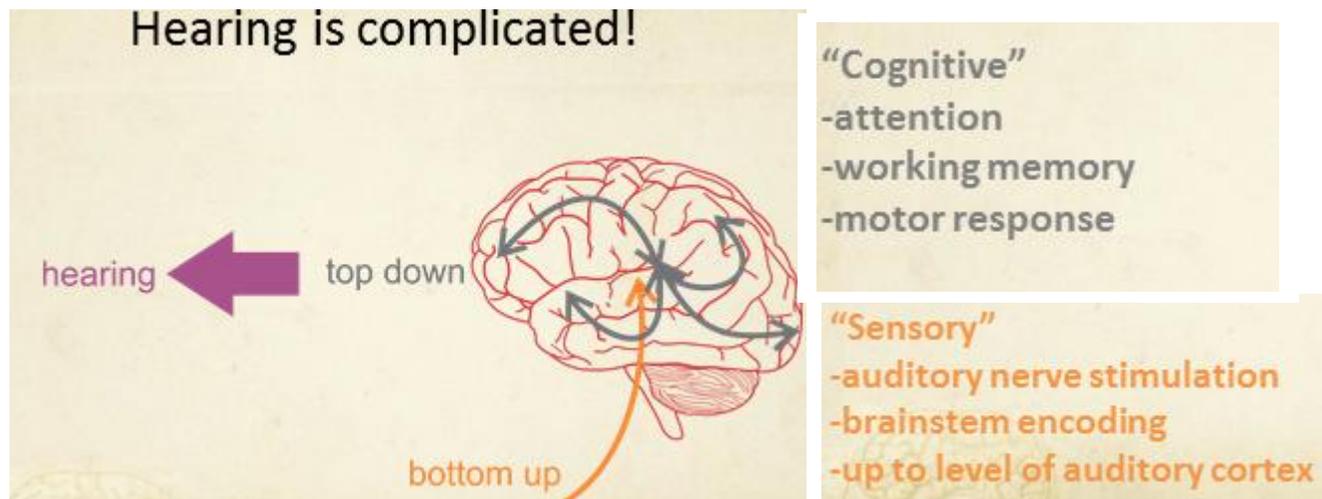
One thing I believe, more and more accepted: Certain brains are more malleable, we call them "plastic", so they are able to adapt to the implant.

Can we predict who will be more malleable? Maybe focus more effort on rehabilitation, versus "you're going to do okay".

Hearing is really complicated. An audiogram -- most of you have had one done at one point in time. It's very complicated. It really involves all parts of the brain.

BOTTOM UP PROCESSING: How sound comes in, transferred into electrical signals = **sensory coding**.

TOP DOWN PROCESSING: **Cognition** -- what does the brain do, once it gets this input?



The **output** of whole process is called **HEARING**.

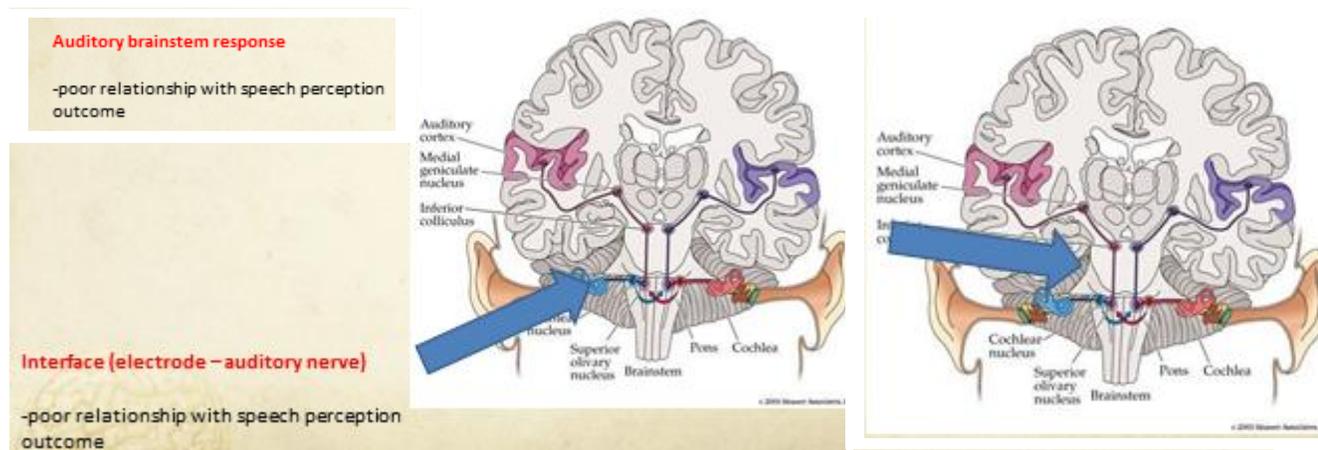
All this has to be intact to do an audiogram, or speech testing.

COGNITION is what the brain does with that input. Very related to: am I paying attention, working memory. If your memory is better, how is your motor response.

A lot of these come into play.

A GOAL: We can use brain waves to try to figure out, where in this pathway, something might go wrong. Is it coding part? Cognition part? If any problems, it gives clues. If encoding, adjust Cochlear Implant program. If that is okay, work on cognitive therapies for cognition. That is the general thing. This will direct our rehabilitation.

There are different parts of the brain that we can actually assess using electrical physiology: **INTERFACE between CI and auditory nerve**. Auditory brain stem response, once it goes up the pathway a bit more. Once it gets to the actual brain, the cortex.



In general, if you use simple types of stimuli, they tend to have a not very good predictive value for speech perception.

But it depends. Some of my research, developed stimuli to help determine **SPEECH PERCEPTION**.

What does SPEECH STIMULI look like?

[sound graph]

This is what speech looks like. There are lots of peaks and valleys in the actual signal, and different frequencies.

The brain has to break up the speech signal in this time wave form, and into frequencies. It kind of gets taken apart.

What we've done: we've designed **experiments** -- can the auditory system follow these peaks and valleys = **temporal processing**.

We've basically shown: if you have specially designed stimuli, you get a very good correlation with speech perception.

On this axis, the brain response. And here is the speech perception for consonants. We are able to predict speech perception in adult users.

Another way we can do similar types of **predictions**: 64 electrodes, can create computer models to predict where it is coming from.

Speech perception on this axis, and brain source activation, the big "blob". So we can predict -- without asking, "can you repeat the word baseball?"

This type of resources is very helpful for children -- you can't ask a one year old to say the word "baseball" -- they can't communicate.

Different research reviews for children, and for adults. Your research question dictates what kind of experiments one runs.

One area I'm really interested in at my lab: **LISTENING EFFORT**.

Some of you might experience this: listening through CI, or even through hearing aid -- a lot of effort is really required. After a full day of listening, you are exhausted, want to take off your implants and go to sleep.

Relation between COGNITION and SPEECH PERCEPTION.

Psychologists tend to think of this: whenever you perform a certain task, there is a pool of cognitive resources, or brain activity, dedicated to certain aspects. Paying attention. Or keeping things in memory.

When there is a Cochlear Implant, or hearing loss, more resources are dedicated to encode stimulus, less for memory, etc. So we think there is **increased listening effort**.

EXPERIMENT: We have speech and noise, and ask people to repeat what they heard, and ask on a scale 1-10, how hard was it. Depending on the experiment, easy or hard.

Threshold: as a function of age. Using this task, it hasn't really been done before with Cochlear Implant. People with a CI, it is actually harder to understand this speech -- in the orange. Typical normal hearing is in the black. The more "negative" you are the better, in speech recognition.

We have correlated -- related the listening effort to brain activity -- and found that the more this left frontal regions of the brain are active, the more effort is required to make that decision.

It doesn't matter if you got the word right OR wrong, the more effort.

And we can kind of predict if you made a mistake, or not. We can predict if you make a mistake, if you are perceiving speech, using similar brain waves. This is another way of looking at that.

Overall, even two people that may have the same audiogram, same speech perception -- we can distinguish their effort based on brain waves. And also when they make a mistake.

I kind of covered this -- children, we want to predict speech perception, and with adults, the more cognitive aspects, whether to focus on rehabilitation training, or rehabilitation to tune the CI.

Basically that covers some of the work I'm doing.

New Lab Space at Sunnybrook

- Lots of projects planned:
 - “realistic” environments with multispeaker array
 - Pre-op predictors
 - Visual and auditory working memory



Here is the lab -- full 3-D stereo set-up. We do **pre-operative predictors**. If you are on the waiting list, I'd love to test you. See brain waves before vs after the surgery, if we can predict how you will do with CI. Auditory and memory experiments.

This is the only lab in the world that has multi speaker array hooked up to EEG, to measure brain response to different 3-D environments.

My card is here, and my email, if you are interested in being part of the lab, I'd love to hear from you!

Andrew.dimitrijevic@sunnybrook.ca

[applause]

Q&A:

Linda: ARE THERE ANY QUESTIONS?

Q: The study I was in at Sick Kids -- integration of signals for normal hearing, acoustics, vs the implant. Is that also something you are into?

A: I am pretty good friends with people at Sick Kids, interested in joining together. Something I am interested in.

Q: Last year, ...[unable to hear speaker] ... 6 weeks in between. What did drugs have to do with my hearing aid?

A: It could vary. **What were the drugs for?**

Q: Prescription drugs.

A: I guess it really depends on the drugs. What kind of prescription drugs would affect the Cochlear Implant. Sometimes it is attention drugs, that make you drowsy, or focus your attention. Really depends on what the drugs were.

Q: 6 weeks apart, then 6 weeks another. They were prescribed by Sunnybrook.

Dr. Shipp: Were they the vaccinations?

Comment: No.

Q: My name is Terry Neill. I am a few months away from surgery. We're talking about PRE-OP PREDICTORS. My wife is wondering how well I'll cope at this point in my life. You do this, predictors on all patients before surgery?

A: This is a project starting now. I guess, keep tuned! We don't really have pre-op predictors that are really good. We'll do a whole series of tests, prior to surgery, and look at that, can we use it to predict outcome. Right now, no good predictor for outcome. We are recruiting people for studies, so I'd love to have you come by the lab, if you are interested.

Q: Are you recruiting only pre-op patients, or people that have a Cochlear Implant now?

A: Both! It depends on which studies. We have numerous studies. A music training study, as well. We're collaborating with UoT's Department of Music. Some of our patients will do music lessons, how does that affect outcomes. We have a couple of studies.

Q: This really isn't a question for either of you -- it is for ME! For all of us here that have a Cochlear Implant: Would you please raise your hand if you could talk on the phone? I cannot! -- Is it just me? The other question: Who CAN'T talk on the phone? Darn -- I am the only one? If it wasn't for texting or email, I would be lost!

A: Part of the research is to figure out why some people do really, really well, and others can't. How is the brain different in different people, to predict this?

Comment: I don't know where to HOLD the phone!?

Q: I'm Janet, my husband has a Cochlear Implant. He used to love to listen to music, became suddenly, totally deaf. He can't hear music. In church, if a hymn starts that he knows, he can sing on tune -- it just amazes me!

A: Singing and music is different, simpler, but different. Music is tambour -- is it piano vs a flute? Singing is not as difficult, following a rhythm. It's really a different process, music vs singing. That would probably help explain why singing would be different.

Q: I was wondering about the TESTING you are doing PRE-OP. My mother is totally deaf, would she be able to have that kind of testing?

A: Yes. There are different types of PRE-OP TESTING that we are going to do, or have started. One involves VISION: There is evidence, if brain is rewired, if visual stimulus, it can take over AUDITORY area of the brain. The question: Can we REVERSE that with a Cochlear Implant?

It depends on that degree of reversal, does that kind of thing predict how you will do?

For example, pre-op, we would show a visual, a flash, if it shows in the auditory type of brain, we may need to do more work with you. It's not just an auditory test, it is visual, as well. That is just one experiment we're doing now.

Linda: Anyone else? I have a question: with all our modern technology, why so difficult to cancel out background noise?

A: That is a very hot area of research! There is a HARDWARE aspect, and a BRAIN aspect. From hardware aspect, engineering -- different types of filters, etc. People with normal or unimpaired hearing, a perfectly normal audiogram -- this is perfectly normal.

Some of the cognition involved: if you have a better working memory, better at speech and noise. Very much a brain and a hardware issue.

Linda: Any other questions?

Q: How do you volunteer for these programs?

Linda: Talk to us after.

Jacque: On behalf of CHHA, we'd really like to thank you. This is an excellent presentation, all kinds of good information, food for thought for us. Thank you.

[applause]

Linda: Thank you. This gentleman just asked how to volunteer for these programs?

Q: Who do you contact at Sunnybrook to volunteer for research programs?

Linda: You can contact Sunnybrook directly:

Andrew.dimitrijevic@sunnybrook.ca David.shipp@sunnybrook.ca Amy.ng@sunnybrook.ca firstname.lastname@sunnybrook.ca
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Dr Shipp: One of the best ways -- your primary audiologist will have some knowledge of what is happening in Dr. Andrew's lab, or overall.

If something Andrew talked about today is of interest to you, definitely talk to Andrew?

Q: What happens if you have a Cochlear Implant that needs an upgrade, and it is NOT one of the companies that Sunnybrook has an RFP with?

A: You can still get an upgrade, we still follow everyone, regardless of what company they have. We don't use Advance Bionics at the moment for NEW surgeries. RFPs don't have to do with the future. If you have a device, we will always be able to service you.

Linda: I would like to thank our speakers for coming this afternoon, very enlightening. I would also like to thank the captioner, it is a big job.

Q: Will the notes be emailed to us? Or put on the web site?

Linda: I've had a few people ask...

NOTETAKER: You can either give your email to Jacquie at CHHA, or give your email to the Notetaker today, to send you the notes.

Q: David, how long should you go before you have an update?

A: A tweaking of the program? A new processor? Once you are an established Cochlear Implant user, had it a while, doing reasonably well: people typically only come in. "not sounding quite right, not as good as 2 weeks ago". Some people we don't see for a few years.

Since 1984, we have 2 patients alive and well, still following them. Some people that have had it 15, 20, 25 years, they don't come in for 4-5 years, not having problems.

When something has CHANGED: Need to be reprogrammed, equipment checked, etc.

UPGRADES: Eligible for ADP, Assistive Devices Program, currently, after 3 years. Every 3 years.

Because company has all changed **WARRANTIES** to 5 YEARS for initial processor set, now have to wait till initial warranty is over.

You can upgrade every 3 years. But no one does it, you have to pay out of pocket.

If \$10,000 for a Cochlear Implant, \$5,400 is paid by ADP. Not a lot of people have \$4,500 every 3 years to throw around! Maybe some of you do, I don't!

That's an individual thing. Most people wait till they've had their processor long enough, till there is a new one that is substantially better to have.

Linda: Thank you very much. I'd like to remind you of 2 events: Our major fundraiser for the year, the golf tournament, and the 150th project -- it is not completely organized, details are still coming.

Four meetings a year for the general public, nearly always have a guest speaker. These are on the web site, and on the brochure at the back. Make sure you take one.

Thank you for coming.

Jacquie: We'll put the Computer Notetaker's notes on the web site, the notes for David and Andrew's presentations -- give us a week! Thanks.

Linda: Thanks very much.

[applause]

UPCOMING EVENTS:

***Saturday, September 16th**

Nine & Dine FUNdraising Golf Tournament at Oak Gables Golf Club, Ancaster

*** Thursday, September 28th**

A special 150 Canada Event on Hearing

--Details coming soon on CHHA website or speak to any CHHA board member.

[end of presentations 4:15 pm]