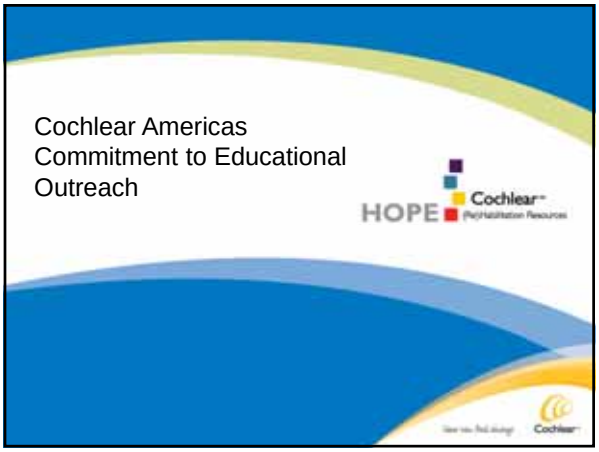

Our Speakers Today

HOPE Cochlear

Donna L. Sorkin M.A.

- Collaborate with others on Cochlear's HOPE Program
- Advocate for parents and adults with hearing loss
- Formerly ED of HLAA and AG Bell
- Avid technology user

Linda Day

- Senior Awareness Manager at Cochlear
- 30 years hearing loss experience
- CI since 2005
- 12 years AT&T Wireless (cell phone division) managing Solutions for People with Hearing Loss program
- Published author and songwriter

Cochlear

Agenda

- Introduction and Problem Statement
- Hearing Technology Issues
- Telephone Considerations
- Linking the Hearing Technology to the Telephone (Different Ways to Listen)
- Building Confidence, Strategies and Tips, Practice Tools
- Questions and Discussion

The Telecommunications Revolution and people with hearing loss

Before the Telecommunications Revolution

- Lack of telephone access (landline and wireless)
- No requirements for volume control. Telecoil linkage for landline only
- Volunteer relay services
- No email, no texting, no instant messaging
- NO INTERNET
- No captioning of TV

Ironic given AG Bell was a teacher of the deaf, was married to a hard of hearing woman, and sought to provide access for deaf people via teletype machines when he invented the first telephone

Why is using the telephone so difficult for some CI users?

- Some people just hold the phone up to their ear and talk successfully
- Most people need to make adjustments to their hearing technology, be selective about the telephone, and address linkage
- Some adults may never have used a cell phone before
- Many (most?) teens use other ways to communicate

Teens and Telephones

- All teens (typically hearing and not) are texting more than talking
- Many teens with CIs have excellent auditory skills but have never mastered voice phones
- One *does* need to be selective about choosing a telephone instrument
- One *does* need to know how to link between the phone and sound processor
- Starting out can be frustrating

Adults and Cell Phones

- If hearing deteriorated more than 10 years ago, an adult CI recipient may have never used a cell phone
- Or, they may have used a wireless phone exclusively for email or texting (data not audio)
- Many seniors are flustered by any technology
- My mother's cell phone

1. Hearing Technology
2. Telephone Considerations
3. Linking Hearing Technology to the Telephone (the interface)

HOPE Cochlear

1. Hearing Technology

Cochlear implants, Baha or hearing aids:

- Couple acoustically (hold the phone up to the microphone of the technology)
- Speaker phone
- Use telecoil
- Direct connection (some hearing aids, all Nucleus cochlear implants): hearing technology must have a port to allow a cable connection (covered as part of #3—Interface)

Couple Acoustically

Pros	Cons
• Easiest—just hold the phone up • Least likely to cause interference with phone • Does work fine for many people • Can use CI noise program in noisy environments	• Background noise may be an issue • May not provide as strong a signal as telecoil • Some people find the voice is not loud enough

Speaker Phone

Pros

- Can listen with others in office or other environment
- No need to address phone placement
- Can listen while you are using the computer or doing another task

Cons

- Background noise
- Generally poorest signal to noise ratio and not the best indication of how well someone will do on the phone
- Affected by quality of the speaker phone
- May need to sit close to the speakerphone

What is a Telecoil (T-coil)?

- Small copper wire built into some hearing aids and cochlear implants (can also be added externally)
- Boosts electronic signal from the telephone handset
- Also provides access to wide ranging assistive devices
- Activated by t-switch on hearing aid or cochlear implant
- The Nucleus 5 sound processor has an AutoPhone™ feature that detects the phone and turns the telecoil on automatically
- All landline and many cell phones are designed, by Federal law, to be used with a telecoil

Telecoils in Hearing Technology

Using T-Coil with the Nucleus®5 (N-5) Sound Processor

- To activate telecoil manually
  - quick press of the upper button on the sound processor
  - or the telecoil button on the remote assistant
- Auto detection of telecoil input can be enabled and re-enabled by remote assistant long-press telecoil button *only*

Telecoil

Pros	Cons
• Reduces or eliminates background noise	• An extra step to turn it on (if no Auto-Telecoil)
• Boosts the strength of the telephone signal	• May pick up electromagnetic fields from other sources (e.g, computer monitors, older fluorescent lighting, household appliances, airplanes)
• Can be on/off	• More care must be taken in the selection of the cell phone
• Ratio of T-coil to microphone can be adjusted on Nucleus CIs allowing different ratios in different settings	
• Auto Telecoil in N-5 automatically goes on	

Telephones

Definition of Cell Phone

- Terms: Wireless, cellular, cell phone, mobile phone
- A telephone that communicates via radio waves rather than along cables or wires
- Not to be confused with a cordless telephone (which is a phone with a very short wireless connection to a local landline phone outlet)
- First cellular telephone for commercial use was approved by the FCC in 1983. The phone, a Motorola DynaTAC 8000X, weighed 2 pounds, offered a half-hour of talk time for every recharging, and sold for $3,995!

What is the issue with cell phones and hearing technology?

- First cell phones were analog and did not create major access problems for people using hearing technology though few cell phones were hearing aid compatible or "HAC"
- HAC=means to internally connect with a **telecoil** via electronic magnetic radiation from phone to hearing aid or cochlear implant
- Hearing Aid Compatibility Act of 1988 (Federal law) required landline phones to be HAC
- Wireless was initially exempted from the law
- Digital wireless phones do have potential to interfere with hearing technology (unlike analog)

What is the problem with wireless?

In 1995, new wireless phones were introduced in US

- Digital technology caused interference with hearing aides (and cochlear implants)
- As a result of ongoing advocacy by consumer and professional orgs (almost 10 years!), FCC lifted the wireless exemption for phone companies

- Standards were adopted
- Each manufacturer must now offer models of wireless phones that meet the standard for hearing aid compatibility

Does HAC apply to cochlear implants?

- Standards were developed for hearing aids
- Most cochlear implant users find that if a phone is rated as being HAC for hearing aids, it also works for a CI user but you should always try the phone with your device
- Cochlear implant manufacturers design their devices knowing that people will want to be able to use digital wireless telephone so CI design takes this into account

HAC = hearing aid compatibility

Requirements for Cell Phones Now

- HAC Act was updated by the Federal Communications Commission (FCC) in 2003 to include cell phones and other provisions on volume
- Each manufacturer and provider of cell phone service must meet a specific interference standard for hearing aid users
  - At least 2 models of phones must provide t-coil compatibility
  - At least 50% of all phones must provide acoustic coupling

How do you know if a cell phone meets the standard?

- The Federal Communications Commission (FCC) established technical standards set forth in the American National Standards Institute (ANSI) Standard C63.19*
- 50% must meet interference standard for hearing aids
- 2 models in each line must be HAC (provide t-coil access)
- Handsets must be rated and rating displayed for consumers
  - Handsets rated M3 or M4 have met (M3) or surpassed (M4) the ANSI standard for hearing aids in microphone mode
  - Handsets rated T3 or T4 have met (T3) or surpassed (T4) the ANSI standard for hearing aids in t-coil mode
- Standards were set for HAs. These are based on radio frequency interference so should be appropriate for CIs

*FCC's Hearing Aid Compatibility Rules for Wireless Telephones, 2003. Full reference at end of section.

Always Try Before You Buy

- The ratings are intended as a guide
- Different models of technology will provide different experiences for the user
- "Sound quality" is very personal and is not measured by the interference rating
- M4 and T4 will generally provide the best outcome
- Use the ratings to assist in selection but always test the phone first—what works for one person will not necessarily work for others

But the display on this one is so much nicer…

- Resist the temptation to select a phone based on its data characteristics and features
- If you want to be able to have conversations on the phone, you need to focus on the audio elements and how they work for the individual user
- Getting the phone away from the hearing technology via other interfaces may help (more on this later)

Telecommunications Laws Impacting Cell Phone Access*

HAC Act of 1988: Required new wireline and cordless (not wireless) phones to provide coupling with the t-coil in hearing aids. www.fcc.gov/Bureaus/common_carrier/FAQ_hac.html

Hearing Aid Compatibility Rules for Wireless Telephones 2003: Broadened HAC Act to include usablity by people with/without telecoils and to provide labeling. www.fcc/cgb/consumerfacts/hac.html

Telecommunications Act of 1996 (Sec 255): Requires companies make products accessible to, and usable by, people with disabilities if readily achievable. Does not have the "teeth" of the HAC rules. www.fcc.gov/cgbl/dro/section 255.html

*Excerpted from: Sorkin DL. Education and access laws for children with hearing loss. In *Pediatric Audiology*, eds Madell & Flexer, Thieme, 2008

References and Sources

- Cochlear Americas product information
  www.cochlearamericas.com/support/354.asp
  www.cochlearamericas.com/support/355.asp
- The Wireless Association (CTIA) background materials
  www.accesswireless.org
- Hearing Loss Association of America (HLAA) has many materials on this topic including the guidance "Choosing and Using a Cell Phone with your hearing aid or cochlear implant" by Lise Hamlin. www.hearingloss.org
- There are many sources on t-coil benefits and telephone usage. One excellent article can be found at:
  www.beyondhearingaids.com/Resource/ALDArticles/Telecoils

Linking Hearing Technology to the Telephone (the Interface)

How can we interface?

- Couple acoustically (holding phone to ear, using speaker phone)
- Telecoil
- **Direct connection**

Direct connect options for hearing aids or cochlear implants

HATIS Mach I

NoizFree

HATIS Mach II

What is Bluetooth?

- Bluetooth is a proprietary open wireless technology standard for exchanging data over short distances (using short wavelength radio transmissions in the ISM band from 2400 – 2480 MHz) from fixed and mobile devices, creating personal area networks (PANs) with high levels of security. Created by Ericsson in 1994, it was originally conceived as a wireless alternative to RS-232 data cables. It can connect several devices, overcoming problems of synchronization.

From Wikipedia

OK…. So, what is Bluetooth?

- Basically, Bluetooth is a radio frequency
- Your phone must be able to transmit a Bluetooth signal in order for wireless Bluetooth accessories to work
- The accessories is the Bluetooth receiver. There are several options available in the marketplace
- Your hearing aid or cochlear implant (or both) must have a T-coil in order to "receive" the signal from the Bluetooth accessory which functions as a receiver of the Bluetooth signal itself unless you use a direct connect device

Many styles to choose from

Ear level devices

Motorola

Samsung

Jabra

Bluetooth Neckloops

Nokia LPS5 Bluetooth Neckloop

ClearSounds Quattro Bluetooth Neckloop

Another Bluetooth option

NoizFree Beetle H2st & H3st

Single Ear Hook

Neckloop

How do they work?

- The phone must be have Bluetooth turned ON
- Follow phone manufacturers instructions for pairing accessories
- You are pairing the accessory to the phone
- Once paired, the cochlear implant or hearing aid must be in T-coil mode
- The accessory should be turned ON
- Calls can be answered directly at the accessory
- All have a microphone so end user can hear you

Direct Connect Option –
Does not require T-coil

- BlueFreedom Bluetooth cellphone headset
- Available through Soundbites website
- Requires Euro Adapter for Nucleus 5 processor
- Not subject to electromagnetic interference due to direct connection

Direct Connect Option –
Does not require T-coil

Personal Phone Cable for Nucleus 5 – direct connect to processor. No microphone on cable. Available at Cochlear Online Store

Monster iSoniTalk Microphone Headphone Adapter for iPhone - microphone

Pros and cons of Bluetooth accessories

Pros	Cons
• Hands free • Improved sound quality • User controls the m/t ratio to determine background noise with Remote Assistant • Convenient to use • No impact on hearing device batteries	• May drop calls if too far from phone • Subject to electromagnetic interference through T-coil • Direct connect may impact hearing device battery life

Websites to purchase accessories

www.soundbytes.com	www.tecear.com
www.soundclarity.com	www.nokia.com
www.hearinglosshelp.com	www.harc.com
www.harriscomm.com	www.hitec.com

Building Confidence, Strategies and Tips, Practice Tools

Tricks of the Trade

- Use different strategies for different situations and different phones
- Learn to make adaptations
- Be selective about the audio quality of cell phone you purchase
- You may find you like a bit more volume on your CI when you use the phone
- In situations in which telecoil is not possible (e.g., airplanes), try using your noise program
- Try different mixing ratios (telecoil to microphone) for different situations
  - 60/40: normal setting (60% thru telecoil)
  - 80/20: very noisy environments (80% thru telecoil)

Practice, Practice, Practice!

- Combine your technology knowledge and tools with confidence building activities
- It does take practice to find the best combination of processor setting, telephone and interface for you
- You may find you prefer different tools (or settings) in different settings

Seek Help from Others

- Talk to your audiologist
- Connect with a Cochlear Awareness Manager. Go to: www.CochlearAmericas.com, then click on Customer Service, then on Cochlear Awareness Network
- Seek help from other CI recipients via the Cochlear Community at www.cochlearcommunity.com
- Watch Nucleus 5 Using the Phone YouTube Video Playlist: http://www.youtube.com/playlist?list=PL615EF74F788242DE

Other Practice Tools

- Practice with a patient family member or friend every day until you are comfortable
- Begin with an agreed upon topic
- Use "closed" set (limited number of response options)
- Order take-out
- Call recorded numbers
- Use Cochlear's practice tools
  - Sound and WAY Beyond
  - Phone with Confidence

Telephone with Confidence

Telephone with Confidence

- Designed by bilateral recipient Scott Rinehart to address his own feelings associated with using the telephone:
  - Will I understand what the other person is saying?
  - Will I respond correctly?
  - Which phones will I hear best on?
- Address uncertainty, frustration, apprehension
- Gain confidence in using the phone

Telephone with Confidence

- Free service from Cochlear to help recipients develop listening skills and confidence in ability to make calls
- Call in to free 800 number with word lists and reading accessible on website
- Also great for learning how to set processor to work best with different phones (i.e., cell phones, landline)
- Two parts to the program
  - **Listening (1-800-458-4999)**
  - **Reading www.cochearamericas.com/HOPE**

Word List for January 31

To begin in English press 1.

- Para empezar en espanol, por favor oprima el numero dos. [To Begin in Spanish Press2]
- We at Cochlear want to maximize your sound processor listening experience. We look forward to hearing your telephone success stories after using this program.
- To get started please chose from the following three options:
- For today's Word list, Press 1
- For today's passage, Press 2
- To repeat these options, Press 3

Word List for January 31

Voice: Male 2

Welcome to today's word list.

PLACES 9 {Pause}

Lighthouse

Cape Canaveral

Pacific Ocean

Beach

Swamp

Conclusion

That completes today's wordlist. Call back tomorrow and listen to a new word list.

Narrative for January 31

Short Passage
Voice: Male 1
The Golden Goose , by Leslie L. Brooke, Chapter 2

When the Simpleton came to the wood the little grey man met him also, and greeted him, and said: "Give me a slice of your cake and a drink from your bottle; I am so hungry and thirsty." The Simpleton replied: "I have only a cake that has been baked in the ashes, and some sour beer, but if that will satisfy you, let us sit down and eat together." So they sat themselves down, and as the Simpleton held out his food it became a rich cake, and the sour beer became good wine. So they ate and drank together, and when the meal was finished, the little man said: "As you have a good heart and give so willingly a share of your own, I will grant you good luck. Yonder stands an old tree; hew it down, and in its roots you will find something."

Questions and Discussion

Upcoming Online Sessions

Next Up:

Wednesday, February 8, 3 pm ET

Auditory Comprehension: Focus on Memory

Ashley Garber, M.S, CCC-SLP, LSLS Cert. AVT
Listening and Language Connections

Thursday, March 1, 3:00 pm ET

There's an App for That

Ashley Garber, M.S, CCC-SLP, LSLS Cert. AVT
Listening and Language Connections

Early Intervention Workshops 2012

- Facilitating Spoken Language Development for Young Children with Hearing Loss
- One Day Introductory Seminar for Early Intervention and Educational Professionals
- Two 2012 Sites: Montpelier, VT(Mar 20) and New Providence, NJ (Mar 21)
- For more information, go to: www.regonline.com/hopeworkshops
- Or call Sarah Gard at 303.524.6848, sgard@cochlear.com

Children with Cochlear Implants: The Words and the Music

- One day introductory level workshops on reading, vocabulary and music
- One remaining site: Washington (DC) on March 13, 2012
- For more information, go to www.regonline.com/hopeworkshops
- Or call Sarah Gard at 303.524.6848, sgard@cochlear.com

Contact Cochlear

- For questions about this seminar, please contact: dsorkin@cochlear.com or lday@cochlear.com
- For inquiries and comments regarding HOPE programming, please contact: dsorkin@cochlear.com
- For a Certificate of Participation, please send your completed Feedback Form to: hopefeedback@cochlear.com