The meeting will begin shortly!
Presenters Introductions

Wendell Johnson Speech and Hearing Clinic
- Julie Jeon, PhD, AuD., CCC-A
- Audiology graduate students:
  - Megan Dorfler
  - Sarah Kingsbury
  - Jeff Shymanski
- Department of Communication Sciences and Disorders

UIHC Cochlear Implant Clinic
Camille Dunn, PhD, CCC-A
- Director, University of Iowa Cochlear Implant Program
- Department of Otolaryngology—Head and Neck Surgery

Cochlear Implant Recipients
- Jim Hansen
- Kay Basham
Zoom use for questions

Audio: Unmute your mic to speak

Chat: public or private messages

Poll: the Polling icon allows us to ask you questions

Today’s session will be recorded.
Poll questions for audience

• Do you struggle with your hearing or have been diagnosed with a hearing loss?
• Do you currently wear hearing aids?
• Has anyone talked to you about cochlear implantation for your hearing loss?
• What are you looking to get out of today’s session?
Hearing Loss: You are not alone!

1 in 3

Nearly 1 out of every 3 people over the age of 65 are affected by hearing loss.¹

47,800,000

That’s about 48 million people in the United States alone!²

Meeting Agenda

• How Hearing Works
• Types and Degrees of Hearing Loss
• Treatments for Hearing Loss
• Steps to Better Hearing
• Q&A
How Hearing Works
Natural Hearing

In natural hearing, sound:
• Enters the ear canal
• Is collected at the eardrum and moves across small bones behind the eardrum
• Is transferred to the cochlea, a fluid-filled organ that converts sound to neural impulses for the brain
Types and Degrees of Hearing Loss
What is an Audiogram?

- An **audiogram** plots the hearing of each ear, showing the softest perceptible sounds (**thresholds**) across pitches.
- Thresholds of the left ear appear in **blue**, right in **red**.
Understanding Speech with Hearing Loss

- Speech sounds differ in their pitch and volume. Perceiving some speech sounds are easier than others!
  - Vowels: 40 – 55 dB HL
  - Consonants: 20 – 50 dB HL

For example, /s/ - very soft (20 dB HL) and high pitch
Conductive Hearing Loss

- Conductive hearing loss occurs when there is a problem impacting the outer and/or middle ear sections along the auditory pathway.

- These types of losses impede the amount of sound that able to reach the inner ear and therefore be heard. In the cases of a conductive hearing loss, increasing the sound level being put into the auditory system can help overcome the hearing loss.
Conductive Hearing Loss

Common causes include:
- Congenital hearing loss
- Chronic ear infections
- Ear drum perforations
- Ossicular disarticulation
- Otosclerosis
- Trauma
- Tumor or growth in middle ear cavity
Sensorineural Hearing Loss

- Sensorineural hearing loss occurs when the inner ear (cochlea) or hearing nerve is damaged or does not work properly.

- With sensorineural hearing loss, sounds are not only softer, but difficult to understand—especially when it is noisy. With this type of hearing loss, turning up the volume level of sounds may not necessarily improve clarity of speech.
Sensorineural Hearing Loss

Common causes include:
- Congenital hearing loss
- Aging
- Exposure to loud sounds
- Head trauma
- Genetics
- Ménière’s disease
- Adverse reaction to medication
Hearing from both ears is important!

Hearing with two ears gives you better speech understanding in noise and helps localize where sounds are coming from.

Those with hearing loss might use two different devices depending upon their needs.
- Some may wear hearing aids on both ears.
- Some may wear cochlear implants on both ears.
- Someone may wear a hearing aid on one ear and a cochlear implant on the other.
Treatments for Hearing Loss
Treatments options

- Hearing aids
- Cochlear implants
- Combination of both hearing aid and cochlear implant (bimodal support)

- Aural rehabilitation is for both children and adults with hearing loss regardless of any hearing devices.
Hearing Aids

• Small electronic devices that capture sound and make the sound louder.
• A possible solution for those who have mild to severe hearing loss and have some remaining healthy sensory hair cells in the inner ear (cochlea) that can transmit sound to the brain using amplification.
Hearing Aid Types

- Receiver in the canal (RICs or RITE)
- Behind-the-ear (BTEs)
- In-the-ear (ITEs)
Is My Hearing Aid Enough?

• **While wearing hearing aid(s), do you…**
  • Have difficulty hearing conversations especially in noisy situations?
  • Frequently ask people to repeat themselves?
  • Have trouble hearing on the telephone?
  • Find yourself agreeing, smiling or nodding during conversations when you are not sure what has been said?
  • Rely on lip reading?
  • Only hear from one ear?
Cochlear Implants (CI)

*Please put any questions in the Zoom chat box!
Cochlear Implants

- Cochlear implants help those with moderate to profound hearing loss in both ears who are not receiving enough benefit when using hearing aids.
Two parts

- There are two main components the cochlear implant system:

  - External sound processor
  - Internal implant
How Cochlear Implant (CI) Works

1. **The sound processor** captures sound and converts it into digital code.
2. The digitally coded sound goes through the coil to the implant.
3. **The implant** converts the digitally coded sound to electrical impulses and sends them along the electrode array, which is positioned in the cochlea.
4. The implant’s electrodes stimulate the auditory nerve, which then sends the impulses to the brain where they are interpreted as sound.
Comparing and contrasting HAs and CIs

How is sound presented differently?

A hearing aid presents sound through all parts of the ear, amplifying sounds.

A cochlear implant stimulates your hearing nerve directly.
Comparing and contrasting HAs and CIs

Which device is appropriate for my hearing loss?

• Hearing aids are most effective to amplify sounds for those with mild-to-severe hearing losses who understand speech if presented loud enough.

• Cochlear implants are used by those with moderate-to-profound hearing losses who cannot understand speech even when presented loudly.

Your audiologist will help you determine which device is appropriate for your needs.
Comparing and contrasting HAs and CIs

Are hearing aids/cochlear implants covered by insurance?

• Hearing aids are not covered under most insurance plans.

• Cochlear implants are commonly covered under insurance plans, as a surgery is needed to use a cochlear implant.
  o Unlike hearing aids, hearing implants may be covered by Medicare. They are also covered by many insurance plans and typically Medicaid.*
  o Expect to pay your deductible, co-insurance and/or co-pay.
CI Manufacturers

• There are **three CI manufacturers** who market their products in the United States.

• All manufactures provide simple behind-the-ear and off-the-ear sound processor options.
Connectivity options with CIs
Bluetooth/Apps

• Like most current hearing aids, there is **Bluetooth connectivity** options for cochlear implant devices
  – Stream phone calls, music, podcasts, etc.

• In addition, all CI and most HA options include accessibility to a **designated App**. This will help you to monitor your device information **from your smartphone**.
  • With device Apps, you can easily:
    – Change programs or volume
    – Check battery life
    – Get help finding your sound processor if you misplace it
Assistive Listening Devices (ALDs)

- For example,
  - TV streamers
  - Mini mics
  - Phone streamer
  - Roger technology
  - AudioLink, etc.
Wear Options

- Protective coverings are available to enable swimming.
- Water-safe accessories for both children and adults
- Off the ear options provide versatility
Sharing experiences from our recipients
Sharing experiences from our recipients

• Briefly, how long have you had hearing loss and when were you implanted?
• What were some main reasons why you decided to proceed with being implanted?
• What was one thing that most surprised you about your process?
• Something you wish you would have known before?
• What has been the biggest change since receiving your cochlear implants?
Your Journey To Better Hearing

1. Hearing evaluation
2. Implant procedure
3. Activation day
4. Get the most from your hearing implant
Visit a Hearing Implant Specialist

- Recent Audiogram
- Verification of Hearing Aids
- Speech testing with hearing aids
- Counseling
Things to consider for Cochlear Implant Candidacy

- Candidate
- Audiogram
- Speech Recognition Scores
- Medical Considerations
- Hearing History & Etiology
- Lifestyle & Demographics
Candidacy Considerations: Audiogram
Types of Users

• Unilateral CI
  – Bilateral profound

• Bilateral CI
  – Simultaneous
  – Sequential

• Unilateral CI with residual hearing
  – Bimodal
    • CI + HA opposite ears (CI+HA)
  – Single-sided deafness
    • CI + Normal acoustic opposite ears (SSD)
  – Hybrid
    • Acoustic + Electrical same ear (A+E)

Hearing with two ears

Hearing in one ear
Candidacy Considerations: Speech Recognition Scores

• Aided Word Scores:
  • Between 0% and 60% in the ear to be implanted
  • No better than 80% in the opposite ear
• Aided Sentence Scores tested in quiet and in noise:
  • 40% or less for CMS (Medicare) in the ear to be implanted
  • 60% or less for private insurance
Candidacy Considerations: 
Hearing History and Etiology

- Stable or progressive loss
- Hearing aid use
- Cause of hearing loss
  - Noise induced
  - Congenital
- Duration of hearing loss
- Duration of profound high frequency hearing
Candidacy Considerations: Lifestyle and Demographics

- Patient age
- Cognitive status
- Patient expectations and lifestyle
- Quality of life and subsequent life demands
  - Patients who have considerable listening demands, e.g., music, noise, etc., are great candidates for EAS
Candidacy Considerations: Medical

- Reservations with certain types of medical issues
  - Dementia
  - Brittle diabetes
  - Progressive loss
  - Autoimmune
- These patients are still implant candidates, but might change device recommendation
Medical/Surgical Consultation

- Meet with the surgeon
- Discuss other medical etiologies
- MRI or CT
- Discuss surgical process
Your Journey To Better Hearing

1. Hearing evaluation
2. Implant procedure
3. Activation day
4. Get the most from your hearing implant
Implant Procedure

• Normally a routine outpatient procedure
• Performed under general anesthesia
• Usually about two hours surgical time
• Involves a small incision
• In a few days, most people are back to their normal activities
• Established treatment option for 40 years
Time Between Surgery and Activation

2-3 weeks
Your Journey To Better Hearing

1. Hearing evaluation
2. Implant procedure
3. Activation day
4. Get the most from your hearing implant
Activation
“I’ll never forget my experience hearing the coffee pour into my cup after activation. I was just wearing the new processor for practice. I had lost this sound of coffee pouring, with my hearing aid for years, but could now hear this crystal clear with my new implant. Sounded so good!”

- Ellen DeVoss, one of CI recipients at UIHC
Your Journey To Better Hearing

1. Hearing evaluation
2. Implant procedure
3. Activation day
4. Get the most from your hearing implant
A Comparison...
Hear Your Best: Practice, Practice, Practice

• **Hearing Therapy – Rehab Services**
  • Communication Corner
    • Assessments on how to get started
    • Age-based programs
    • Help you to work on communication strategies and improve listening
      ✓ Home-based practice
      ✓ Telephone with Confidence
        – Practice listening on the phone
      ✓ Bring Back the Beat
        – Downloadable learning app focusing on music and music appreciation

• **Angel Sound**
Home-Based Trainings

Workbook developing auditory skills with a newly-implanted ear. Exercises can be practiced with a friend or loved one.

Activities involve:

- Journaling new sounds
- Repeating speech sounds, words, and sentences
Auditory Practice | Angel Sound

App facilitating auditory discrimination skills, available on smart phones or PC computers.

Activities include:

- Word identification
- Pitch contour training
- Nonspeech sound identification
- Consonant identification

http://angelsound.tigerspeech.com
Auditory Practice | Telephone Training

Service available to practice speech understanding over the phone. New recordings are available each day and vary by complexity and by speaker voice.

Calls include word lists, short passages, and long passages to monitor your understanding.

To Get Started:
To Listen:
Call 1-800-458-4999 and follow the prompts.

To Read:
- Click on the link for the correct date range below
- Find today’s date in the chart below
- Click on the corresponding link and download a PDF copy of today’s word list and passage.
Don’t Wait to Address Your Hearing Loss

• You don’t have to wait until you lose all your hearing to benefit from a cochlear implant. You may hear better sooner.

• It is important that you have realistic expectations of the benefits of a cochlear implant. It will take commitment, patience, and support.
Scheduling information

• **Wendell Johnson Speech Hearing Clinic**
  
  : *For hearing evaluation, hearing aid fitting, aural rehabilitation, and counseling*
  
  – (319) 335-8736
  – For scheduling, linsey-thomann@uiowa.edu
  – For any questions, eunkyung-jeon@uiowa.edu

• **Cochlear Implant Clinic at UIHC**
  
  : *For CI evaluation and counseling*
  
  – (319) 384-8092
  – For scheduling, CI-coordinator@uiowa.edu
  – For any questions, camille-dunn@uiowa.edu
Thank you for listening!

Any questions, comments, or thoughts?