Canadian Academy of Audiology
Academie Canadienne d'audiologie

Cochlear Implantation and Single-Sided Deafness

Speaker: Kari Smilsky, Senior Audiologist, Cochlear Implant Program, Sunnybrook Health Sciences Centre Lecturer, University of Toronto: Otolaryngology - Head and Neck Surgery

Host: Kassandra Kaminskas, CAA Board Member

2022-05-26

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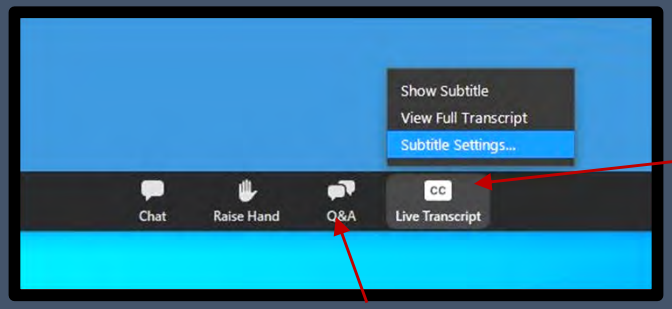

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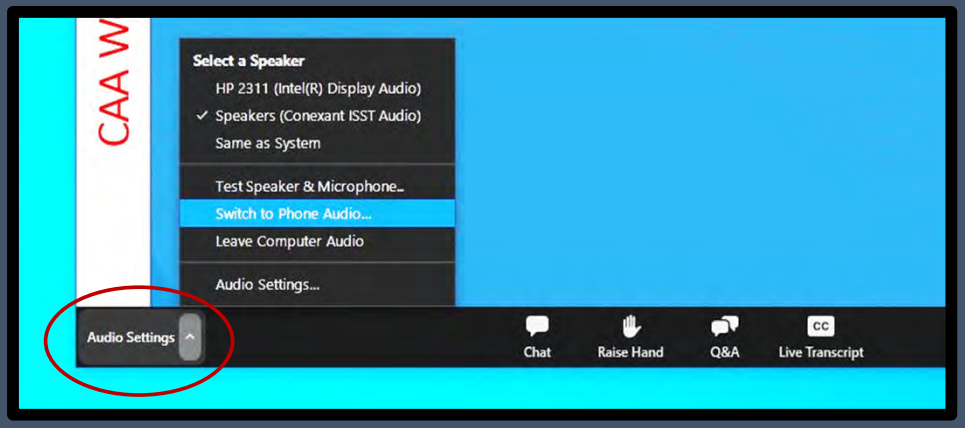

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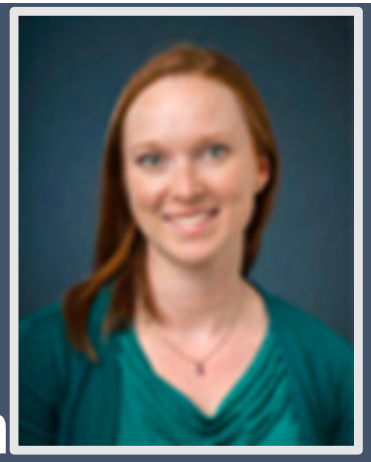
Canadian Academy of Audiology is a professional association dedicated to enhancing the role of audiologists as primary hearing health care providers through advocacy, education and research.



Moderator: Kassandra Kaminskas, Director,
Sunnybrook Health Sciences, CAA Board Member

Kassandra studied at the University of Western Ontario, earning Masters degrees in Communication Sciences and Disorders (Hearing Sciences; 2012) and in Audiology (2014). After graduating, she provided hearing health care services to individuals 0-18 yrs of age at Surrey Place Centre. She also served as the in-house Audiologist at Vivosonic Inc.

In 2015, she had the opportunity to join the Cochlear Implant Program at Sunnybrook Health Sciences Centre. In the clinic, her role involves diagnostic audiology, Cochlear Implant fitting and Aural Rehabilitation. Outside of the clinic, Kassandra enjoys spending time with her family either in the kitchen, reading books or exploring the outdoors.

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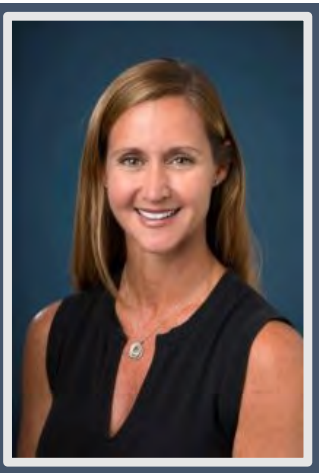
Speaker: Kari Smilsky, Sunnybrook Health Sciences Centre



Kari Smilsky is an audiologist who has been employed at Sunnybrook Health Sciences Centre in Toronto for the past twenty-two years. She has worked with the Cochlear Implant Program since 2006. Kari holds a Masters of Clinical Science Degree from the University of Western Ontario in Communication Disorders and a Bachelor of Science Degree from McMaster University.

Kari's research interests include bilateral cochlear implants, single-sided deafness, auditory brainstem implants, hearing preservation, and the expansion of cochlear implant candidacy. Through her involvement in the Canadian Cochlear Implant Centres Group, Kari has been involved in the development of national clinical standards for bilateral cochlear implant candidacy and provision of cochlear implants for single-sided deafness. Kari sits on the Audiology Advisory Board of MedEl.

Cochlear Implantation and Single-Sided Hearing Loss

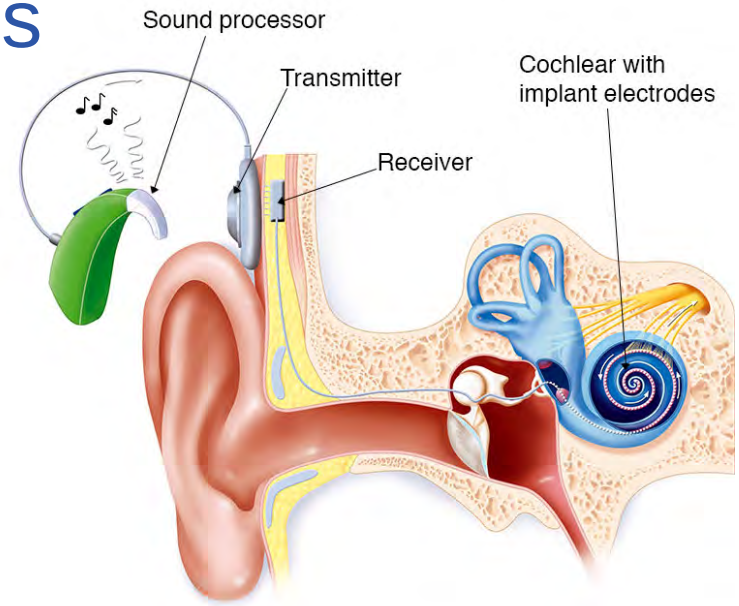
Canadian Academy of Audiology, May 26, 2022

Kari Smilsky, M.Cl.Sc.

Senior Audiologist, Cochlear Implant Program

Session Outline

- Brief historical overview
- Evolution of CI Candidacy
- Traditional SSD treatment options
- Binaural advantages
- CI for SSD
- Clinical and research outcomes
- Rehabilitation considerations
- Q&A



Cochlear Implants

- First and (almost*) only commercially available artificial sensory organ
- Close to 1,000,000 worldwide
- Safe and effective
- Technology has advanced, outcomes improved
- Indications have broadened

*Argus II Retinal Prosthesis System

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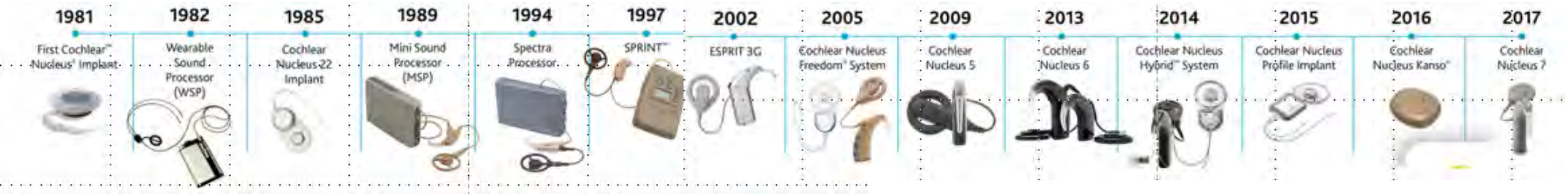
History of Cochlear Implants

- First cited report in France 1957
- 1960's: early research with single ball electrodes
- 1970's: worldwide research expansion with multichannel devices, first commercial interests

History of Cochlear Implants

- 1980's: large scale clinical trials, regulatory approval (Health Canada, FDA, CE Mark, etc.)
- 1990's: commercial globalization, standard treatment for adults & children
- 2000's: miniaturization of externals, increasing complexity
- 2010's: hearing preservation, hybrid electro-acoustic devices, wireless streaming
- 2020's: bimodal hearing, otoprotective agents, stem cell delivery, totally implantable



SCANNER

SPRING 1984 A PUBLICATION of SUNNYBROOK MEDICAL CENTRE University of Toronto

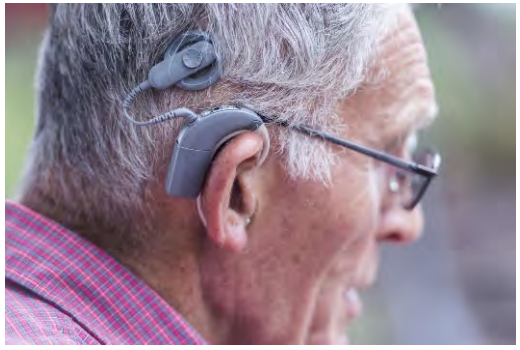
Emerging from 50 years of the 'sound' of silence

HELPING OTHERS LIKE HIMSELF — Louis Mueller participates in the testing of a cochlear implant, designed to help the profoundly deaf hear electronically produced sounds. Sunnybrook's Dr. Julian Nedzelski makes an adjustment during the test procedure. Louis hopes his efforts will advance the study of the implant, and eventually help other profoundly deaf people.

AT FIRST it was a hum, then a ring followed by several quick knocks. Not exactly a symphony, but for Burlington machine operator Louis Mueller, they were the first sounds he heard in more than half a century.

At the age of 8, Louis, now 60, completely lost his hearing after a bout of meningitis. Fifty-two years later, he is among the first profoundly deaf Canadians to have a single-channel cochlear device, which directly and electronically stimulates the nerve of hearing, surgically implanted in his

Who is a candidate for a cochlear implant?



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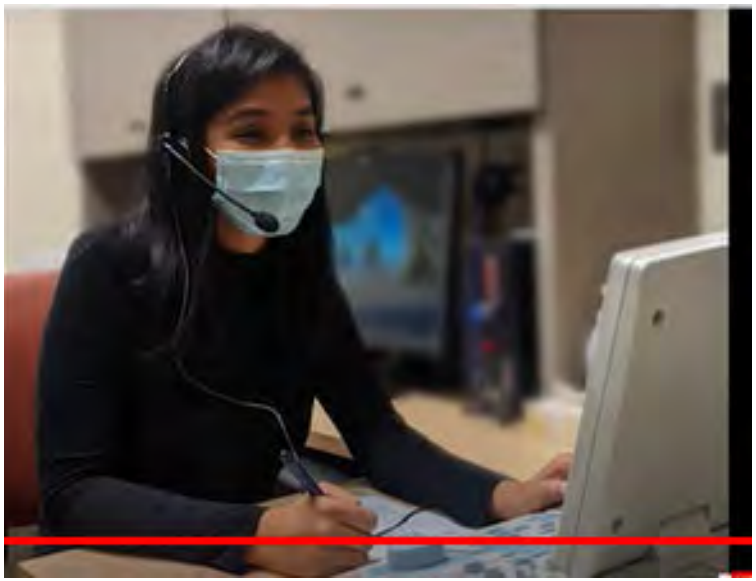
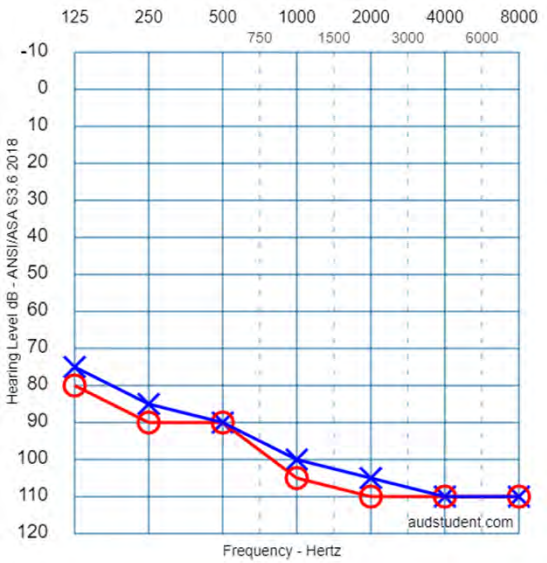
Cochlear Implant Candidacy

Audiologic criteria (traditional)

- Moderate –> profound SNHL bilaterally **>70** dB HL PTA in better ear
- Poor speech discrimination **(<50% guideline)**
- Limited benefit from optimally fit amplification
  ≤ 60% on AzBio Sentences @ 60 dB SPL
- CNC word score <40%





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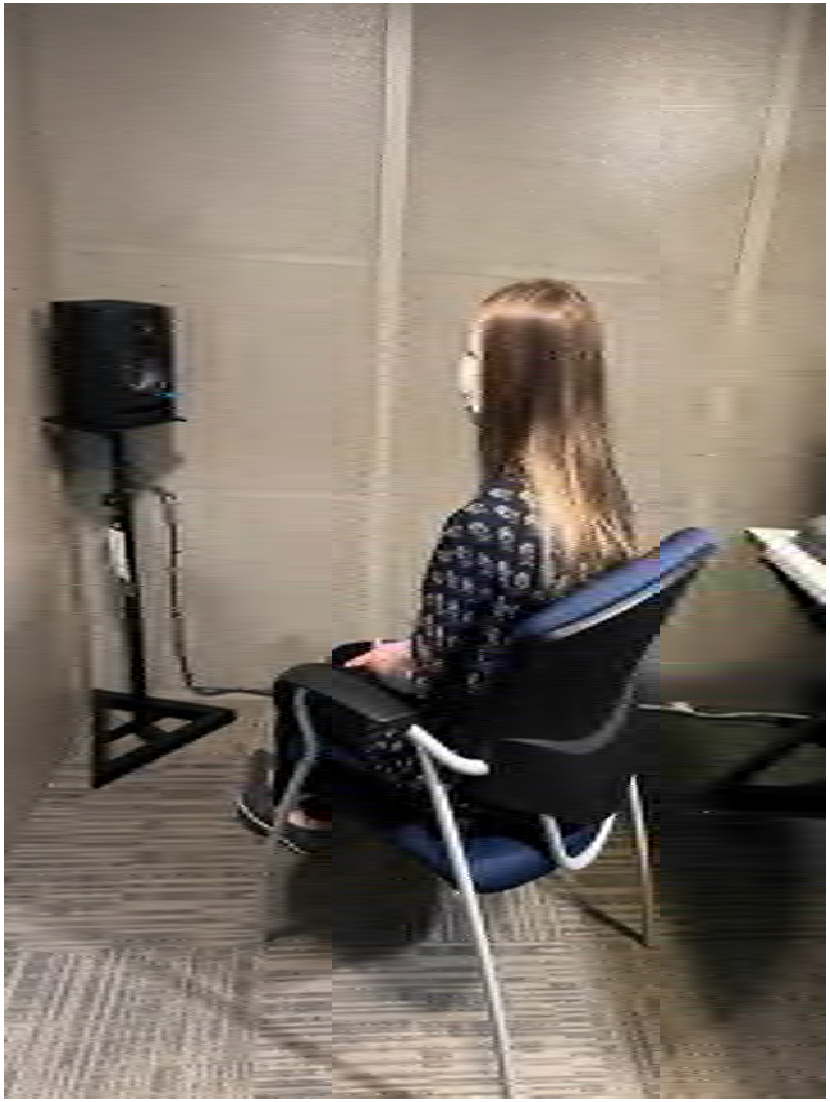
Assessing Aided Speech Perception

- Normally assessed in sound field
- Sentence materials (AzBio sentences) and word materials (CNC words) are used
- Patients are scored on correctly repeated words and phonemes

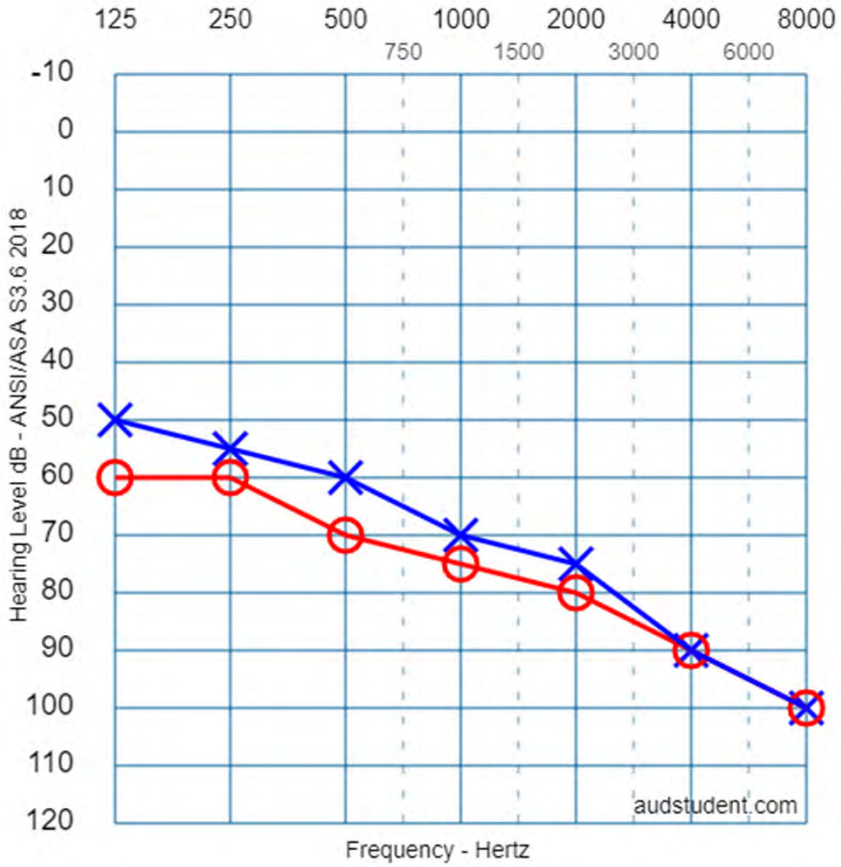


Cochlear Implant Candidacy

60/60 Guideline for Referring Adults for a CI Evaluation

Best ear PTA ≥**60** dB HL

Unaided monosyllabic word score of **60**% or less



Right PTA = 75 dBHL
Left PTA = 68 dB HL
Right WRS = 32%
Left WRS = 28%

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Why is the 60/60 Rule Important?

- According to the WHO in April, 2021, over 5% of the world's population require rehabilitation to address their 'disabling' hearing loss (432 million adults and 34 million children).
- It is estimated that by 2050 over 700 million people – or one in every ten people – will have disabling hearing loss.
- Hearing loss is associated with increased risks of social isolation, depression, dementia, stroke, vision loss, diabetes and mortality.
- The penetration of cochlear implants still remains around10% of those who could benefit (50-59% kids)

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