

# Case studies

19 February 2023



## Case Study 1: 78 year old female



### Background information:

- Onset approximately 20 years ago. Vision and hearing started to deteriorate at the same time
- Legally blind now
- Cause of hearing loss uncertain, loud noise trauma, had an infection a few years ago, antibiotics
- Right ear always worse
- Slow progressive bilateral hearing loss
- Hearing aid on right initially to suppress tinnitus, stopped wearing as it no longer suppressed the tinnitus
- Diabetic and high blood pressure



# Hearing Assessment : Pre-op

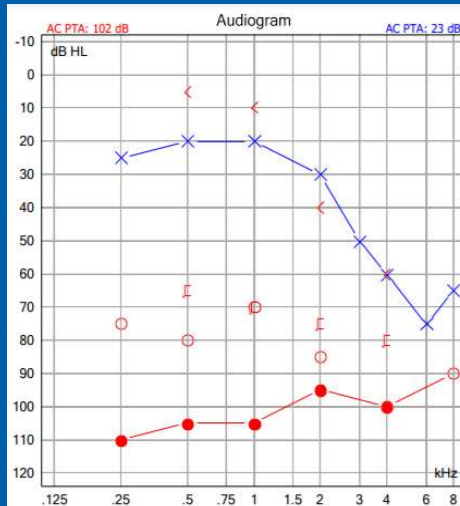
Otосcopy  
 Right: Clear  
 Left: Clear

Tympanometry

	TYPE	Canal Vol (mL)	Compl (mL)	PRES (daPa)
Right	A	2.1	1.2	-2
Left	A	2.1	1.3	-11

Speech table

Material		AB WORDS			
Ear	Left	Left	Right		
Level	50dB	55dB	105dB		
%	84%	91%	0%		



## Case Study 1 cont.

- **Balance:** No concerns
- **General health:** Diabetes and high blood pressure, under control
- **Visual impairment:** legally blind
- **Very good family support** from daughter and son-in-law
- **Telephone use:** Uses speakerphone on the left ear and finds it difficult at times
- **Amplification History:**
  - Aided left ear only
  - Wore a right hearing aid until a few months ago
  - Tried a BiCROS, unsuccessful



# Hearing Assessment: Aided Speech Perception (Pre-op)

CNC Words - In Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 26/2/2021	
	Words	Phonemes
R + L	DnT	DnT
R	0 %	0 %
L	84 %	93 %

CUNY Sentences - In Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 26/2/2021
R + L	DnT
R	0 %
L	100 %

BKB-SIN - Sentences in Noise (speech and noise to the front)

Condition	Pre-Op (dB SPL) 26/2/2021
Left Device: Hearing Aid (Own) Right Device: Unaided	17 dB S:N

(NB: SNR-50 mean value for a normal hearing adult is -2.5 with SD of 0.8)

BKB-SIN - Sentences in Noise (speech and noise spatially separated)

Condition	Pre-Op (dB SPL) 26/2/2021
Left Device: Hearing Aid (Own) Right Device: Unaided	21 dB S:N

(NB: SNR-50 mean value for a normal hearing adult is -2.5 with SD of 0.8)



## COSI Goals

To hear better when she is with a group of people especially at the lunch or dinner table

To hear her daughter better, especially when she turn around and walks away while talking

To hear better when they play Bingo, she can't hear them calling the numbers

To hear better on a bus with background noise



## Questions from Audiologist

- **What concerned me is when I blocked her good ear with impression material, she could not hear very well at all which has not been the case with some other clients with Cochlear Implants**
- **I have another client who would have had no trouble hearing me with the non-implant ear blocked**
- **The client reports not hearing anything but “a racket” with her Cochlear Implant**



## Questions: Management and outcome

### **How can we support the Audiologist with their concerns?**

- Where can the Audiologist find information on her client's progress with her cochlear implant?
- Possible reasons for client's report of limited benefit?
- How can you as the Audiologist counsel or support the client?



# Hearing Assessment: Aided Speech Perception (Post-op)

CNC Words in Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 26/2/2021		Post-Op 3 Mth 5/11/2021		Post-Op 6 Mth 14/1/2022		Post-Op 12 Mth 12/10/2022	
	Words	Phonemes	Words	Phonemes	Words	Phonemes	Words	Phonemes
R + L	DnT	DnT	80 %	93 %	88 %	95 %	DnT	DnT
R	0 %	0 %	8 %	41 %	16 %	40 %	56 %	81 %
L	84 %	93 %	DnT	DnT	DnT	DnT	84 %	94 %

CUNY - Sentences in Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 26/2/2021	Post-Op 3 Mth 5/11/2021	Post-Op 6 Mth 14/1/2022	Post-Op 12 Mth 12/10/2022
R + L	DnT	100 %	100 %	DnT
R	0 %	49 %	45 %	75 %
L	100 %	DnT	DnT	100 %

BKB/SIN - Sentences in Noise  
 Speaker Orientation: 0 : 0

Condition	Pre-Op (dB SPL) 26/2/2021	Post-Op 3 Mth (dB SPL) 5/11/2021	Post-Op 6 Mth (dB SPL) 14/1/2022	Post-Op 12 Mth (dB SPL) 12/10/2022
Left Device: Hearing Aid (Own) Right Device: Cochlear Implant	DnT	6 dB S:N	5 dB S:N	7.5 dB S:N
Left Device: Hearing Aid (Own) Right Device: Unaided	17 dB S:N	DnT	DnT	DnT



## Case Study 2: 41 year old male



### Background information:

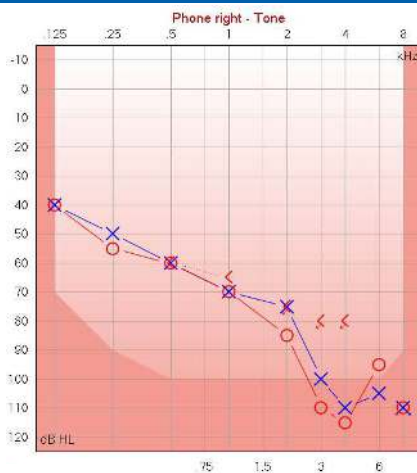
- Self referral after attending a cochlear implant picnic with his dad who has bilateral implants
- Strong family history of hearing loss
- Onset age 13, gradual deterioration. Last 5 years been the worst
- Significant tinnitus
- No medical concerns, no balance issues
- Farmer – significant moisture exposure working on the farm
- Concerns about losing residual hearing



# Hearing Ass: Pre-op

Speech table

Material: AB words						
Ear	R	R	R	L	L	
Level dB HL/SPL	100	110	105	100	105	
%	63%	too loud	70%	63%	87%	



# Hearing Assessment: Speech testing Pre-op

CNC Words in Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 22/2/2017	
	Words	Phonemes
R + L	20 %	65 %
R	30 %	47 %
L	35 %	55 %

CUNY - Sentences in Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 22/2/2017
	R + L
R	66 %
L	93 %

BKB/SIN - Sentences in Noise  
 Speaker Orientation: 0 : 0

Condition	Pre-Op (dB SPL) 22/2/2017
Left Device: Hearing Aid (Own) Right Device: Cochlear Implant	DnT
Left Device: Unaided Right Device: Electro-Acoustic Stimulation	DnT
Left Device: Hearing Aid (Own) Right Device: Electro-Acoustic Stimulation	DnT
Left Device: Hearing Aid (Own) Right Device: Hearing Aid (Own)	9.5 dB S:N



## COSI Goals

To increase ability to hear when out with friends socially, become more active socially

To hear what 2.5 year old son is saying and to understand him better

To be able to hear the TV and telephone better

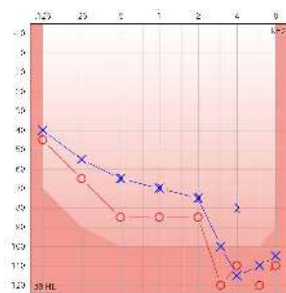
To hear better on the farm in the presence of background noise



## Management

- Discussed at MDT monthly meeting
- Fit the EAS candidacy criteria
- Implanted on the right side in Sept 2017
- Significant post operative residual hearing, suitable for acoustic fitting

9 months  
post  
surgery



## Client report following implantation with Electric- Acoustic implant

Client reports the following after 6 months:

- Very frustrated with the sound, poor quality, speech clarity limited
- Can't distinguish voices, just a noise
- Hearing bubbling noises like a fish tank
- Lots of issues with moisture and broken devices
- Cannot hear on the telephone



## Questions Management and Outcomes

- **How will you counsel this client?**
- **What information do you need?**
- **What about streaming options and bimodal fitting options?**
- **Counselling with regards to device maintenance, moisture control?**



# Hearing Assessment: Aided Speech Perception (Post-op)

CNC Words in Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 22/2/2017		Post-Op Non-review 1/11/2017		Post-Op 3 Mth 12/12/2017		Post-Op 6 Mth 20/3/2018		Post-Op 12 Mth 18/12/2018		Post-Op Non-review 4/10/2021	
	Words	Phonemes	Words	Phonemes	Words	Phonemes	Words	Phonemes	Words	Phonemes	Words	Phonemes
R + L	20%	65%	60%	83%	48%	69%	DnT	DnT	76%	89%	80%	90%
R	30%	47%	52%	77%	12%	29%	36%	56%	60%	80%	72%	82%
L	35%	55%	DnT	DnT	DnT	DnT	DnT	DnT	36%	62%	16%	29%

CUNY - Sentences in Quiet

Listening Condition Recorded 65 dB SPL	Pre-Op 22/2/2017	Post-Op 3 Mth 12/12/2017	Post-Op 6 Mth 20/3/2018	Post-Op Non-review 4/10/2021
R + L	91%	96%	DnT	100%
R	66%	82%	92%	100%
L	93%	DnT	DnT	67%

BKIN/SIN - Sentences in Noise

Speaker Orientation: 0:0

Condition	Pre-Op (dB SPL) 22/2/2017	Post-Op 3 Mth (dB SPL) 12/12/2017	Post-Op 6 Mth (dB SPL) 20/3/2018	Post-Op 12 Mth (dB SPL) 18/12/2018	Post-Op Non-review (dB SPL) 4/10/2021
Left Device: Hearing Aid (Oxim) Right Device: Cochlear Implant	DnT	DnT	DnT	7.5 dB S:N	8.5 dB S:N
Left Device: Unaided Right Device: Electro-acoustic Stimulation	DnT	DnT	6.5 dB S:N	DnT	DnT
Left Device: Hearing Aid (Oxim) Right Device: Electro-acoustic Stimulation	DnT	11.5 dB S:N	DnT	DnT	DnT
Left Device: Hearing Aid (Oxim) Right Device: Hearing Aid (Oxim)	9.5 dB S:N	DnT	DnT	DnT	DnT



## Final outcome to date

- 3 years post surgery
- Interested in second side implant, report excellent hearing from cochlear implantation the right side
- Significant improvement in device management

