

# Unilateral is not Uniform



Sunshine Cottage™  
SCHOOL FOR DEAF CHILDREN



# Intros & Disclosures

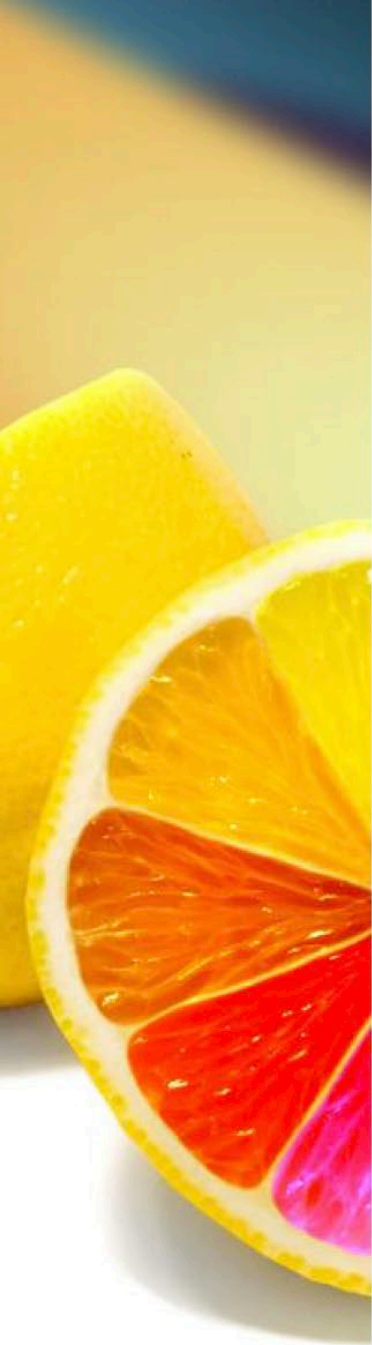
- Melissa Jensen M.A. CED LSLS Cert. AvEd
  - Parent Infant Advisor at Sunshine Cottage
  - Certified TOD with classroom and EI experience at OPTION schools
- Ana Sei, M. DEHS, LSLS Cert. AVT
  - Bilingual Parent Infant Advisor at Sunshine Cottage
  - 11 years of experience working with deaf and hard of hearing children and their families
- Logan A. Horner, Au.D., CCC-A
  - Audiologist at Sunshine Cottage
  - 13 years experience working with deaf and hard of hearing children and their families

Sunshine was given a honorarium for this lecture.



# What will we learn?

- **Five common unilateral hearing loss profiles**
- **Unique aspects of each profile and how they impact amplification and therapeutic needs**
- **Amplification and intervention plans for young children with unilateral hearing loss**



# What Makes Unilateral Different

1. Hears fine!
2. Localization & Noise
3. Impacts of reading and language later
4. Wear time issues
5. Ear Advantage



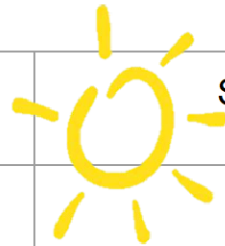
# 5 Profiles of Unilateral Hearing Loss



1. CHL: Microtia/Atresia + Bone Conduction Hearing Aid
2. SNHL: Mild to Mod-Severe +Hearing Aid
3. Severe to Profound SNHL: Auditory Nerve + Hearing Aid
4. Profound SNHL: Auditory Nerve + Cochlear Implant
5. Profound: Abnormal Auditory Nerve/Cochlea + Bone Conduction Hearing Aid



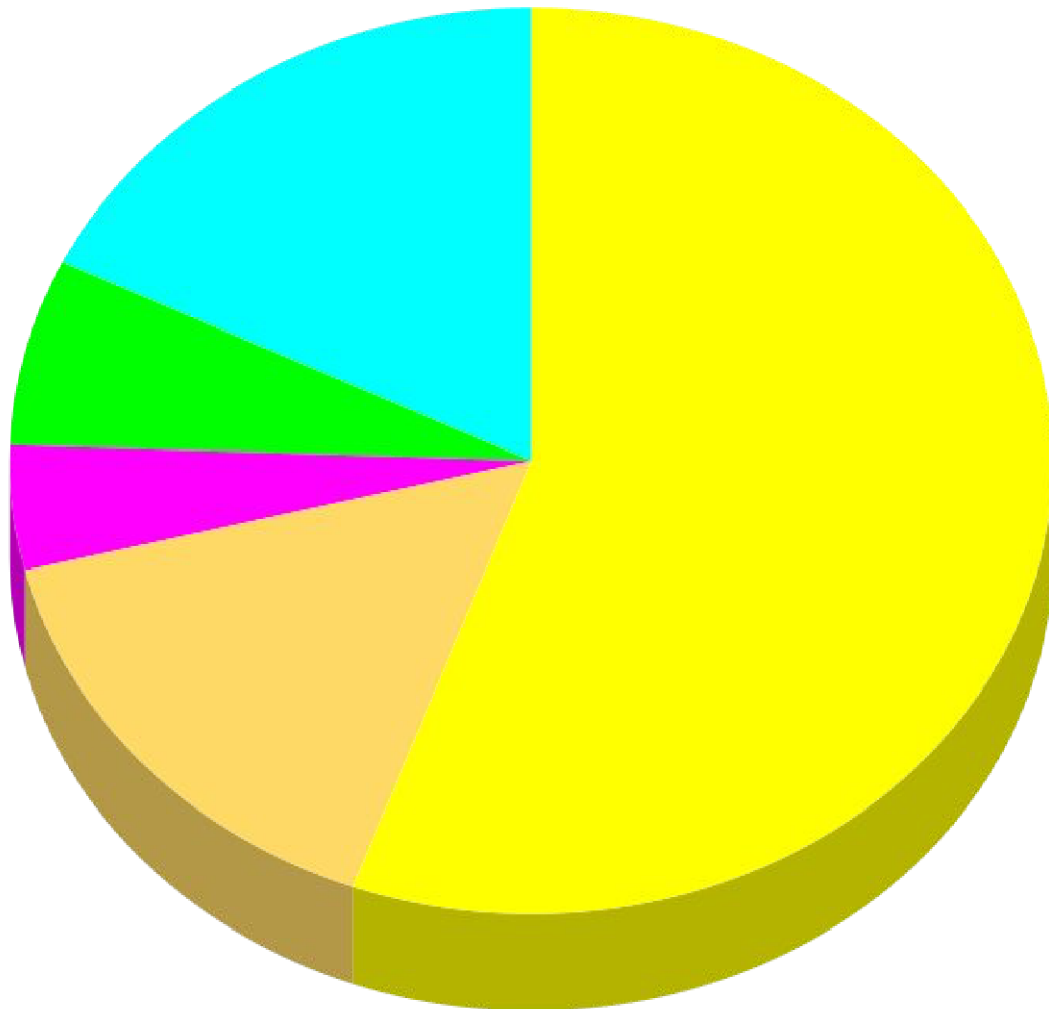
## Type of Amplification: Unilateral Loss



	Sunshine	ODDACE
None	1%	32%
Hearing Aid	23%	37%
Cochlear Implant	1%	2%
HA + Bone Conduction	3%	0%
Bone Conduction Aid	72%	30%



# 5 Profiles of Unilateral Hearing Loss



- **CHL: Microtia/Atresia + BCHA**
- **SNHL: Mild to Mod-Severe**
- **Severe to Profound SNHL: AN & HA**
- **Profound SNHL: AN & CI**
- **Profound HL: Absent AN + BCHA**

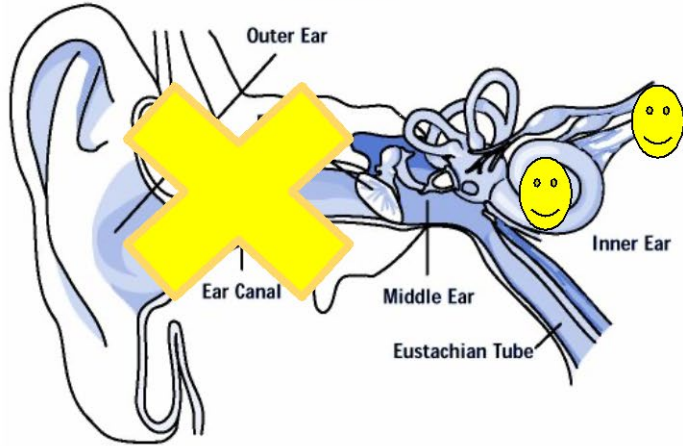
*21% of the children we serve at Sunshine Cottage have a unilateral hearing loss*



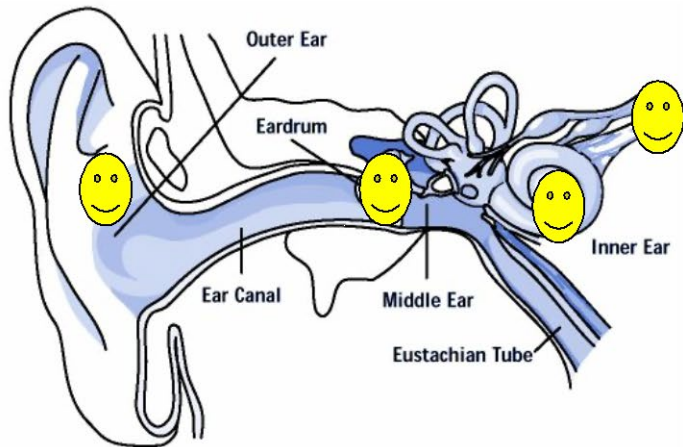


# Unilateral Microtia/Atresia

RIGHT

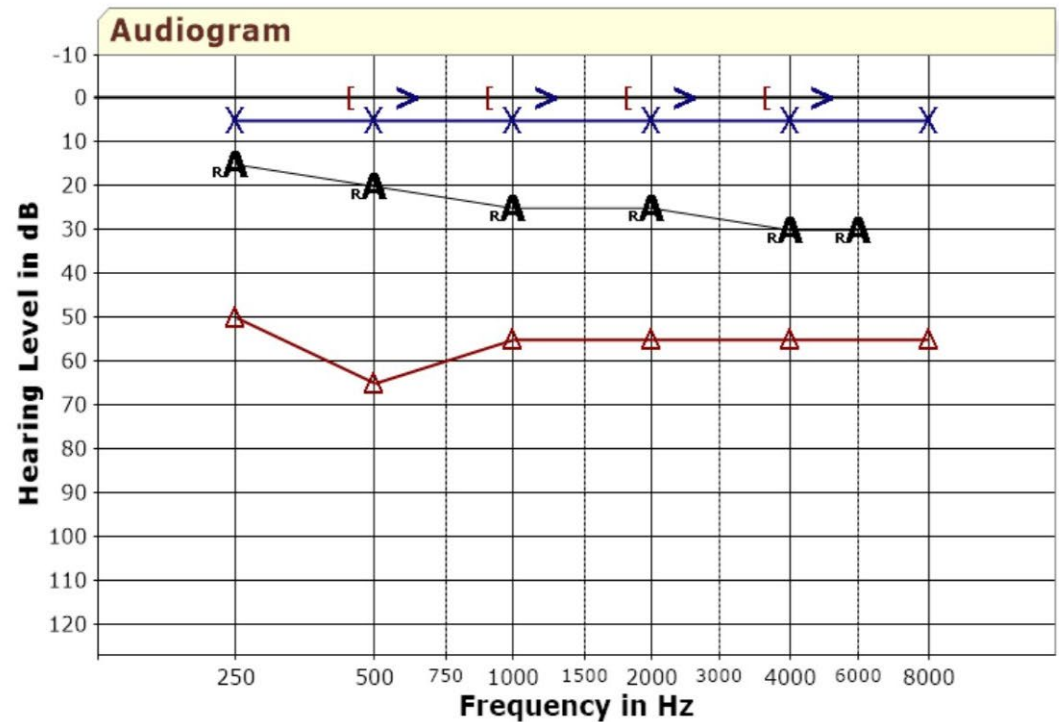


LEFT



$\Delta$  = RIGHT EAR: MODERATE CONDUCTIVE HEARING LOSS

X = LEFT EAR: HEARING WITHIN NORMAL LIMITS



A = aided with LE plugged & muffed







# Unilateral Microtia/Atresia

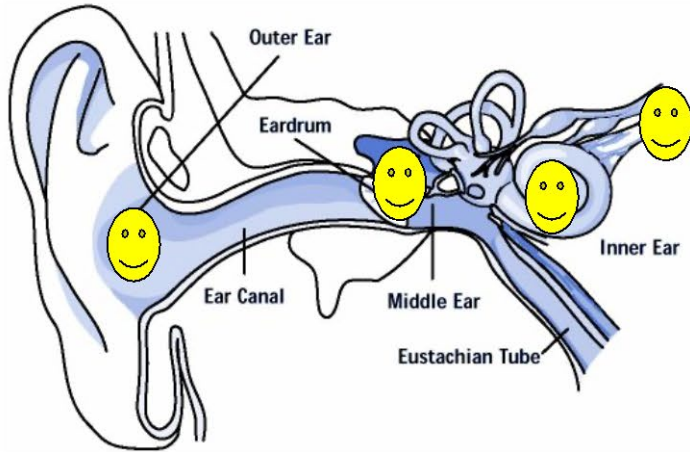
- Amplification
  - Bone Conduction Hearing Aid on a Softband
    - Oticon Medical & Cochlear Americas
- Frequency of Therapy
  - Twice a month
- Rehabilitation
  - Use Remote Microphone after full time use of amplification is established
- Influencing Factors
  - Facial asymmetry, surgeries



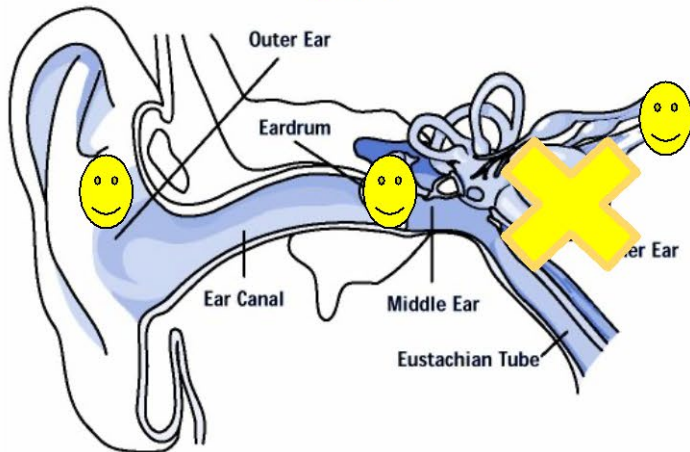


# SNHL: Mild to Moderately-Severe

RIGHT

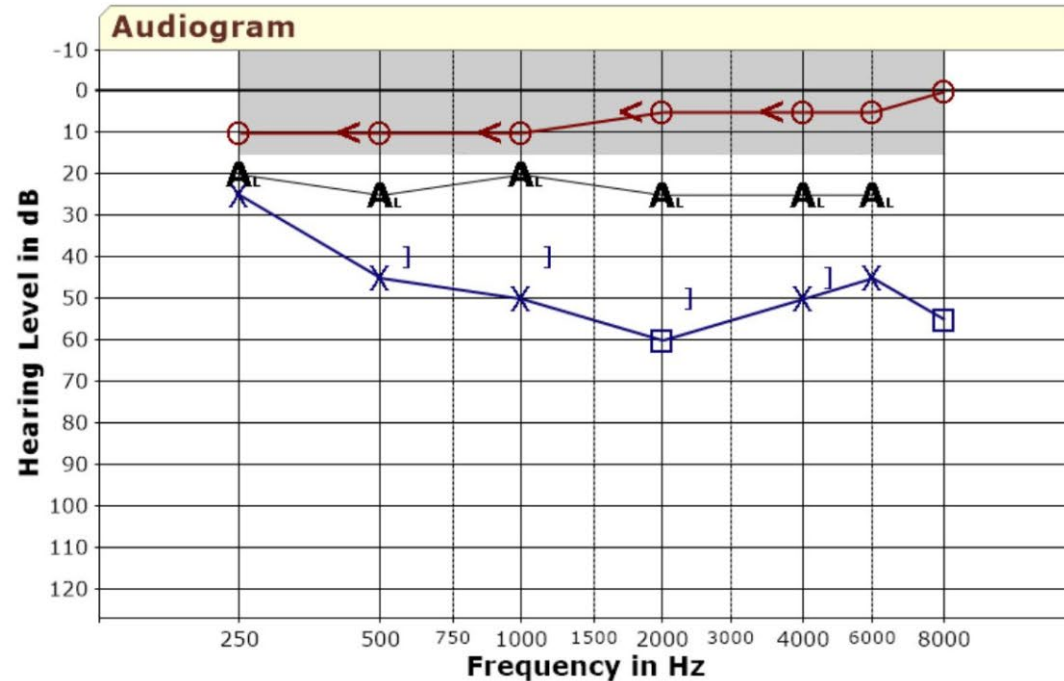


LEFT



O = RIGHT EAR: HEARING WITHIN NORMAL LIMITS

X = LEFT EAR: SLIGHT TO MODERATE SENSORINEURAL HEARING LOSS



A = aided with RE plugged & muffed





# SNHL: Mild to Moderately-Severe

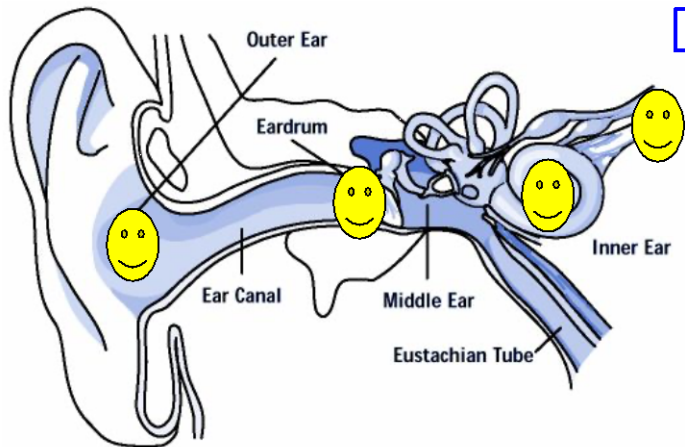
- Amplification
  - Hearing Aid
- Frequency of Therapy
  - Twice a month
- Rehabilitation
  - Use of hearing aid, tracking wear time, remote microphone
- Influencing Factors
  - Enlarged Vestibular Aqueducts, Cytomegalovirus
  - Concerns about progressive hearing loss



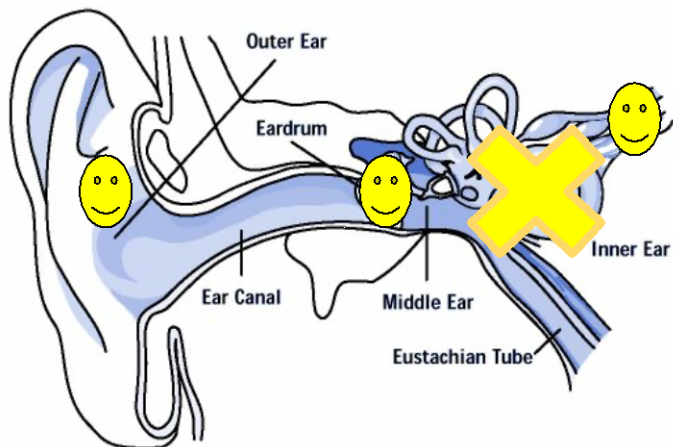


# SEVERE TO PROFOUND SNHL: Auditory Nerve + Hearing Aid

RIGHT

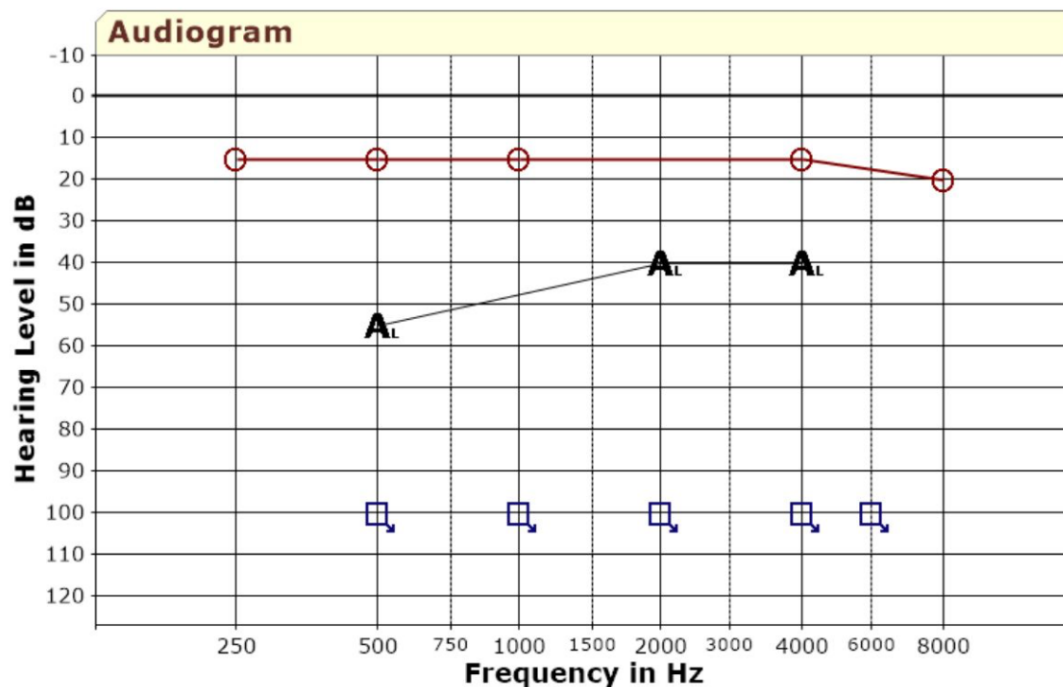


LEFT



O = RIGHT EAR: HEARING WITHIN NORMAL LIMITS

□ = LEFT EAR: PROFOUND SENSORINEURAL HEARING LOSS



A = aided with RE plugged & muffed





# SEVERE TO PROFOUND SNHL: Auditory Nerve + Hearing Aid

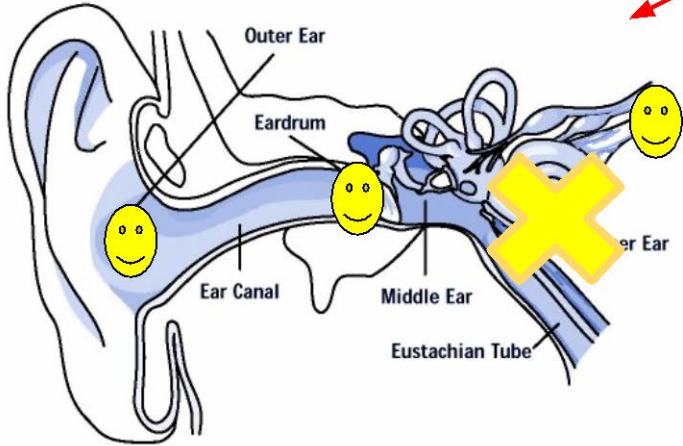
- Amplification
  - Hearing Aid
- Frequency of Therapy
  - Twice a month
- Rehabilitation
  - Use Muff & Ear- Ling check, following directions, practicing for audiological sessions
  - Use Remote Microphone
- Influencing Factors
  - Enlarged Vestibular Aqueducts, Cytomegalovirus
  - Concerns about progressive hearing loss in typical ear
  - Counseling about when a CI would be appropriate



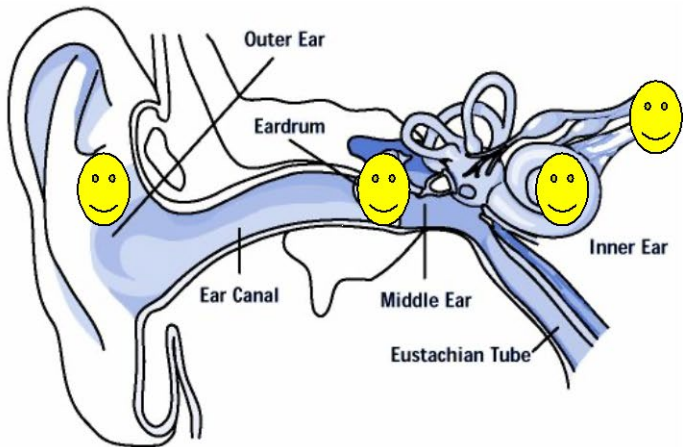


# PROFOUND SNHL: Auditory Nerve + Cochlear Implant

RIGHT

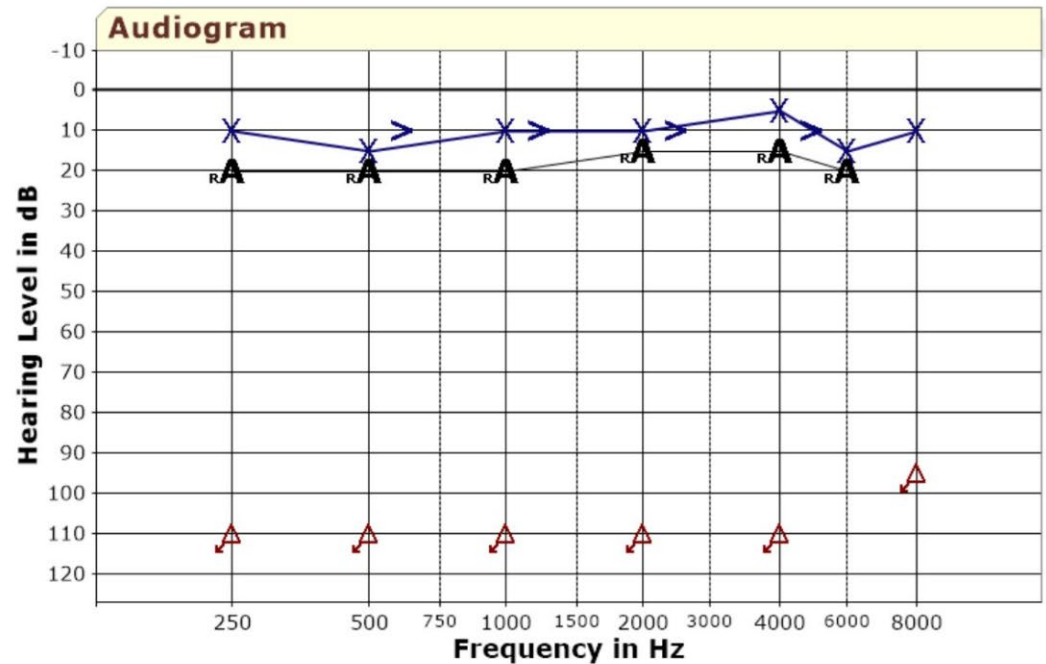


LEFT



= RIGHT EAR: PROFOUND SENSORINEURAL HEARING LOSS

= LEFT EAR: HEARING WITHIN NORMAL LIMITS



A = aided with LE plugged & muffed





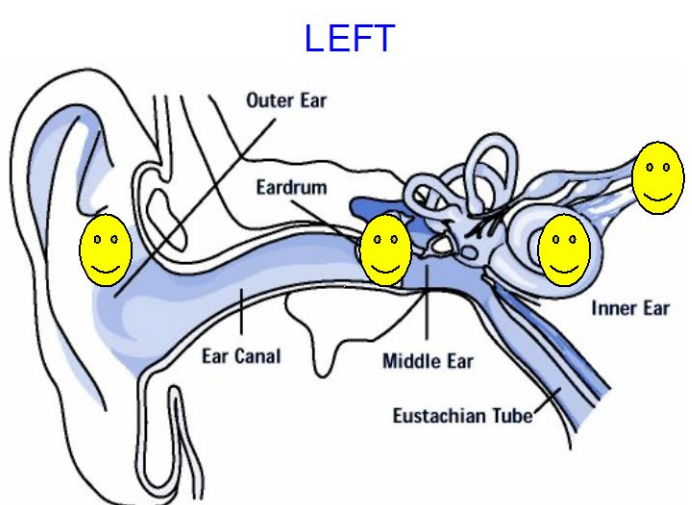
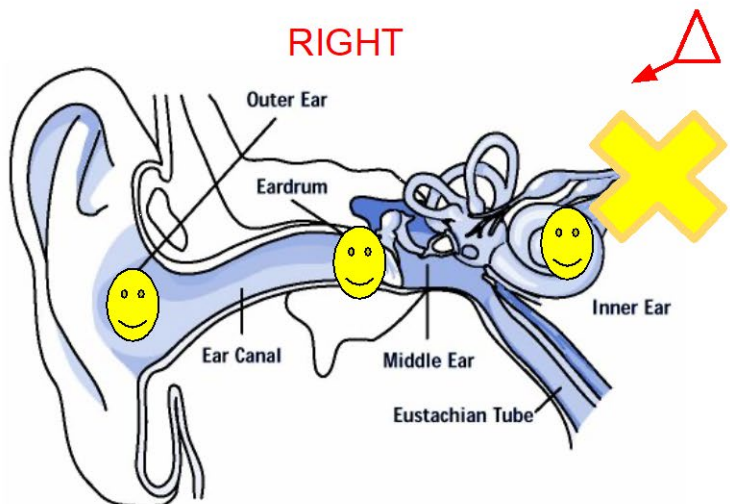
# PROFOUND SNHL: Auditory Nerve + Cochlear Implant

- Amplification
  - Cochlear Implant
    - Advanced Bionics, Cochlear Americas, Medel
- Frequency of Therapy
  - Twice a month
- Rehabilitation
  - Use Muff & Ear Plug
  - Use Remote Microphone and streaming
- Influencing Factors
  - Enlarged Vestibular Aqueducts, Cytomegalovirus
  - Insurance coverage for unilateral implantation



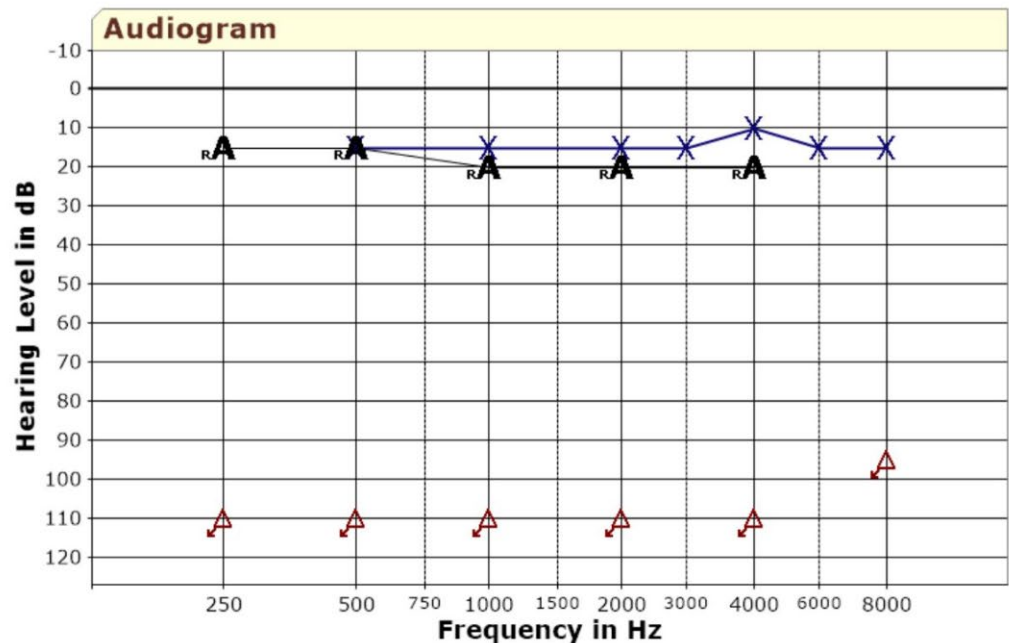


# PROFOUND SNHL: NO Auditory Nerve + Bone Conduction



**△ = RIGHT EAR: PROFOUND SENSORINEURAL HEARING LOSS**

**X = LEFT EAR: HEARING WITHIN NORMAL LIMITS**



*A = aided with LE plugged & muffed*







# PROFOUND SNHL: NO Auditory Nerve + Bone Conduction

- Amplification
  - Bone Conduction Hearing Aid
    - Cochlear Americas, Oticon Medical
- Frequency of Therapy
  - Twice a month
- Rehabilitation
  - Wear time struggles
- Influencing Factors
  - Localization
  - Hearing in Noise





# Ear Muff + Ear Plug



<https://www.alpinehearingprotection.com/products/muffy-baby>



# Unilateral Audiology Testing Battery

1. Unaided testing
2. Program the hearing technology for age appropriate targets
3. Aided Frequency Specific & Word Recognition testing in Quiet
  - a. Everyday Listening Condition
    - i. Speech Recognition Threshold
    - ii. Word Recognition at 50 dB HL & 35 dB HL
  - b. Better hearing ear plugged and muffed with hearing technology
    - i. Speech Recognition Threshold
    - ii. Word Recognition at 50 dB HL
4. Word Recognition in Noise
  - a. Everyday Listening Condition
    - i. 50:45 SNR or 50:50 SNR
  - b. Everyday Listening Condition + Personal Assistive Hearing Technology
    - i. 50:45 SNR or 50:50 SNR
  - c. Better hearing ear plugged and muffed with hearing technology
    - i. 50:45 SNR or 50:50 SNR
  - d. No equipment in Noise
    - i. 50:45 SNR or 50:50 SNR

\*Everyday Listening Condition = better ear and hearing technology



# Unilateral Audiology Testing Battery

AIDED TESTING (dB HL)										
	250	500	1000	2000	3000	4000	6000	SAT	SAT	SRT
Everyday Listening Condition (BAHA 5 + Right Ear Open)	15	15	10	10	DNT	10	5			0
Baha 5 + Right Ear Plugged & Muffed	25	20	15	15	DNT	10	10			15

AIDED WORD RECOGNITION						
	Test	INTENSITY		% Disc		SNR
Everyday Listening Condition (BAHA 5 + Right Ear)	LNT HARD 1 & 2	50 dB HL	35 dB HL	100%	96%	N/A
Everyday Listening Condition in Noise	PBK w/Multi Talker Babble	50:50 dB HL		80%		+0
Everyday Listening Condition in Noise with PAHT	PBK w/Multi Talker Babble	50:50 dB HL		96%		+0
LE Baha 5 + Right Ear Plugged & Muffed in Quiet	LNT EASY 1	50 dB HL		96%		N/A
LE Baha 5 + Right Ear Plugged & Muffed in Noise	PBK w/Multi Talker Babble	50:50 dB HL		76%		+0
No Equipment in Noise	PBK w/Multi Talker Babble	50:50 dB HL		0%		+0