

Student-Led Grand Rounds

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Humanitarianism and Global Audiology: A Focus on Pediatric Intervention

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AAA 2023 + HearTECH EXPO

Disclosure Statement

I have no actual or potential conflict of interest in relation to this presentation. The hearing devices described in this case study were received via donation from Oticon. I have no financial interest or affiliation concerning the material discussed in this presentation.

The usage of patient photos was approved by the patients' parent and by The American Academy of Audiology (AAA) Conference Leadership.

Learning Objectives

- ★ Describe the provision of audiology services via international outreach trips with year-round follow-up via telehealth.
- ★ Assess the impacts of untreated hearing loss on childhood language development.
- ★ Evaluate approaches for pediatric hearing aid follow-up in coordination with in-country medical personnel.

Case History

D.N. and D.L. are 10-year-old twin sisters from Cancun, Mexico. They are currently in primary school. They remain active by attending judo lessons on a weekly basis.

Both sisters were born premature (~1 month). D.L. had a perinatal anoxic episode at birth. D.L. has a cognitive impairment, resulting in developmental milestones to be estimated at a 3-year delay.



Cancun, Mexico – November 2022

Case History

D.N.

- ★ Normal gross motor control
- ★ Speech delay
 - Monotone prosody
 - Reduced articulation
 - Consonant detection errors

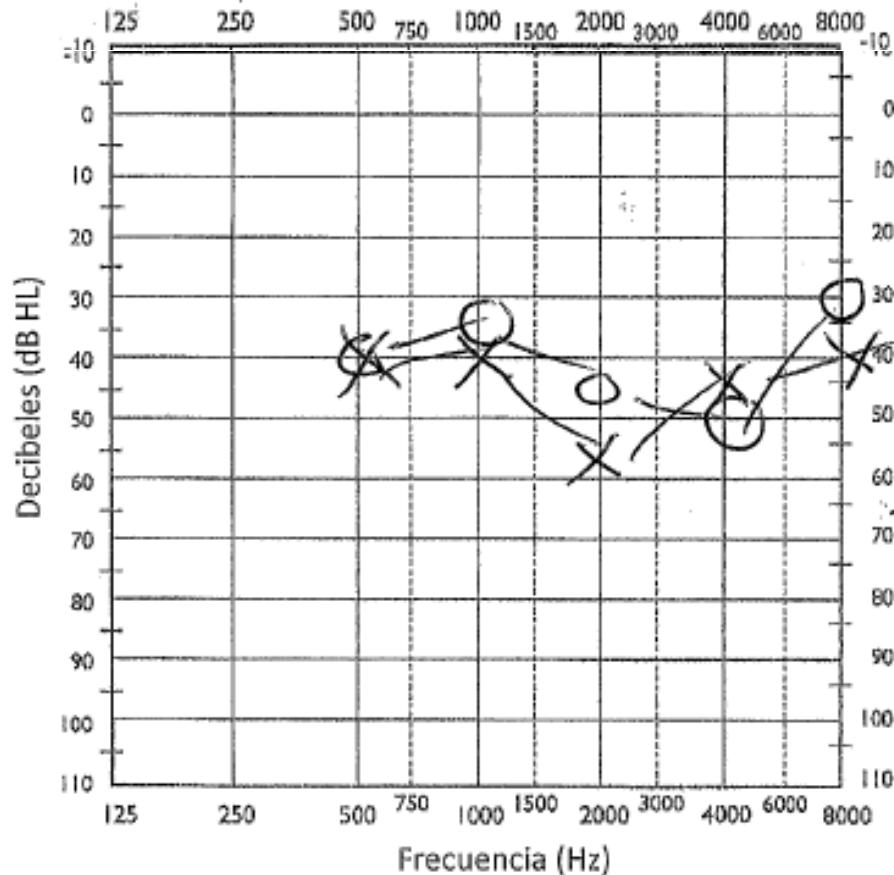
D.L.

- ★ Normal gross motor control
- ★ Speech and cognitive delay
 - Monotone prosody
 - Reduced articulation
 - Consonant omission and substitution

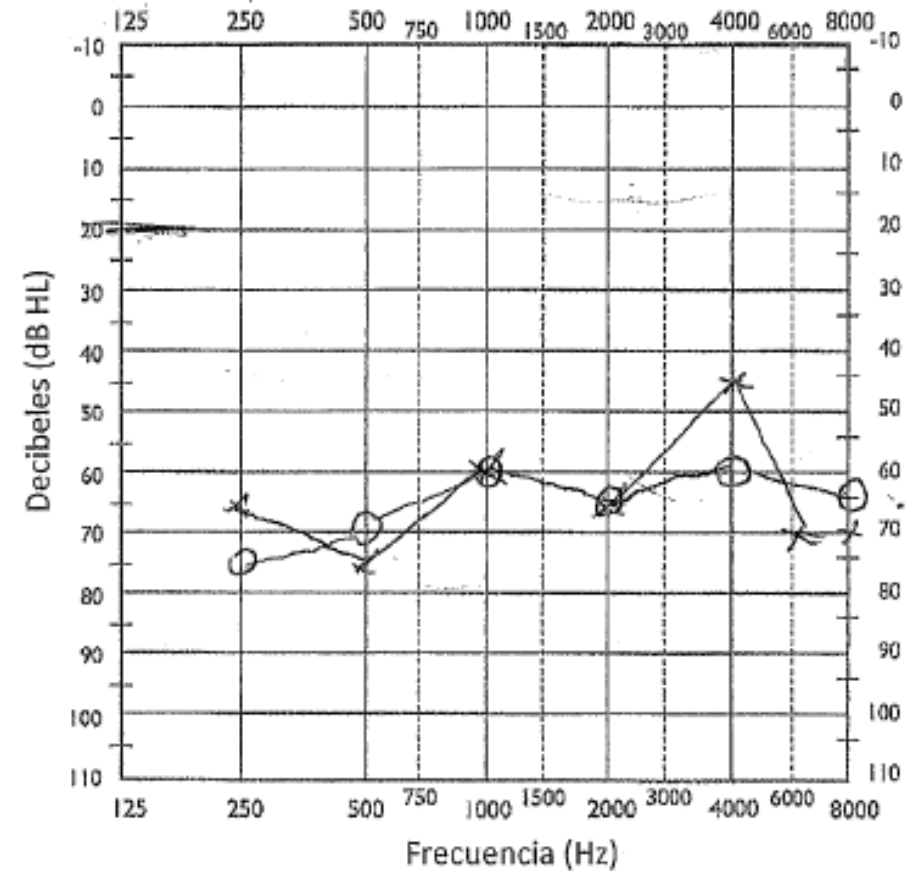
Audiologic Results

(05/06/2022)

D.N.



D.L.

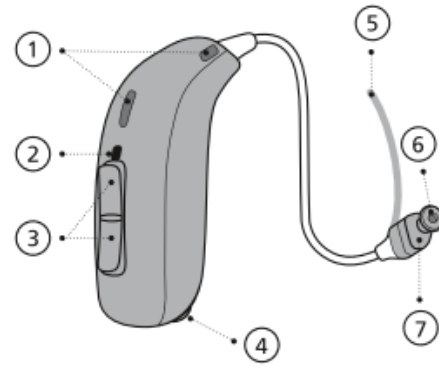


D.N. and D.L. had unremarkable otoscopy and Type A (normal) tympanograms (AU)

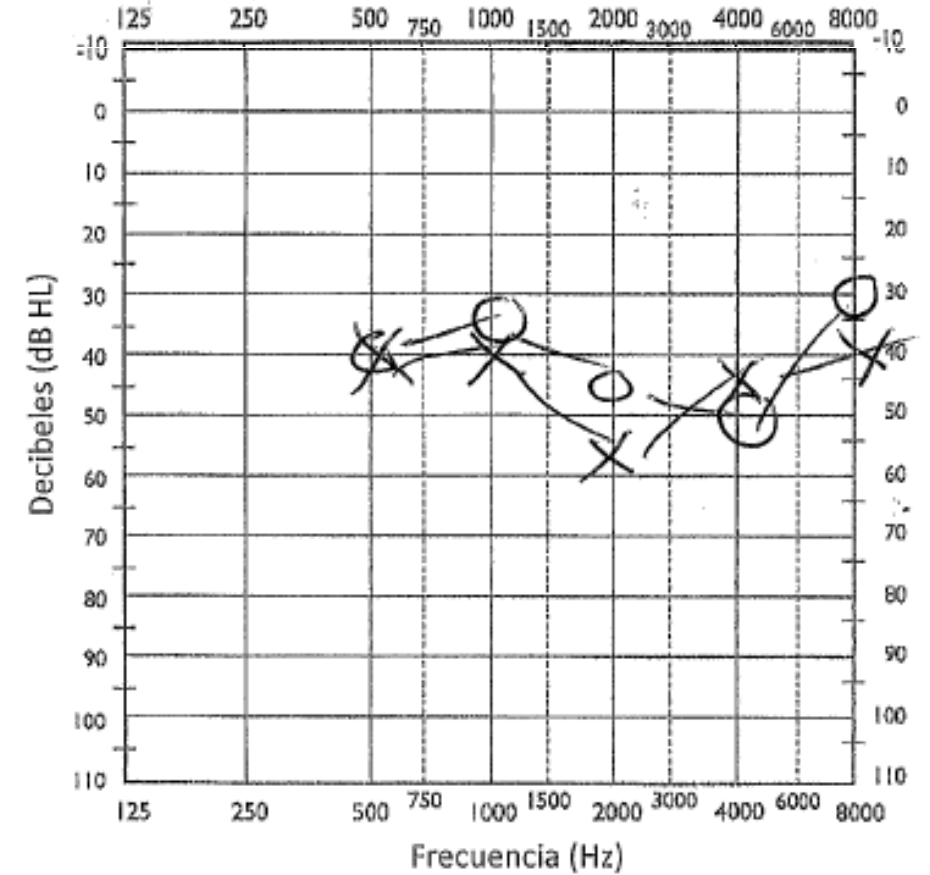
Devices: Oticon More 1 MiniRITE T



OÍDO IZQUIERDO

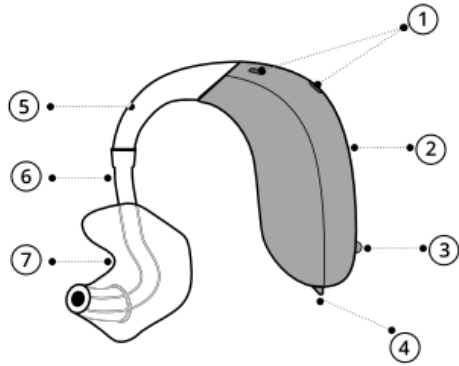


- ① Aberturas del micrófono
- ② Luz LED (opcional)
- ③ Pulsador
- ④ Portapilas
- ⑤ Hilo de sujeción (opcional)
- ⑥ Filtro anticerumen
- ⑦ Auricular (60 mostrado)

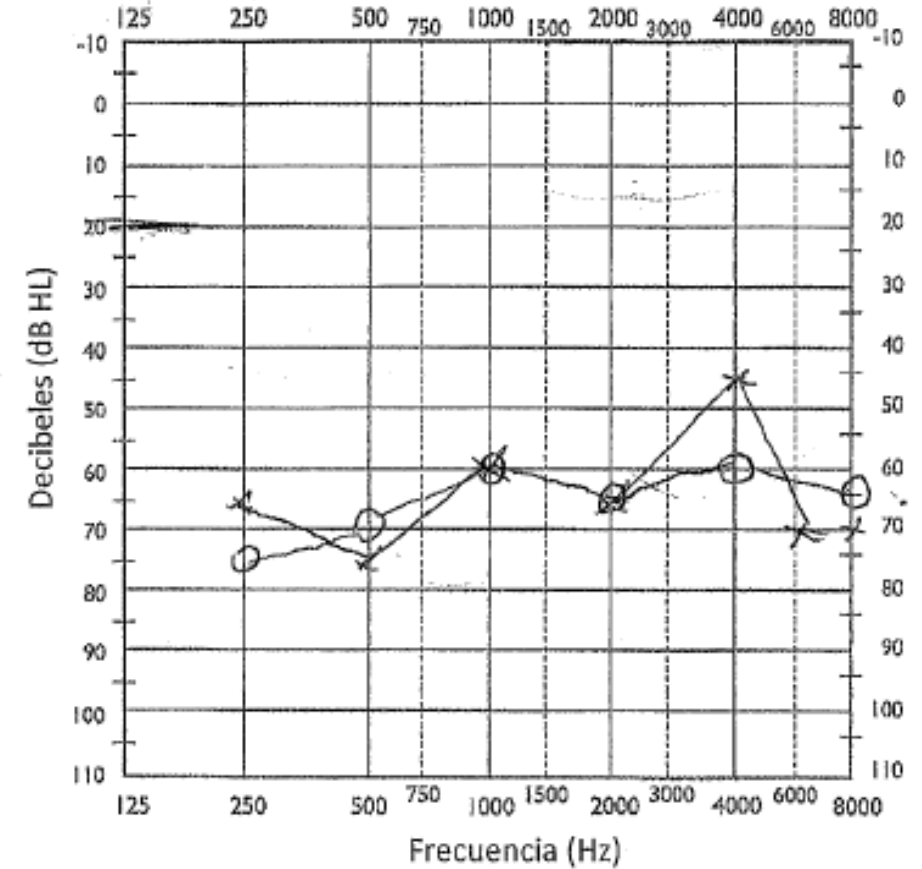
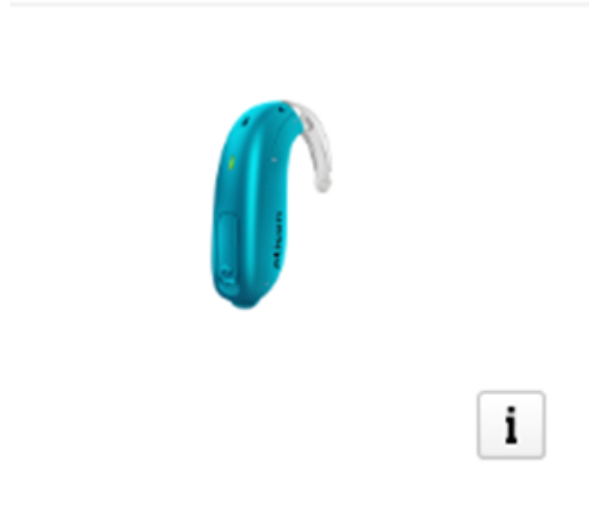


Devices: Oticon Play PX MiniBTEs T

OÍDO DERECHO



- ① Aberturas del micrófono
- ② Luz LED (opcional)
- ③ Pulsador
- ④ Portapilas
- ⑤ Codo de sonido
- ⑥ Tubo
- ⑦ Molde



Verification of Fitting

(07/07/2022 and 08/08/2022)

- ★ Extended Ling 6 identification and discrimination at normal speaking level
- ★ Assessed patient discomfort to loud environmental sounds (e.g. clapping)

	Band 1	Band 2	Band 3	Band 4
	200-1000Hz	1000-1500 Hz	1500-3500 Hz	3500 Hz +
	VOICING	CONSONANT DIFFERENTIATION	CONSONANT DIFFERENTIATION	FRICATION
/u/	F1:300 Hz		F3: 2240 Hz	
	F2: 870 Hz			
/a/	F1:730 Hz	F2: 1090Hz	F3: 2440 Hz	
			F2: 2290 Hz	
/i/	F1: 270 Hz		F3: 3010	
/m/	250-350	1000-1500 Hz	2500-3500 Hz	
/sh/			1500-2000 Hz	4500-5500 Hz
/s/				5000-6000 Hz
/dj/	200-300 Hz		2000-3000 Hz	
/z/	200-400 Hz			4000-5000 Hz
/h/			1500-2000 Hz	
/n/	250-350 Hz	1000-1500 Hz	2000-3000 Hz	

Earmold Fitting

(03/01/2023)



D.L. at earmold fitting, acoustical adjustments made re. earmold change

Speech Evaluation

(01/27/2023)



Future Considerations

D.N. and D.L. receive school-based speech therapy, learning support, and psychological support. Each of those disciplines have reported improvement for both twins since they were fit with hearing aids.

The University of Cincinnati will be returning in-person to Mexico in May 2023 to provide in-person follow-up services to D.N. and D.L. in coordination with the Palace Foundation Team.

Takeaways

- ★ Impacts of telehealth on healthcare
- ★ Speech development trajectory
- ★ Interdisciplinary collaboration

Acknowledgements & References

Acknowledgements

American Academy of Audiology

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University of Cincinnati College of Allied Health Sciences and University of Cincinnati International

The Palace Foundation

References

Madell, J. R., & Hewitt, J. G. (2022). *From Listening to Language: Comprehensive Intervention to Maximize Learning for Children and Adults with Hearing Loss* (1st ed.). Thieme.

Pham, B., Karen, Madell, J., Tran, M., Farren, M., Bailey, A., & Lisa. (2023, January 4). *The LMH test for monitoring listening - Jane Madell and Joan Hewitt*. Hearing Health & Technology Matters. Retrieved April 4, 2023, from <https://hearinghealthmatters.org/hearing-and-kids/2021/the-lmh-test-for-monitoring-listening/>

Considering APD Evaluation with Evolving Middle Ear Pathology

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Hunter College Center for Communication Disorders

AAA²⁰²³ + HearTECH^{EXPO}

Disclosures

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- I do not have any financial interests or affiliation concerning the materials discussed in this presentation.

Objectives

- Consider the pros and cons of APD evaluation in the presence of medically complex conductive hearing loss
- Consider how to best support patients and parents in lieu of administering APD evaluations or providing a definitive diagnosis

Case History: BE

- Seen for a CAE in pursuit of APE in November 2022
 - clinical supervisor: Susan Wortsman, AuD CCC-A
- 15-year-old male with a diagnosis of high-functioning ASD
 - Hypersensitive to touch
- Ms. F (mother) sought re-evaluation for APD
 - Previous eval at another site ruled out presence of APD → results unavailable for review

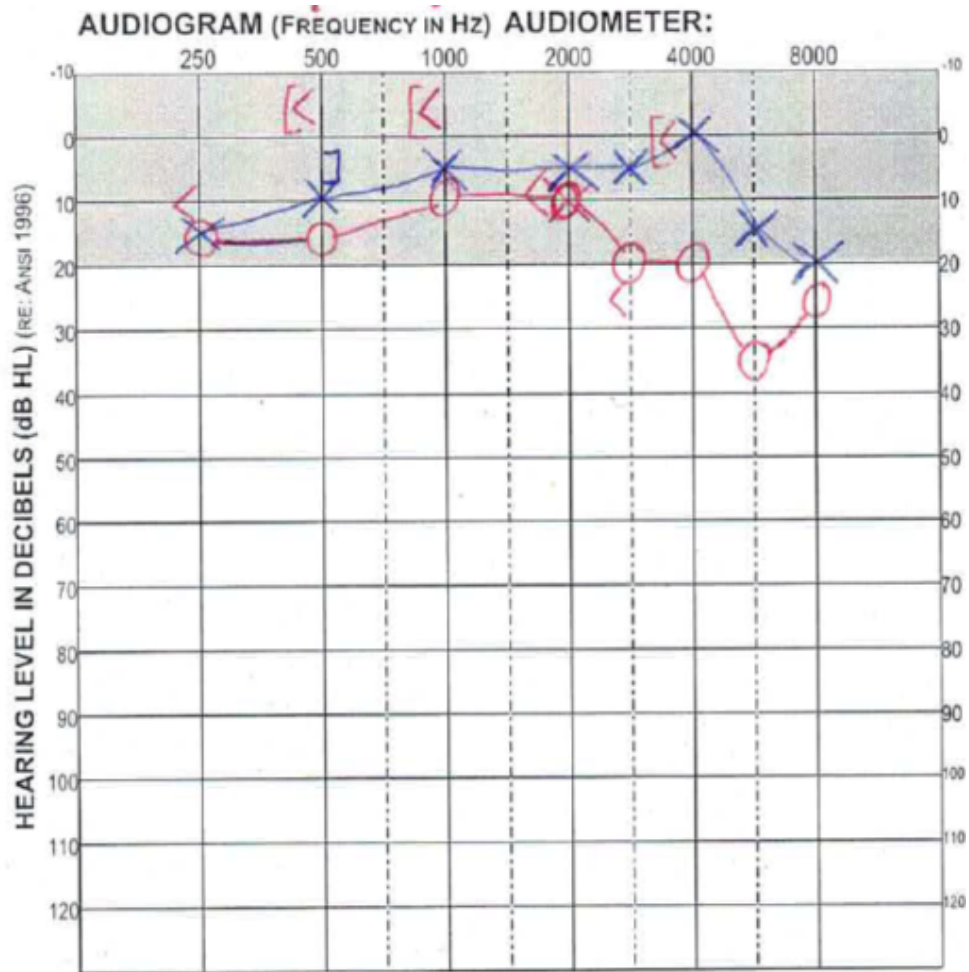
Case History: BE

- 10th grade at a public high school with ASD nest program
 - Integrated co-teaching (ICT) classroom
 - Individualized education plan (IEP) in place
 - Speech and occupational therapies 2x weekly
 - Preferential seating in the front of the classroom
- “Needs significantly more time to complete schoolwork than his peers”
- “Struggles without a visual aid to support verbal instructions”
- “Still has issues with presence of background noise”

Case History: BE

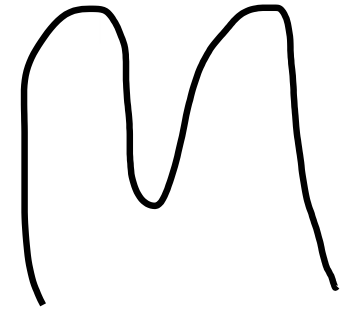
- Hx of chronic recurrent OM → multiple sets of PE tubes
- AD TM perforation suspected present for two years before surgical intervention (tympanoplasty) in June 2022
 - Etiology and exact duration unknown
- Follow up CAE performed September 2022
 - Ms. F felt his “hearing and processing” had not improved
 - Results were not immediately available at the November appointment

Audiological Results: Nov 2022



ACOUSTIC ADMITTANCE (226 Hz) UNIT:

	LEFT	RIGHT
EQUIV EAR CANAL VOL (cm ³)	1.5	1.7
TYMP PEAK PRESSURE (daPa)	-9	NP
STATIC ADMITTANCE (mmho)	0.67	NP



Ipsi ART: absent AD, present AS

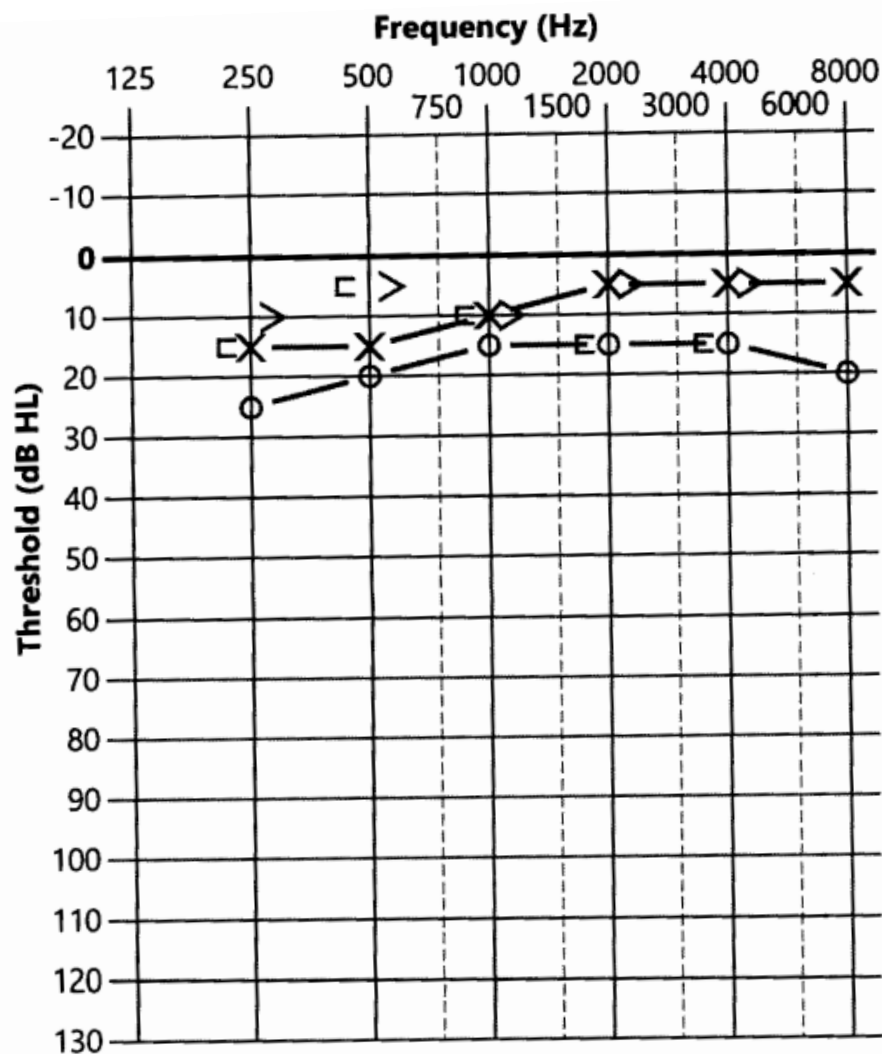
TEOAEs screened 1-4kHz:

- present 1.5-3kHz, absent 1kHz & 4kHz AD
- present AS

SRT: AD = 10 dB HL, AS = 5 dB HL

WRS: Excellent AU

Audiological Results: Sept 2022



	Right Ear	Left Ear
Tympanogram type:	Type A	Type A
Canal volume (mL):	0.7	1.1
Peak pressure (daPa):	10	-7
Peak amplitude (mL):	0.34	0.71
Tympanogram width (daPa):		
Comments:		

Ipsi ART: absent AD, present AS

OAEs not tested

SRT: AD = 20 dB HL, AS = 5 dB HL

WRS: Excellent AU

Considering Results → Next Steps

Return to ENT before re-eval?

- Evolving middle ear status
- Type A tymp → NP
- HF pure tone decline

Proceed with APD re-eval?

- Adequate presentation level can compensate for CHL
- Tolerance for APD eval?
- Four screening questions (Bellis, 2011)

Questions for APD Screening (Bellis 2011)

- (1) Are the current evaluations that have already been completed sufficient in nature and scope to provide a picture of the child's strengths and weaknesses across cognitive, academic, and speech/language domains prior to addressing the issue of CAPD?
- (2) Is there sufficient evidence to support the likelihood that a CAPD is present that would necessitate further comprehensive auditory processing assessment?
- (3) Is the child capable of participating in comprehensive central auditory assessment, or will age, cognitive status, or other factors interfere with our ability to obtain reliable central auditory assessment results?
- (4) Would results of comprehensive central auditory assessment add information that is likely to affect the overall assessment and management of the child's learning and communication difficulties, or are current intervention strategies already sufficient to address the child's areas of need?

Considering Results → Next Steps

Return to ENT before re-eval?

- Evolving middle ear status
- Type A tymp → NP
- HF pure tone decline

Proceed with APD re-eval?

- Adequate presentation level can compensate for CHL
- Tolerance for APD eval?
- Four screening questions (Bellis, 2011)

Takeaways

- Can we amend our CAE test battery to include tasks of AP?
 - Speech-in-noise testing
- What support can we offer in lieu of diagnosis?
 - ex: Use of visual aids, improving SNR
- Not every case has resolution, but we do the best we can with the information we have.

References

- Bellis, T. J. (2011). *Assessment and management of central auditory processing disorders in the educational setting from science to practice* (2nd ed.). Plural Publishing Inc.
- Dunn, D. K. (2022, November 9). *About the NYC Department of Education ASD Nest Program*. NYU Steinhardt. Retrieved March 8, 2023, from <https://steinhardt.nyu.edu/metrocenter/asdnest/new-york-city>
- Margolis, R. H. (2006, May 29). *Bifid tympanogram peak*. AudiologyOnline. Retrieved March 8, 2023, from <https://www.audiologyonline.com/ask-the-experts/bifid-tympanogram-peak-433>

***PROVIDING
EQUITABLE CARE TO
LINGUISTICALLY
DIVERSE PATIENTS***

Eric R. Rodriguez, BS

AuD/PhD Graduate Student

Disclosure Statements

- I do not have any actual or potential conflicts of interest in relation to the presentation of this clinical case.
- I do not have any financial interests or affiliation concerning the materials discussed in this presentation.

Learning Objectives

- Describe the barriers that commonly affect non-English speaking patients and their families
- Assess different solutions to overcoming a linguistic barrier in a clinical setting
- Explain the importance of equitable care to culturally and linguistically diverse individuals.







Case History

Nikolas “Niko” Herrera

- Born in the Indiana in April 2020 via caesarean section
 - Referred NBHS in left ear
- Parents are migrant farm workers who have limited proficiency in English
- Had a diagnostic ABR performed at an audiology clinic in Indiana in early-August

Case History

Niko's ABR Results – August 2020

Diagnostic Testing in August 2020			
Ear	ABR	OAEs	Tymps
Right			
Left			

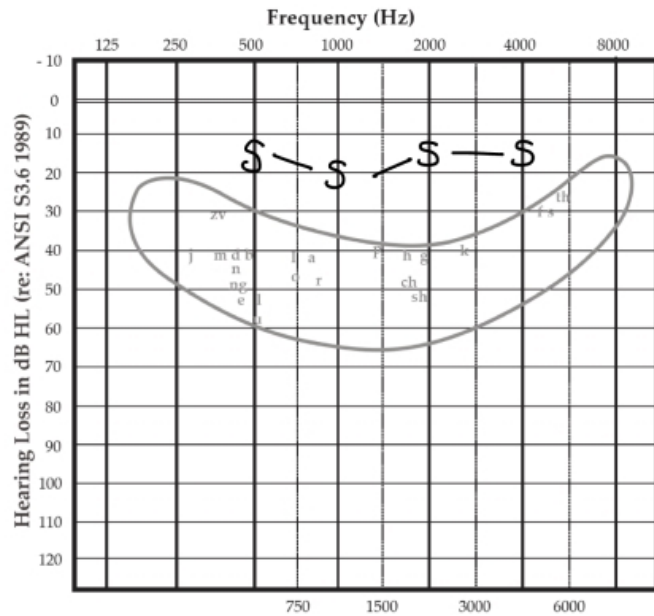
- Diagnostic ABR and additional testing was performed
- Results:
 - Severe (likely) sensorineural hearing loss in the left ear
 - Normal hearing sensitivity in the right ear
- Enrolled in First Steps of Indiana

Audiological Assessment – August 2021

- Niko was lost to follow up for a year
 - Limitation of appts due to COVID
 - Parents' seasonal work schedules
- First appointment at Purdue University Audiology Clinic
- Parent were unsure of results from first ABR.
 - Interpreter was not available at previous audiology clinic.

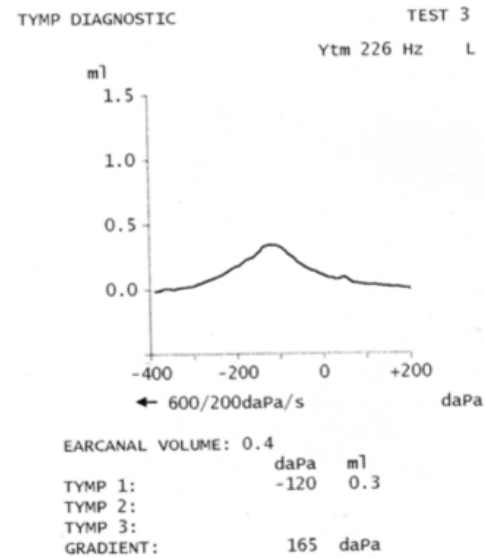
Audiological Assessment – August 2021

VRA in Soundfield



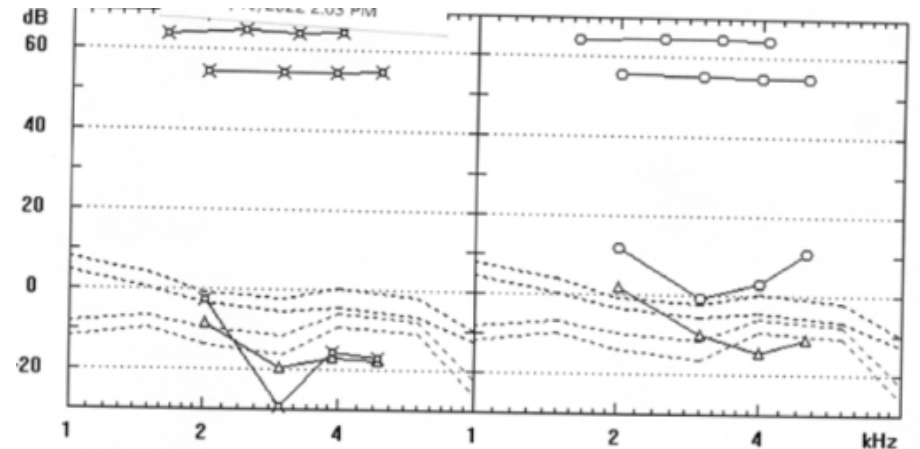
Normal hearing sensitivity in the better hearing ear

Tympanometry



LE: Type A
RE: CNT

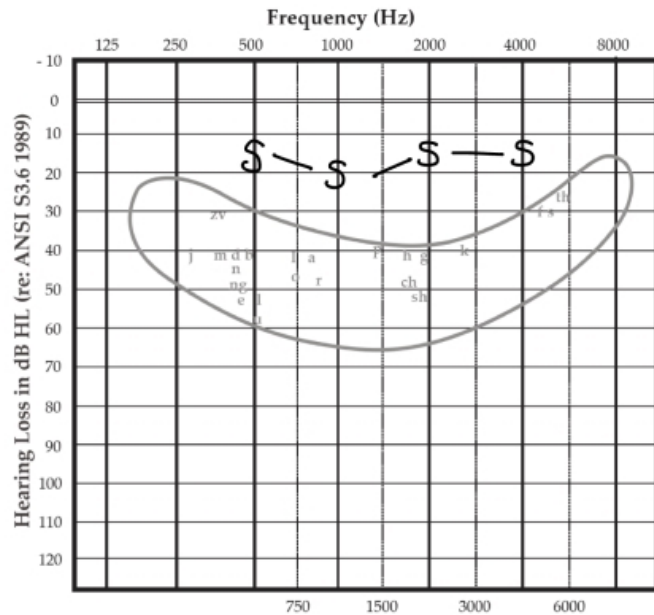
Distortion Product Otoacoustic Emissions



LE: Absent
RE: Present

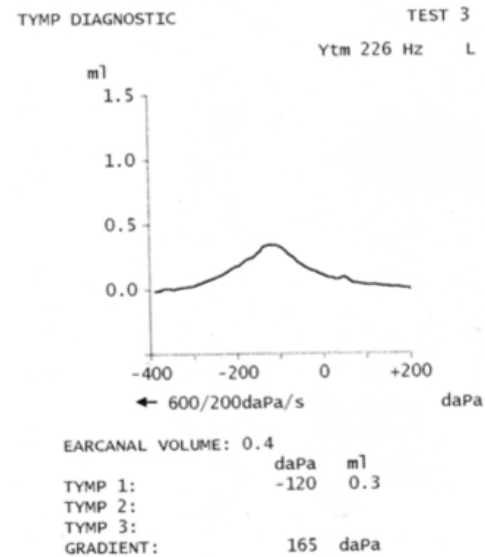
Audiological Assessment – August 2021

VRA in Soundfield



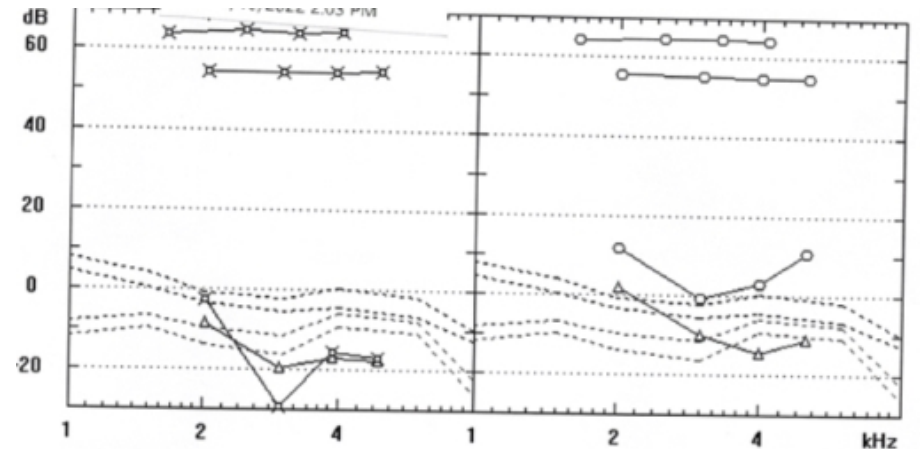
Normal hearing
sensitivity in the better
hearing ear

Tympanometry



LE: Type A
RE: CNT

Distortion Product Otoacoustic Emissions



LE: Absent
RE: Present

Results confirmed unilateral sensorineural hearing loss in the left ear

Audiological Assessment – August 2021

Action Plan

- Medical clearance provided by primary care physician
- Ordered 1 Oticon OPN Play PP HA & took EMI of LE
 - Cost covered by First Steps of Indiana
- Scheduled for fitting in September 2021
- Connect with program director of Hands & Voices' "Guide By Your Side" program coordinator



“Guide By Your Side” (GBYS)

What is GBYS?

- Guide By Your Side™ is a program from Hands & Voices that provides emotional support and unbiased information from trained Parent Guides to families of newly identified children who are deaf or hard of hearing and to the systems that serve them.
- Promotes spoken language and sign language support for children and their families
- ¡Se habla español!



Hearing Aid Fitting – September 2021

- Snug earmold fit in the left ear
- Performed speechmapping using test box and probe microphone measures.
 - Targets were well approximated
 - Slight feedback, even after feedback manager was utilized
- Counseled family (in Spanish):
 - Realistic expectations of HA
 - Care & maintenance for HA
 - Importance of ensuring EM fit and to have replacement made as Niko grows

Hearing Aid Check – October

2021

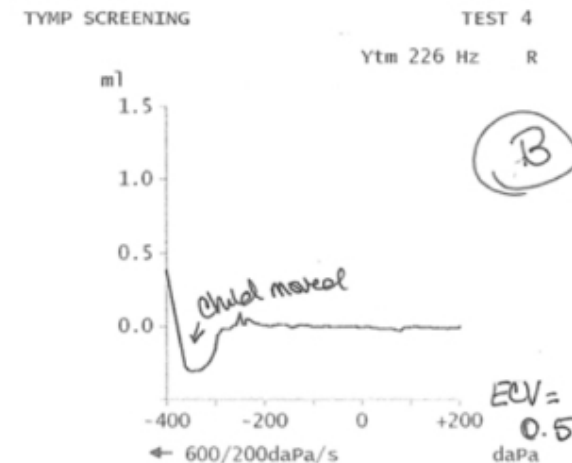
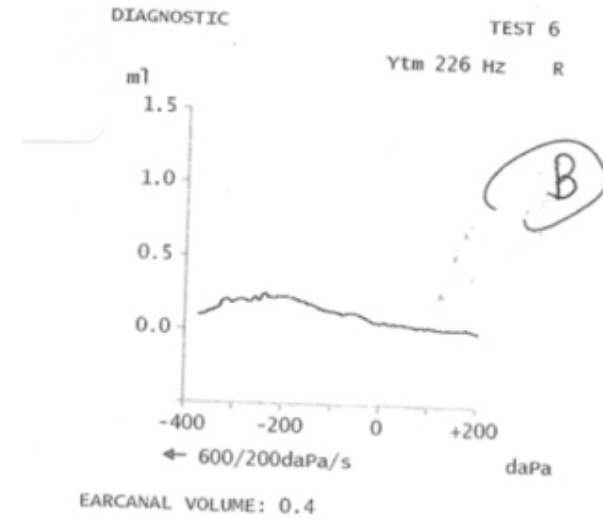
One-Month Follow-Up

- Datalogging: 12+ hours a day
- Mother reported Niko already reacting to more sounds and is starting to babble more
- Overall, high satisfaction with left hearing aid

December 2021

Two Months Later

- Niko is presenting with:
 - Consistent tugging the left ear
 - Crying when laying on either side
 - Increased fussiness and resistance to using HA
- Referred to pediatric ENT to address possible ear infection
 - Mother reported front desk not being able to communicate with her



Fast Forward with Niko

- Confirmed ear infection in both ears.
 - Monitored by ENT and PCP
 - Improved accommodations for interpreter at appointments
 - Schedule through GBYS program coordinator
- Consistent hearing aid usage
- Recent appointment with Niko and his family

Takeaways

- Understand the difficulties that linguistically diverse patients have to endure to receive care
- Become aware of resources that can be offered to linguistically diverse patients and their family
 - CDC resources in Spanish
 - GBYS or similar programs in your states
- Be your patient's advocate

THANK YOU!

Questions?



Department of Speech, Language,
and Hearing Sciences