

# Pediatric and Adult Hearing Loss



New Mexico Medical Society  
NOON ZOOM

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# Hearing loss for the primary care setting

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  - Otology - Neurotology

# Pediatric Hearing Loss

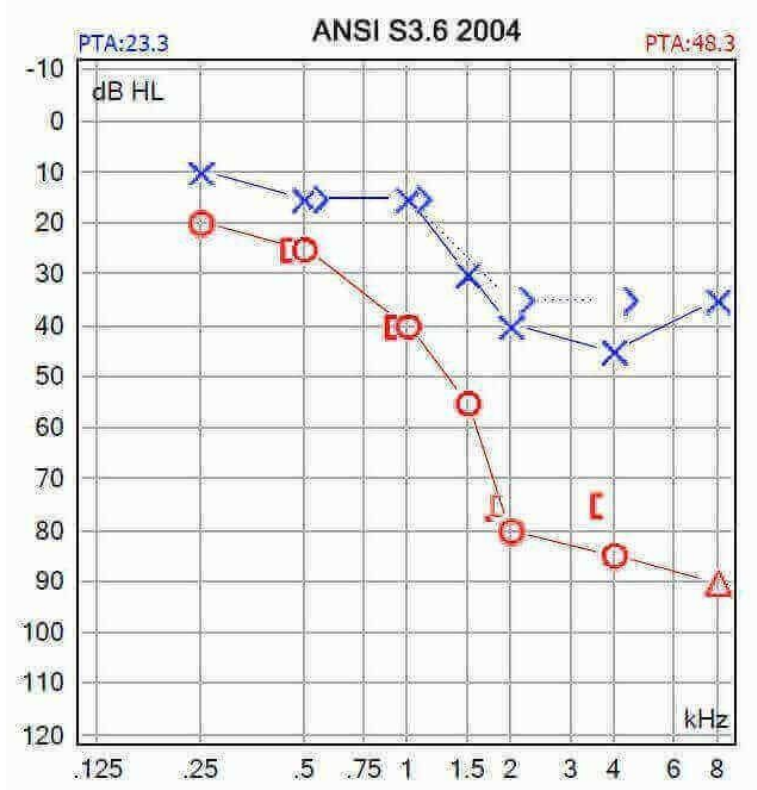
- Congenital hearing loss effects about 1-2/1,000 births
- 90% of children born with a hearing loss are born to hearing parents



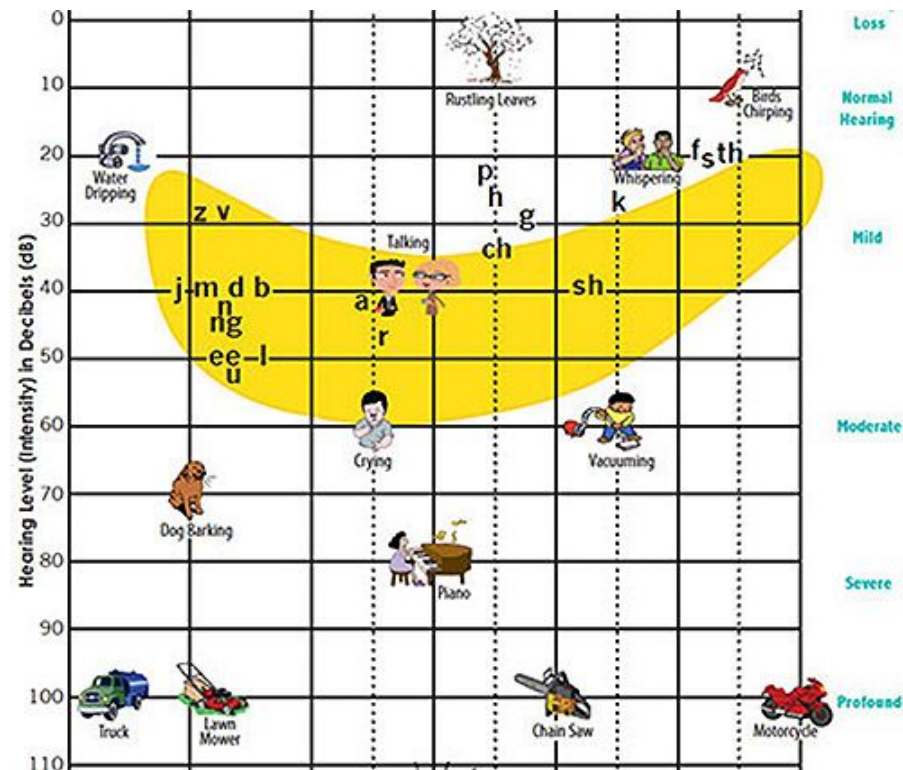
- Delay in diagnosis ~ \$400,000 in special education and early intervention during school year
- Every \$1 spent on hearing care services = \$16 return on investment!

# Audiogram

## Pure Tone Thresholds



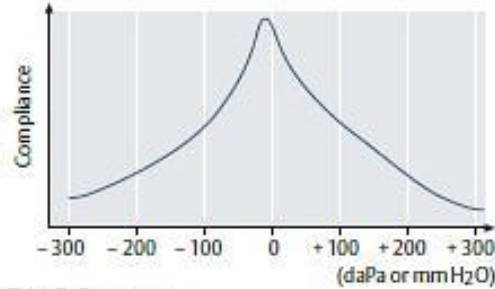
## Speech Banana



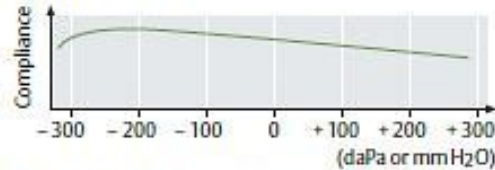
# Audiogram

## Tympanograms

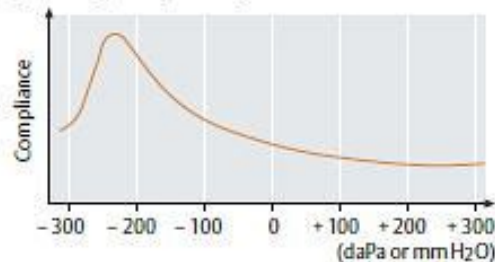
a Type A: normal finding



b Type B: flat curve



c Type C: negative pressure peak



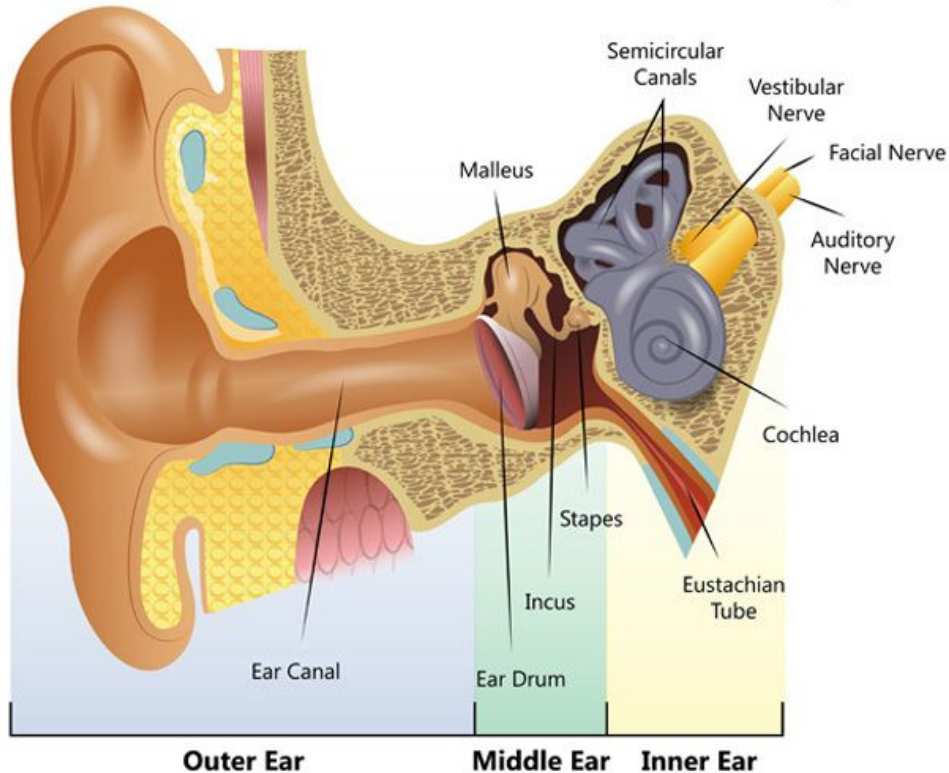
## Speech testing

### SPEECH AUDIOMETRY

☐ Recorded ☒ MLV ☐ Spanish ☐ Other: \_\_\_\_\_ ☒ 25 words  
 Form: NL6 List: 4C ☐ 50 words

EAR	SRT	HL PB%	HL PB%	HL PB%	MCL	ULL
R	30	70dB 100%				
MASKING		55				
L	15	55dB 100%				
MASKING						

# Types of Hearing Loss



Conductive Hearing Loss

Sensorineural Hearing Loss

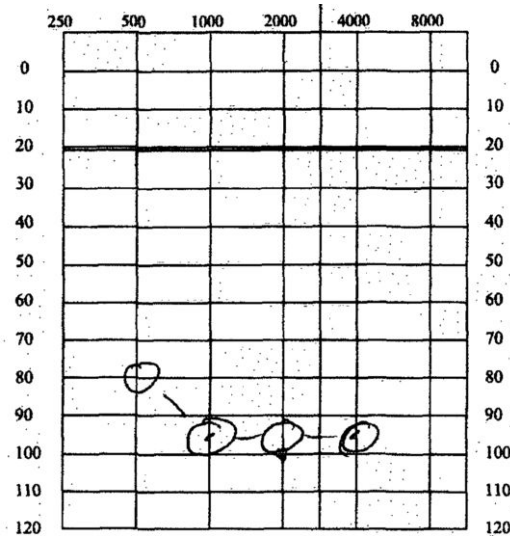
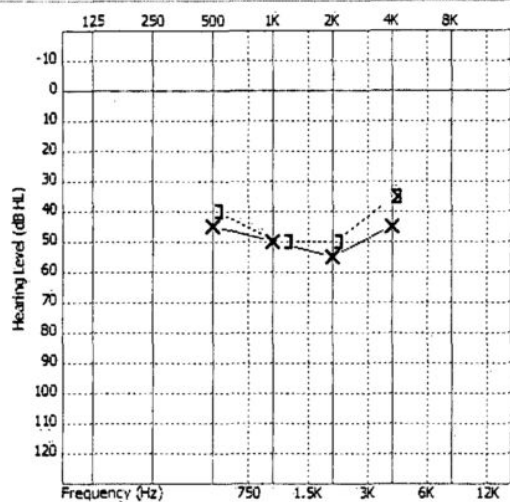
Mixed Hearing Loss

# A tale of two kids with hearing loss...

Presented at age 5  
with severe  
language delay

Grew up in Hobbs

Spanish speaking  
family



OWLS II

Subtest	Standard Score	Percentile Rank	Interpretation
Listening Comprehension (AC)	58	0.3	Below normal limits
Oral Expression (OE)	40	<0.1	Below normal limits
<b>Total Language Score</b>	<b>46</b>	<b>&lt;0.1</b>	<b>Below normal limits</b>

\* Scores are based on a mean of 100 and a standard deviation of +/-15.

Age 9 years

Cochlear Implant age 11 mo

From Roswell, NM

Excelling in the 2nd grade!



## KEY POINT

***Earlier diagnosis and management*** of children with any level of hearing loss can greatly benefit speech and language outcomes, educational performance, and quality of life measures

# Access to Hearing Aids and Early Intervention

Children who are diagnosed with HL and receive amplification by 6 months of age...

...better language outcomes at 2, 3, 4, 5 and 6 years of age when compared to peers who were amplified later



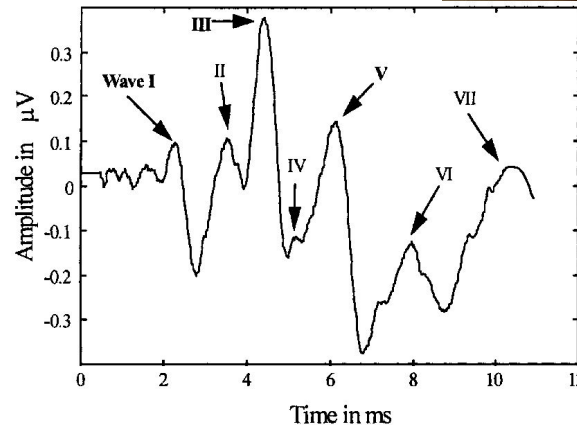
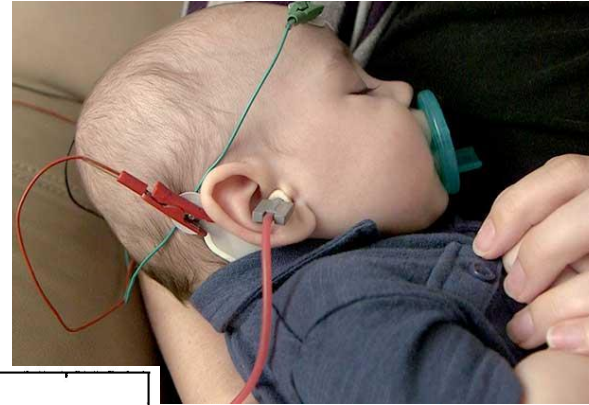
# 1 - 3 - 6 Guidelines: EHDI

- 1 month of age: Screening
- 3 months of age: Diagnosis
- 6 months of age: Early Intervention



# Diagnostic ABR - auditory brainstem response

- Assesses the integrity of the auditory pathway: cochlear nerve to the brainstem
- Creates an “audiogram”
- Baby must be asleep
  - Birth-5ish months
- Sedated: >5-6 months
  - ONLY at UNMH and Pres





## Diagnostic ABR: Audiologists

- 4- Clinics in ABQ
- 1- Clinic in Ruidoso
- 1- Clinic in Alamogordo

# How is NM doing?

	2020	2019	National avg 2020
Live Births (reported to EHDI)	20,508	21,562	3,587,350
%age of babies screened	92.3%	96.1%	98.2
Loss to follow up	6.8%*	.1%*	.6%*

# New Mexico 2019 data

- 20,750 Babies received a hearing screening in the hospital
  - 533 referred (2.6%)
- 53.8% - normal hearing
- 5.8% - permanent hearing loss

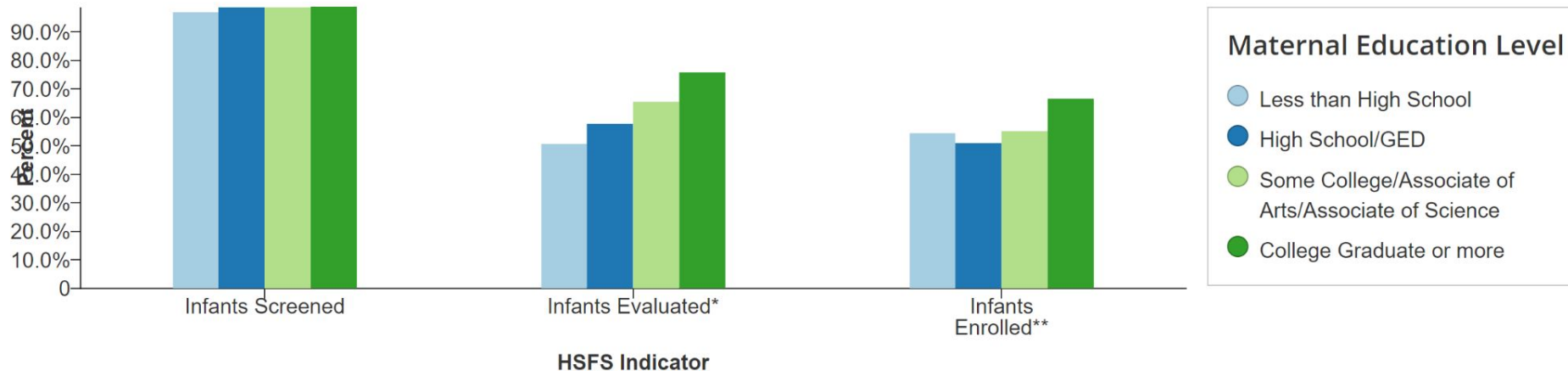
	New Mexico	USA
% Diagnosed	78%	72.5%
% Dx'd by 3 month	55%	79%

# Enrolled in Early Intervention

	2020	2019	National Avg 2020
Enrolled in EI	64.7%	61.3%	61.4%
Lost to f/u	8.8%	16.1%	19.5%

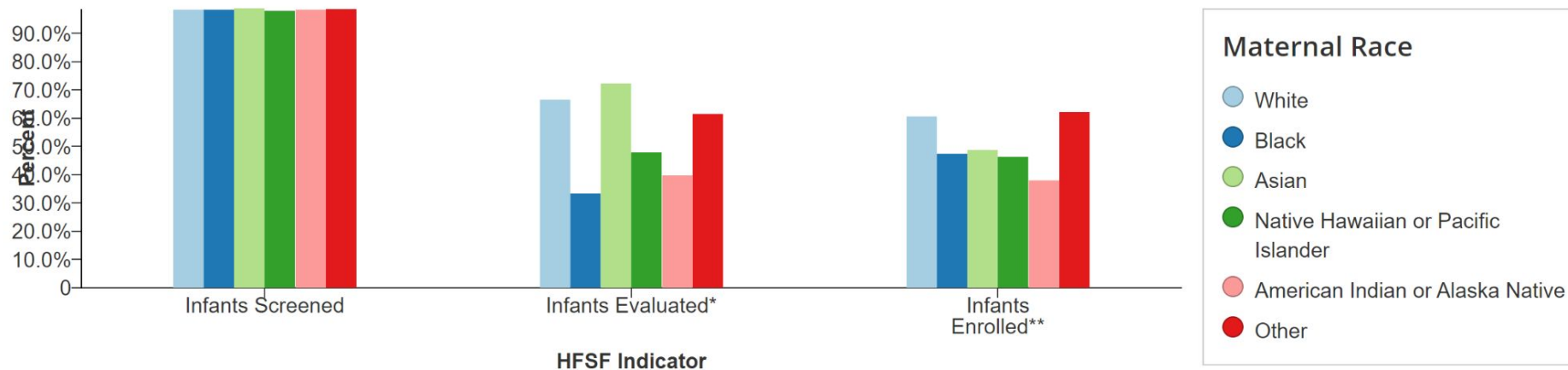
# 2019 Demographic Info

## Newborn Hearing Screening, Diagnosis, and Early Intervention (EI) by Maternal Education



# 2019 Demographic Info

## Newborn Hearing Screening, Diagnosis, and Early Intervention (EI) by Maternal Race



Diagnosis is step 1...

Early Intervention/Hearing Aids step 2...

That is just the beginning!

# Management/Work-Up SNHL

- Diagnostic hearing test; audiogram/ABR
- Refer to Otolaryngology - Need a “hearing aid clearance”
- Hearing aid fitting
- Medical Work Up/Referrals
  - Genetics
  - Ophthalmology
  - Consider labs/ECG
- School Support - 504/IEP
- Speech therapy/sign support



**Hodgin** Elementary School  
Hodgin Hawks are Winners in Learning!

**The Albuquerque Sign Language Academy**

children. family. community. possibility.

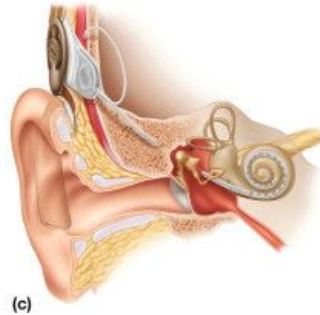
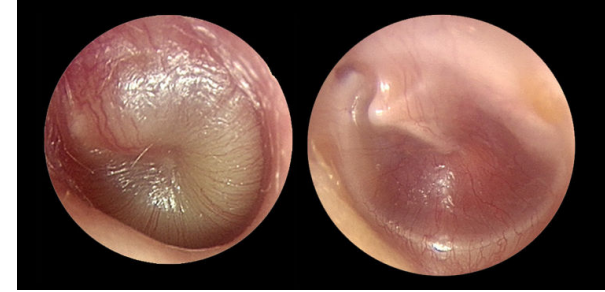
**PRESBYTERIAN**

**ear**

**I N S T I T U T E**

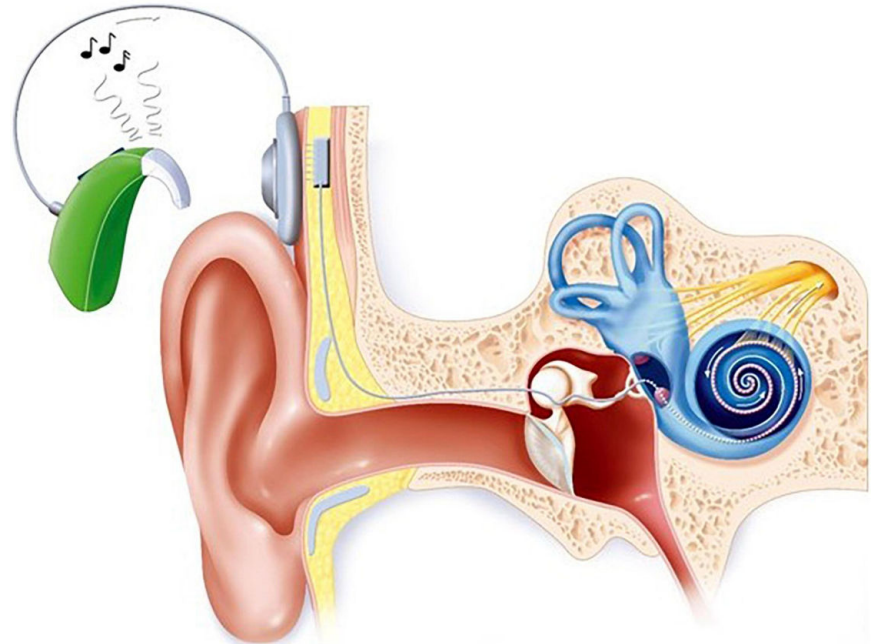


# Management of Hearing Loss: SNHL vs CHL



# Cochlear Implantation: Peds

- 9 months of age (Bilateral SNHL)
- Severe to profound SNHL
- Lack of benefit from hearing aids
- Speech/word rec <60%
- Single sided deafness (age 5)

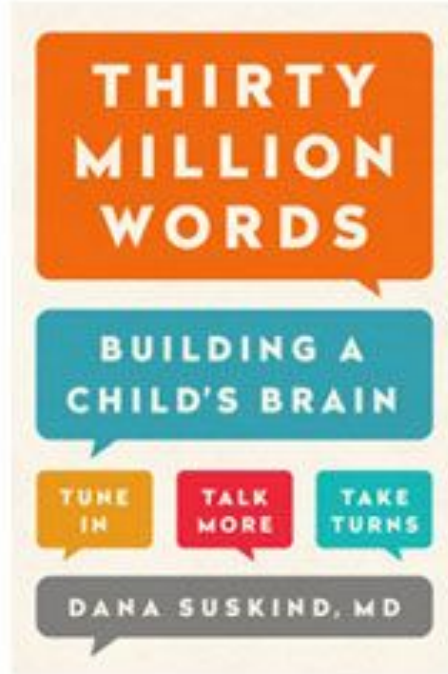


*Mauritius images*

# Auditory, Speech, Language Therapy

- SLPs and Deaf Educators that are trained in working with children with hearing loss
  - Listening and Spoken Language
    - PEI/UNMH
  - American Sign Language (ASL)
    - NMSD





# Risk Factors in Delay of Diagnosis

- Public insurance
  - Nearly twice the time to get diagnostic testing than private insured
- Non-white race
- Lower birth weight
- Live outside a metropolitan area
- Mother with lower level of education
- Mother who is < 25 years of age



# Access to Hearing Aids and Early Intervention

- Children who live in rural areas are at increased risk for delay in receiving amplification
- Insurance type
  - Mixed findings: may depend on state coverage for Medicaid
- Lower levels of maternal education and ethnic minority are associated with delays in HA fitting and/or access to EI

# What do we do?

EHDI suggests we address these 4 factors/gaps to improve “lost to follow up”

- Lack of service system capacity
  - Access access access
  - Partnerships - Audiology EHDI Team
  - Telehealth
  - Mobile Outreach
  - PCP help with hearing aid clearance?
- Lack of provider knowledge
  - We are here! Spread the word!
  - Project ECHO
  - NMMS - “noon zoom”
- Challenges to families obtaining services
  - Travel, childcare, insurance/finance
- Information gaps
  - Family resources - NBHS, dx of hearing loss, technology
  - Schools!

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