

The **ABC's** of Pediatric Audiology

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Welcome to Louisville!



ABC's of Pediatric Audiology

ACCESS

BEST PRACTICES

COMPASSION

Why are these important?

Let's talk about ACCESS

Main document that guides access to audiology services:

Joint Committee on Infant Hearing (2007)

Who is the JCIH and why should we follow their recommendations?

JCIH

Stakeholder organizations:

AG Bell, AAA, AAO-HNS, AAP, ASHA, CED,
DSHPHWA

EVIDENCE BASED approach for access
recommendations:

- **1-3-6**
- **Surveillance in medical home**
- **EHDI supports families in this process**

What is 1-3-6? Why is it important?

Screening **by 1 month of age**

Diagnosis **by 3 months of age**

- Hearing aids to be fitted within 1 month of diagnosis

Intervention **by 6 months of age**

- EI referral to be made within 2 days of HL diagnosis

Studies by Christie Yoshinaga-Itano et. al. provided support for this guideline!

Impact of 1-3-6 when it works:

Children who are diagnosed and fit with amplification, and enrolled in early intervention according to **1-3-6**:

By age 5, these children have language development in the normal range, assuming no other cognitive concerns!

Other critical ACCESS issues

All children identified with hearing loss need eye health and vision exam, ENT consultation, and genetic testing

My opinion: Testing for congenital CMV infection should also be completed for all children identified with hearing loss

Ongoing Medical Home Surveillance is needed for other developmental issues- 30 to 40% of kids with HL have other disabilities or issues

Best Practices in Pediatric Audiology

What should an evaluation look like by age?

How often to evaluate/monitor?

What if there is parent/caregiver concern about change in hearing?

How should performance with hearing technology be monitored?

References for Best Practices

American Academy of Audiology

JCIH 2007

AG Bell Association

ASHA

babyhearing.org

What's That Acronym?

Audiology is overloaded with acronyms and jargon- please reference our Resource List for a short glossary of commonly used “audiology lingo”

Evaluation: birth to 6 months

Case history (child and family)

Immittance (1000 Hz probe tone)

Otoacoustic emissions

ABR: click stimulus, polarity reversal to rule out ANSD

Threshold ABR: frequency specific and bone conduction

Evaluation: 6-36 months of age

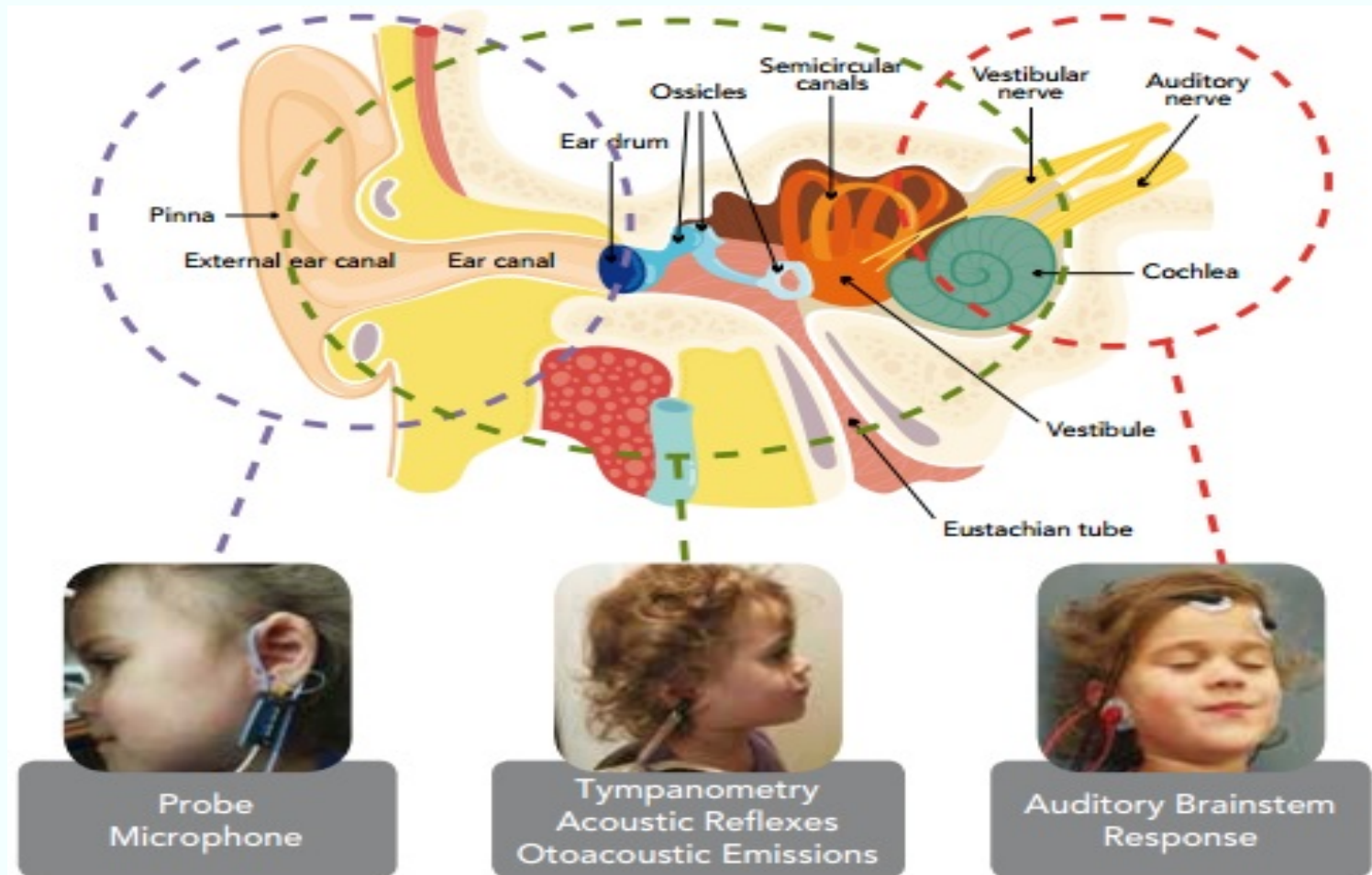
All of the birth-6 months evaluations, as needed, PLUS:

Behavioral testing

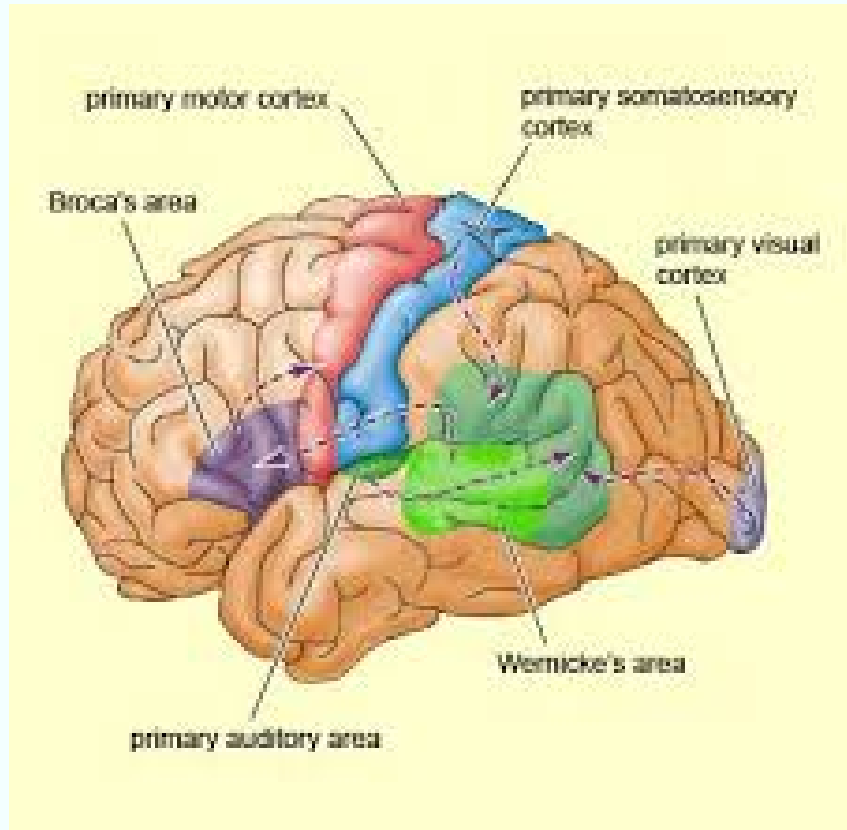
- Visual reinforcement audiometry
- Conditioned play audiometry

ABR is required to confirm suspected HL if child is < 3 years old

What do the different types of tests evaluate? (thanks to Hearing Health Foundation for the pic!)



This is your ear!



- Behavioral audiologic testing (VRA, CPA)
- Speech perception testing with hearing technology

Hearing Assistance Technology

Buzzwords:

VERIFICATION and **VALIDATION**

Verification: Are the devices working properly? Are the settings appropriate for access to spoken communication? Safe?

Validation: How is your child performing with their technology? Is additional technology needed to optimize performance?

Verification with Hearing Aids

Daily listening check (parents and teachers)

Ling Sound check (parents and teachers)

In the clinic:

Listening check

Datalogging check

Real Ear measurements!!!

Why are real ear measurements (REMs) important?

Based on SCIENCE!

Ensures that sounds are

AUDIBLE, COMFORTABLE, TOLERABLE

For very young infants, it can be difficult to observe behavior to know what is happening with the aids. REM's are a great starting point for a hearing aid fitting!

When should Real Ear Measurements be performed?

Any time hearing aid settings are changed

Any time your child is fitted with new earmolds (ear has changed, fit of earmold in ear has changed)

Any time there is a concern about performance with aids

Options for Real Ear Measurements

RECD: real ear to coupler difference

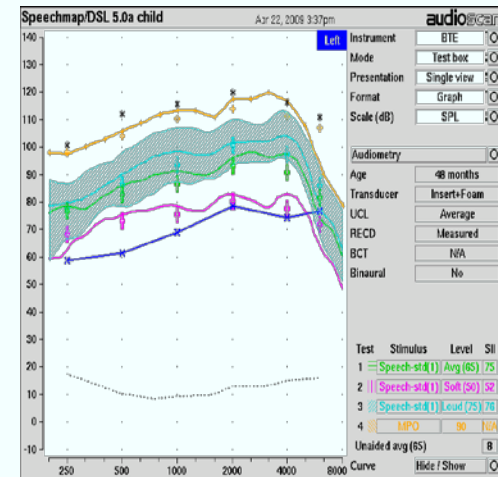
Use in infants, toddlers, kids who won't sit for traditional REM's

Probe tube placed in ear canal

Stimulus delivered to ear through earmold and acoustic properties measured

This generates a “correction” that is applied to an ear simulator, so all measurements can then be conducted in the test box

What do RECD measurements look like and how do we get them?



“Non-compliant” Kids- What to Do?

Distraction is key! Lighted toys, puppets,
anything to distract the child from what you
are doing

5 seconds of quiet = all it takes!

Age average RECD measures available, ok
to use in cases where measurement cannot
be obtained

Real Ear Measurements

For older kids, we can complete all of the required measurements on the ear:



Verification for Bone Anchored Devices and CI's

In this case:

LISTENING CHECKS

DATALOGGING CHECKS

LING SOUND CHECKS

In the clinic:

Sound field thresholds

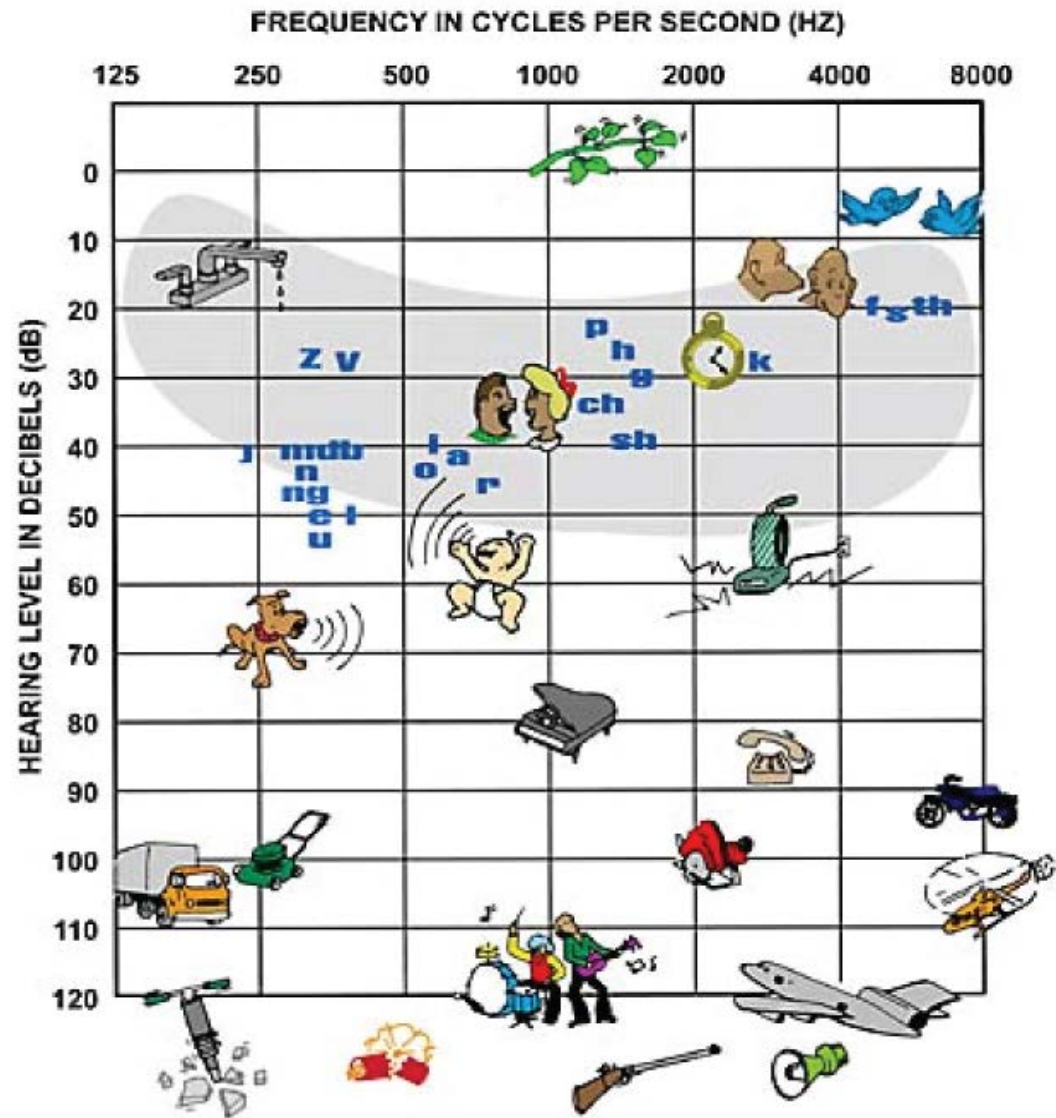
Left aid alone, right aid alone, aids together!

Sound Field Thresholds

We want kids to hear at the top of the speech banana- may need to adjust from real ear targets to achieve this

We do not listen to warble tones or narrow band noise in real life- ideal to use speech signals to assess aided thresholds

AUDIOGRAM OF FAMILIAR SOUNDS



Validation

This is a **performance-based** metric

How does my child perform with hearing technology?

How is my child progressing in their auditory skill development?

How has hearing technology improved my child's quality of life?

Speech Perception Testing

Can be completed with kids developmental age 2+

Many different tests available, some have normative data to compare to WNL's!

Younger kids- use closed set (picture pointing); it's easier to complete

Older kids- open set, repeat words

We want to know...

How does my child hear in quiet at a normal conversational level?

How does my child hear soft speech (correlates to faint or distant speech)?

How does my child hear in background noise?

What is acceptable performance?

“If it's not a good score on a math test, it's not a good speech perception score”- Jane Madell

If we aren't hitting the necessary level of performance:

- reprogram (or replace) hearing aids
- add assistive technology (i.e. FM, Bluetooth)
- consider cochlear implant eval as appropriate

Validation through Questionnaires

Questionnaires available to look at auditory skill development, based on age; some normed, some not

Your audiologist should be using these!

Great tools to monitor progress and watch for plateaus

Last, but not least...

Compassion (and support)

Audiologists diagnose hearing loss in children every day

~ 90% of children with hearing loss are born to hearing parents

In most cases, your child is the first person you have met with hearing loss

Support from your Audiologist

How we break the news affects how you move forward

Time for questions is critical

Written information is critical

FAMILY SUPPORT is critical!!!

Denial

Denial can be healthy... if it is short lived

If a family is stuck in denial, it may impact their ability to make decisions regarding their child's care

Referral to a trained support professional (psychologist, LCSW) may be needed for families having difficulty accepting their child's hearing loss

Hands and Voices

Unbiased parent support and education;
Guide by Your Side program

Most states have a Hands and Voices
chapter; if there isn't one ask your
audiologist to link you with another family

Other state, national resources

Many of the stakeholder organizations mentioned for JCIH have information for parents- run the gamut of communication options

Connect with state organizations that support kids with HL- contact your EHDI program for more information!

EHDI PALS- a resource to find audiologists who provide diagnosis and treatment of pediatric hearing loss

Wrapping Up...

Remember your **ABC's**

Parents/caregivers are a child's best advocate- take the time to be informed about best practices

Develop a relationship with your providers based on clear and honest communication

Second opinions are always ok if you have unanswered questions

Thank you!

And special thanks to Mandi Grumm, 4th year extern for her Power Point skills! 😊