

HEARING TESTS FOR CHILDREN

What to expect before, during, and after your child's hearing test



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INTRODUCTION

Your child has been referred for a hearing test. This test will measure his or her ability to hear sounds that can affect language development at a very important time.

Your child's brain is growing very fast. Language is learned through interacting with people and hearing them talk or seeing sign language. Children who are deaf or hard of hearing may need extra help before six months of age to learn language. Hearing tests help us know if your family may benefit from this extra help.

BEFORE TESTING

Many families wonder if their child really needs a hearing test when they seem to react to sounds. It is important for your child to have a full hearing test because most children with hearing loss can hear some things and might even respond to sounds around them. But even a slight hearing loss or hearing loss in only one ear can affect a child's development if it isn't caught early.

There are different types and levels of hearing loss and your child's hearing can be different for low pitch and high pitch sounds. An audiologist has special training to test your child's hearing. Your child's audiologist will help find answers to these questions:

- Does my child have hearing loss?
- If so, is it temporary or permanent?
- What types of sounds can my child hear?
- What do we do next?

TYPES OF TESTS

There are many ways to test your child's hearing. If your child is younger than six months of age or can't respond to sound during the hearing test, the audiologist will choose tests that are done while your child is asleep, such as a BAER test, otoacoustic emissions, and tympanometry. The kind of test your child has depends on your child's age, needs, and abilities. The audiologist may choose to do one or more of these tests during your visit.

Brainstem Auditory Evoked Response (BAER – pronounced “bear”)

This test shows how well your child's hearing nerve responds to sound at different pitches and levels. Your child's skin is cleaned and sensors (like stickers) are put on the forehead and behind each ear. Sounds are played into each ear through a soft foam or rubber earphone. A computer records the response of your child's hearing nerve. The audiologist looks for the softest sound your



child's hearing nerve responds to. This test is sometimes also called an Auditory Brainstem Response (ABR) test.

Preparing for your BAER test

It is important for your child to be asleep during the BAER test. This helps the audiologist get accurate results.

Other families have found the following tips helpful when preparing for a successful BAER test.

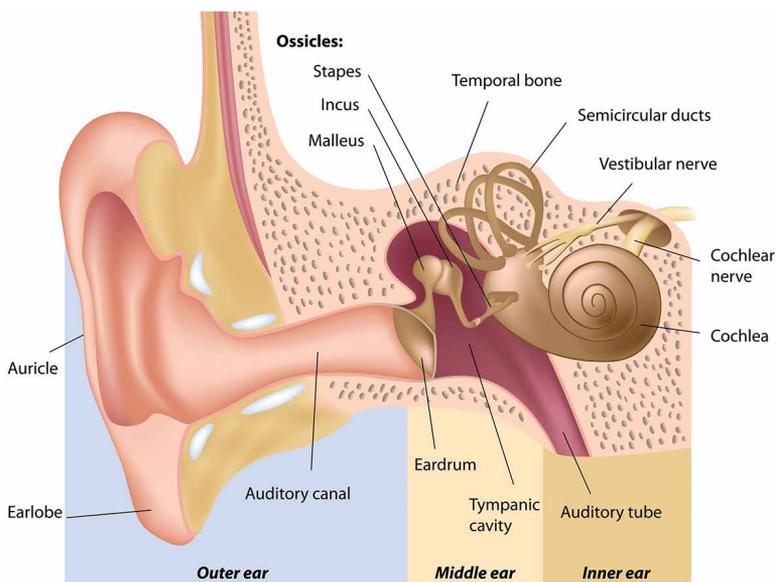
- Schedule the appointment for a time when your child is likely to sleep.
- Arrive at the appointment with your child tired.
- Try not to let your child nap before the appointment.
- Feed your child right before the test.
- Plan for a long appointment, it may take 1-2 hours.
- Bring a blanket, extra diapers, and a change of clothes.

Otoacoustic Emissions (OAE Test)

This test measures how the hair cells in your child's inner ear (cochlea) respond to sound. It is usually done during the same visit as a BAER test. A soft foam or rubber earphone is placed in each of your child's ears. Sounds play through the earphones. A computer measures the response of the hair cells. The audiologist evaluates the response.

Tympanometry Test

This test helps the audiologist find out how well your child's eardrum and middle ear bones are working. The audiologist puts a rubber tip in your child's ear. The tip is connected to a machine that changes the air pressure in your child's ear canal. The machine prints out a graph with information about whether the eardrum is moving well. If the eardrum is not moving as much as we expect, it could mean there is a problem in the middle ear that



can affect your child's hearing. Fluid build-up in the middle ear is an example of a middle ear problem.

If your child is older than six to seven months developmental age and can respond to sound during the hearing test, the audiologist will use tests that your child will be awake for such as Visual Reinforcement Audiometry.

Visual Reinforcement Audiometry (VRA Test)

For this test, your child needs to be able to sit up on your lap. Your child will also need to have head control to turn towards sounds. You and your child will sit in the middle of the room. The audiologist will teach your child to turn toward the sound by rewarding your child's response with toys in lighted boxes. The audiologist will find the softest sounds to which your child turns. An OAE test and tympanometry test may be done during the same visit as the VRA test.

AFTER TESTING

After the tests, the audiologist will tell you about your child's hearing. Hearing levels are described in degrees, ranging from “No decrease” to “Profound.” Degrees of hearing loss are measured in decibels (dB). Decibels refer to the intensity or loudness of the sound. The larger the number is, the louder the sound. Your child's audiologist may show you your child's hearing levels on a chart called an audiogram.

No decrease in hearing level: Sounds softer than 15 dB, like soft sounds of speech, are heard.

Slight decrease in hearing level: Sounds softer than 16–25 dB, like leaves rustling, are not heard.

Mild decrease in hearing level: Sounds softer than 26–40 dB, like a dripping faucet, are not heard.

Moderate decrease in hearing level: Sounds softer than 41–55 dB, like a clock ticking, are not heard.

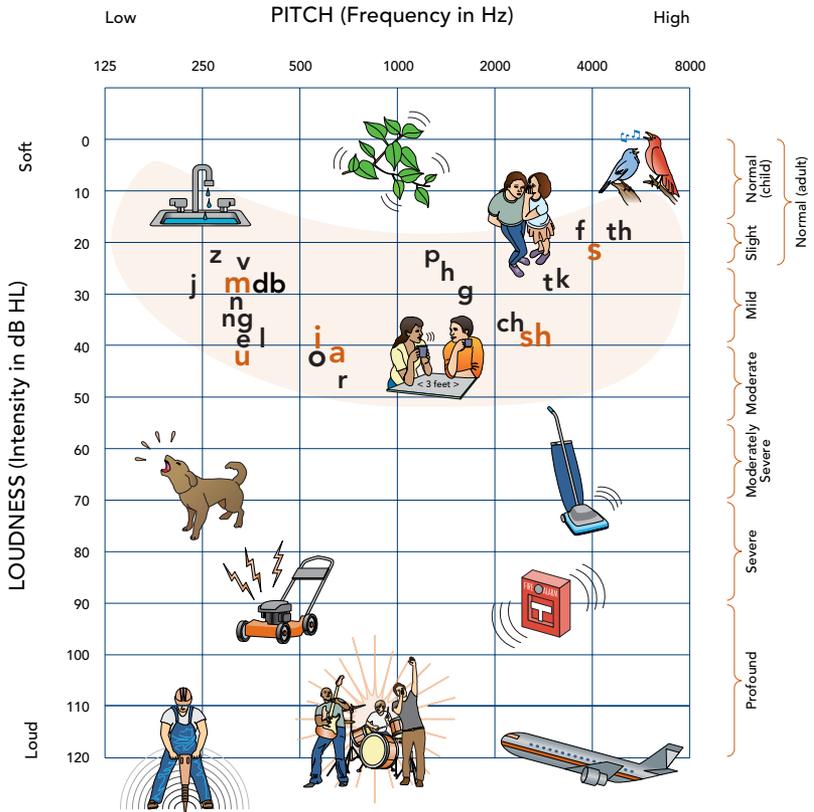
Moderately severe decrease in hearing level: Sounds softer than 56–70 dB, like a dishwasher, are not heard.

Severe decrease in hearing level: Sounds softer than 71–90 dB, like a dog barking, are not heard.

Profound decrease in hearing level: Sounds softer than 91 dB, like a lawnmower, are not heard.

familiar sounds

AUDIOGRAM



Adapted from Northern, J. & Downs, M. (2002). *Hearing in Children* (5th ed.). Lippincott Williams and Wilkins, Baltimore, Maryland

Discussed in the CID online self-study course "Pediatric Audiology: The Basics"

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If the testing shows that your child has decreased hearing levels, your child's audiologist will try to determine what type of hearing loss your child has. Type of hearing loss depends on where it occurs in the ear. The main types are conductive, sensorineural, mixed, and neural or auditory neuropathy spectrum disorder (ANSD).

Conductive means the decreased hearing level is due to issues with the outer or middle parts of the ear. Often something in the middle or outer ear blocks the sound from reaching the inner ear (cochlea). Medicine or surgery can sometimes change hearing levels with this type of hearing loss.

Sensorineural means the decreased hearing level is due to issues with the inner ear (cochlea) or the hearing (auditory) nerve. Often this type of hearing loss is permanent. Medicine or surgery are usually unable to change hearing levels with this type of hearing loss.

Mixed means the decreased hearing level is due to issues with both the outer or middle ear and the inner ear. Medicine or surgery may be able to change some hearing levels with this type of hearing loss, but some permanent hearing loss will likely remain.

Neural or Auditory Neuropathy Spectrum Disorder means the inner ear (cochlea) receives sound but there is an issue with the signals leaving the cochlea or the hearing nerve itself. Medicine or surgery are usually unable to change hearing levels with this type of hearing loss.



It may take more than one appointment with the audiologist to find out how your child hears. You may be asked to come back for more testing right away or to wait a little while before coming back to recheck your child's hearing. Your child's audiologist may recommend that you see other specialists too, such as an ear, nose, and throat doctor.

If you can't make it to your appointment, please call your child's audiologist right away to reschedule.

NEXT STEPS

If you find out your child is deaf or hard of hearing, you will be offered services from experts that will teach your family how to help your child learn language. Children who are deaf or hard of hearing can learn to communicate in several ways, such as:

American Sign Language (ASL)

ASL is a full, visual language with its own unique rules. Children learn ASL as their first language. Then they learn how to read and write English or their family's primary language. Families may also choose to teach their child spoken language, as well. The use of ASL is part of the Deaf community but is not limited to the Deaf community.

Cued Speech

Cued speech helps children hear and see speech sounds. It uses special hand shapes as “cues” around the face when speaking. This can help children tell the difference between words that can sound or look the same.

Listening and Spoken Language

Listening and spoken language teaches children to understand and speak the language that their family members and peers speak. Children use their hearing abilities and hearing technology such as hearing aids and cochlear implants as they learn spoken language.

Total Communication

Total communication is a combination of a sign language system, such as Signing Exact English (SEE) and spoken



language. SEE is a sign language system that follows exact English vocabulary and grammar. Children are encouraged to use their eyes, ears, hands, and voices to communicate.

Some families choose to use hearing technology to help a child who is deaf or hard of hearing have access to sound. Hearing technology for children includes: hearing aids, cochlear implants, bone

conduction sound processors, and frequency modulation systems. Your child's audiologist can answer more questions about hearing technology.

There is no one best way for children who are deaf or hard of hearing to communicate.

Your child and your family are unique! If your child is deaf or hard of hearing, it may take some time to find out what works best for your family. If one option does not work well, it's okay to change your plan and get help from different specialists.

It can be helpful to talk to other parents who have experience with hearing testing and services for families of children who are deaf or hard of hearing. The Washington State Hands and Voices Guide By Your Side™ (GBYS) Program provides free support and resources by trained Parent Guides. All Parent Guides have children who are deaf or hard of hearing. If you have any concerns about your child's upcoming hearing test, contact the GBYS Program by calling (425) 268-7087 or email gbys@wahandsandvoices.org.



For more information, visit **babyhearing.org**
or **doh.wa.gov/earlyhearingloss**

or contact:

The Early Hearing Detection, Diagnosis,
& Intervention (EHDDI) Program

Washington State Department of Health

Phone: 206-418-5613

Toll free: 1-888-WAEHDDI (1-888-923-4334)

Email: ehddi2@doh.wa.gov



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For persons with disabilities this document is available
on request in other formats. To submit a request, please
call 1-800-525-0127 (TTY/TDD 711).