

YOUR BABY'S JOURNEY WITH

LSL

Listening & Spoken Language



**HOUSE CHILDREN'S
HEARING CENTER**



Foreword

Receiving a diagnosis that your baby is deaf or hard of hearing can be an emotional experience filled with questions and concerns about your child's future. The first step is to reassure yourself that hearing differences do not make your child less healthy or whole than others. With timely intervention and support, your child can follow a healthy learning and development path.

Your family may be processing many strong emotions right now, and learning about new terms, procedures, and services can be overwhelming. Knowing where to start and how to move forward can be hard. As a parent, you can choose what you want for your child's future as you begin this journey.

If your dream is for your child to listen and talk, this eBook is for you.

Listening and Spoken Language (LSL) is an approach that supports the development of these skills, making those dreams possible. While this eBook focuses on the Listening and Spoken Language (LSL) route, it's important to recognize that there are other communication strategies available for children who are deaf or hard of hearing. American Sign Language (ASL) and other sign languages are valuable and enriching forms of communication that foster deep cultural connections and identity. These approaches will not be covered in this eBook, but they are equally valid and respected options that may be the right choice for your family. Exploring all communication options with your hearing healthcare team will help you make the best decision for your child's unique needs.

This eBook, *Your Baby's Listening and Spoken Language Journey: A Guide for Parents*, will provide the information you need to understand your child's diagnosis, explore treatment options, and learn how to support their development. As you navigate this new path, remember that you are not alone. Our House Children's Hearing Center team is here to support you every step of the way.

Thank you for allowing us to be a part of your journey. Together, we can ensure that your child has every opportunity to thrive.

Reynita Alcisto, AuD

Clinical Director, House Children's Hearing Center





01. Foreword
02. Table of Contents
03. Understanding Your Baby's
Hearing Loss
04. Types of Hearing Loss
05. The Impact of Hearing Loss on
Your Baby
06. What is an Audiogram
07. How to Read an Audiogram
09. Next Steps After Diagnosis
10. Building Your Child's
Healthcare Team
11. Supporting Your Baby's
Development

Table of Contents



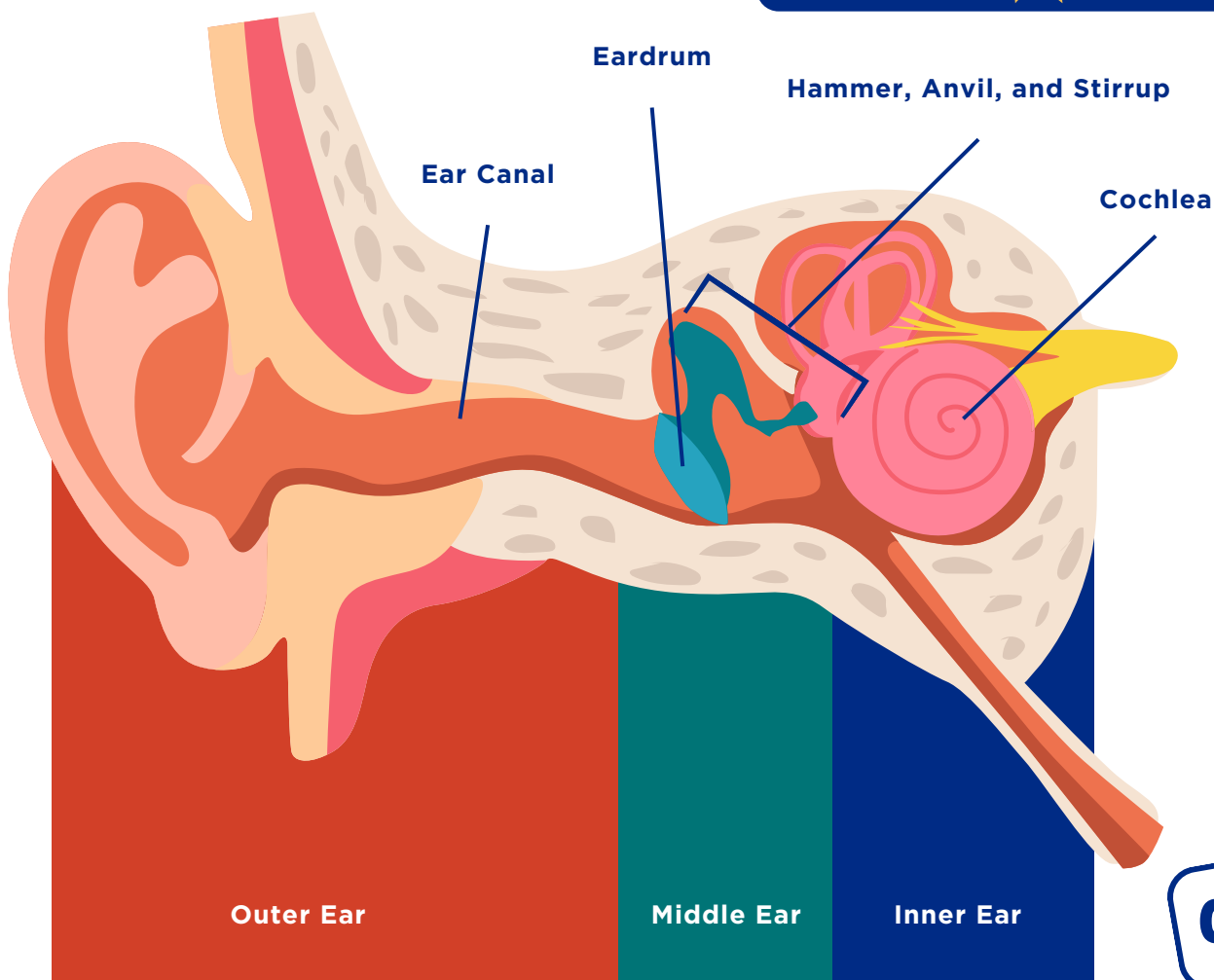
Understanding Your Baby's Hearing Loss

What is Hearing Loss?

Hearing loss in babies occurs when there's an issue with one or more parts of the ear or the pathways to the brain that prevent sound from being properly transmitted. This can affect your baby's ability to hear your voice, lullabies, and other important sounds in their environment.

How Do Babies Hear Sounds?

Hearing is a complex process that involves the outer, middle, and inner ear. When your baby hears a sound, it enters through the outer ear and travels down the ear canal to make the eardrum vibrate. Three tiny bones in the middle ear (the hammer, anvil, and stirrup) pass along these vibrations to the inner ear's cochlea. The cochlea then turns these vibrations into electrical signals that travel to your baby's brain through the auditory nerve, where they are understood as sound.





Types of Hearing Loss

1. Conductive Hearing Loss

This happens when a problem in the outer or middle ear prevents sound from reaching the inner ear. In babies, this can be due to frequent ear infections, fluid in the middle ear, or blockages like earwax.

2. Sensorineural Hearing Loss

This type of hearing loss is caused by inner ear or auditory nerve damage. It's often permanent and can be due to factors like genetic conditions, head injuries, or exposure to loud noises. Babies who have spent time in a NICU may also be at higher risk.

3. Mixed Hearing Loss

This means there are issues in both the outer/middle ear and the inner ear or auditory nerve, combining conductive and sensorineural hearing loss.

4. Central Hearing Loss

This occurs when there are problems with the auditory pathways or the part of the brain that processes sound. It can result from conditions like strokes or other neurological issues.





The Impact of Hearing Loss on Your Baby

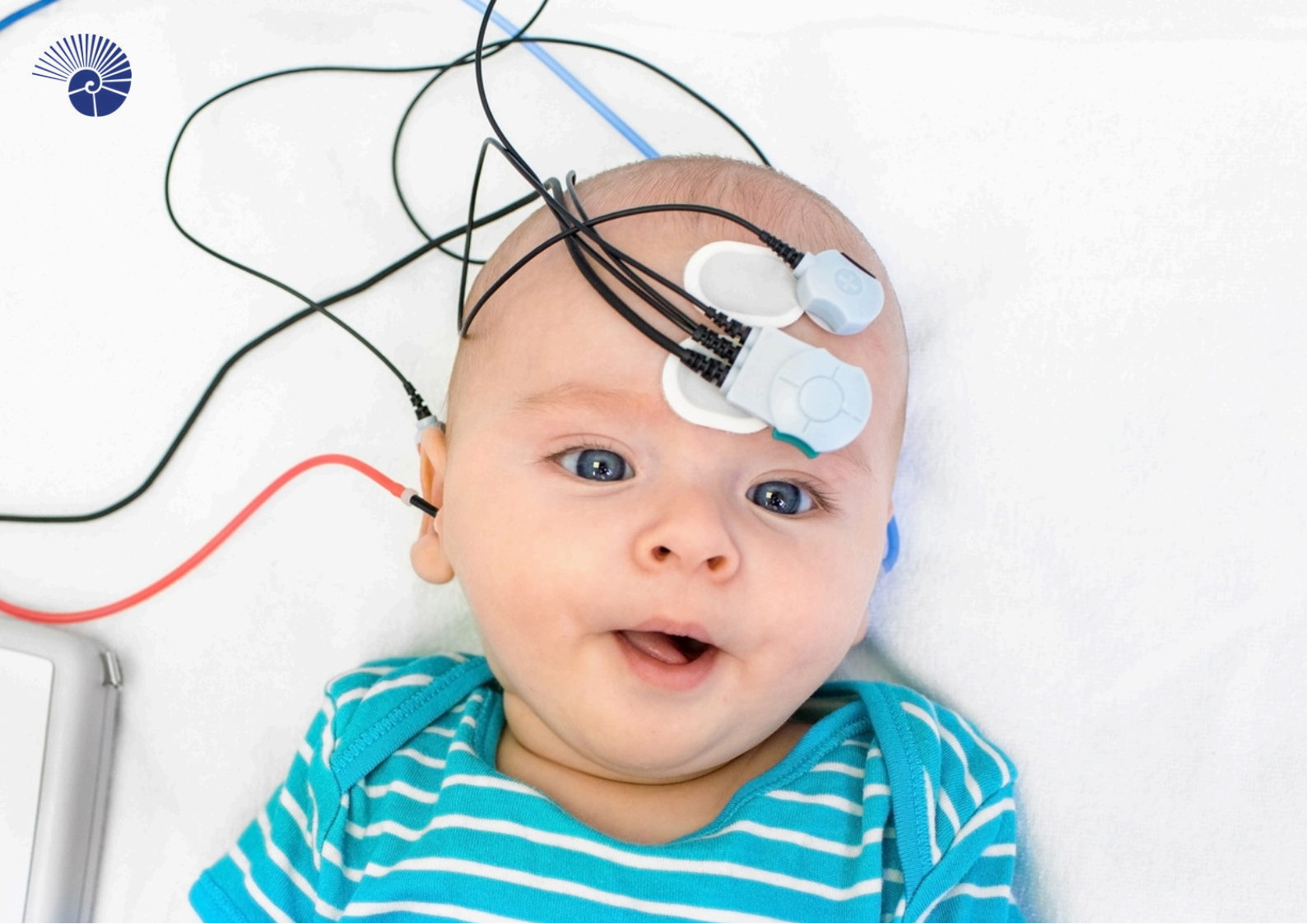
Your baby's ears act as a doorway, helping sound reach their brain. When there's a problem with this doorway, sounds—like your voice, songs, and other important auditory information—might not get through clearly. The degree to which this doorway is blocked, measured in decibels (dB), determines how much sound can reach your baby's brain and how severe their hearing loss is.

Degrees of Hearing Loss

The severity of your baby's hearing loss will affect how much of the world they can hear and understand. Here's a breakdown of how different levels of hearing loss can impact your child:

- **Normal Hearing Thresholds (0 dB - 20 dB HL):** Your baby can hear soft sounds and pick up all the speech sounds needed to develop spoken language.
- **Mild Hearing Loss (20 dB - 40 dB HL):** Your baby may struggle to understand soft speech or speech from a distance, affecting their ability to follow conversations and learn new words.
- **Moderate Hearing Loss (40 dB - 55 dB HL):** Without hearing technology, your baby may miss a significant amount of speech in conversations, which can make communication and language development challenging.
- **Moderately-Severe Hearing Loss (55 dB - 70 dB HL):** Your baby may miss all speech sounds without hearing aids or other devices, leading to difficulties in social interactions and frustration.
- **Severe Hearing Loss (70 dB - 90 dB HL):** Without early intervention and hearing technology, your baby may struggle to develop spoken language, but with the right tools and support, they can still learn to communicate effectively.
- **Profound Hearing Loss (90 dB - 120 dB HL):** Your baby's brain won't receive any speech or environmental sounds without the use of cochlear implants or other advanced hearing technology, making these tools essential for listening and spoken language skills.





What is an Audiogram?

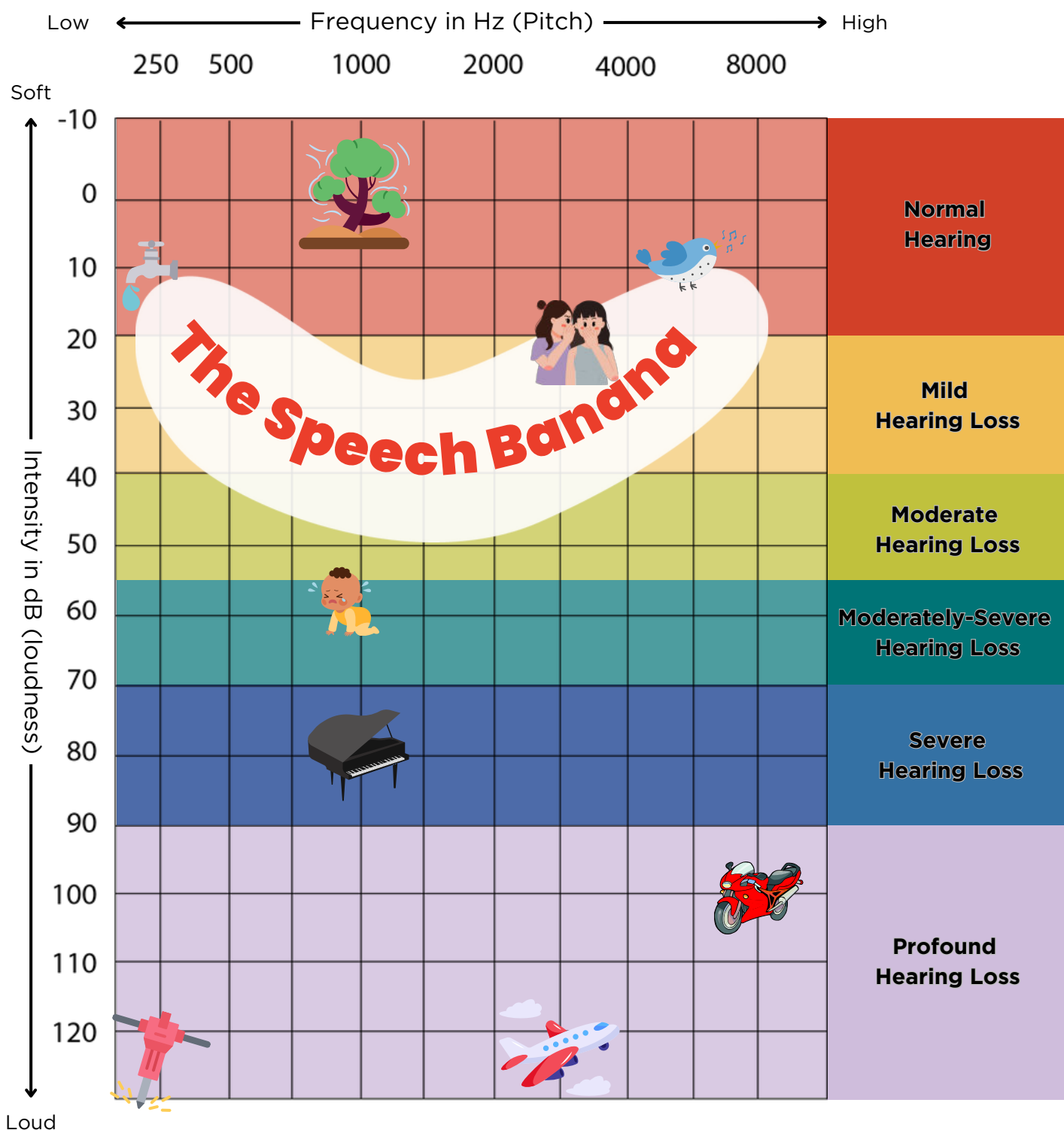
An Explanation of Audiograms

An audiogram is a graph that charts the softest sounds or thresholds that a person can hear at various frequencies. Frequencies (itches) from 250 Hz to 8,000 Hz and intensity (loudness) in decibels (dB HL) ranging from -10 dB (very soft) to 120 dB (very loud) are displayed on the audiogram.

An audiologist will assess your child's hearing in a sound-isolated booth during a hearing test by presenting pure tones to each ear separately through an insert earphone. The softest sound your child can hear is recorded as their threshold for each frequency. For example, if the softest sound heard at 500 Hz was at 60 dB, this threshold would be marked on the audiogram. A threshold of 60 dB means the child can hear sounds at or above this level but cannot hear softer sounds at that frequency.



How to Read an Audiogram



This audiogram illustrates the severity of hearing loss by showing how much sound is blocked from reaching your child's brain, measured in decibels (dB). Higher dB thresholds indicate more severe hearing loss. The "speech banana" on the audiogram above highlights the range where typical speech sounds occur, helping to identify what speech information your child may miss out on if not adequately assisted by hearing technology. Additionally, familiar sounds are plotted on the audiogram, showing the range from soft noises, like a bird singing, to loud noises, like a jackhammer.



How to Read an Audiogram Continued

Air Conduction or AC (Insert Earphones)	O or (right ear)	X or (left ear)
Bone Conduction or BC (skull vibrations)	< or [(right ear)	> or] (left ear)
With Hearing Technology	A (hearing aids)	C (cochlear implants)
No Response	indicates no response at a particular frequency and intensity	

Below is a sample of an audiogram taken here at the House Children's Hearing Center. This child has a mild hearing loss in both ears and now wears hearing aids.

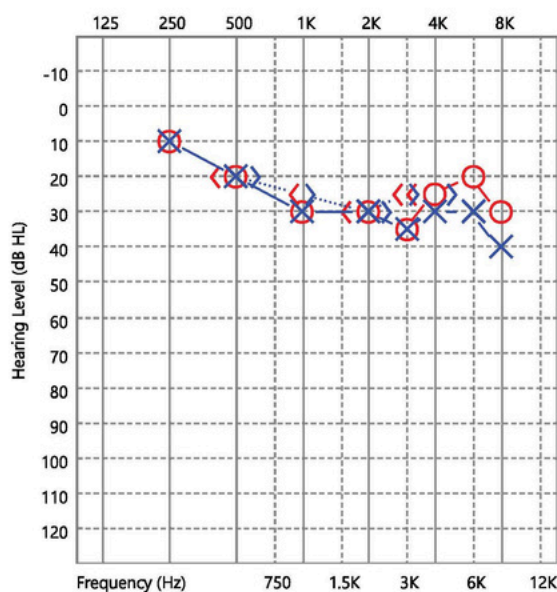
Name [REDACTED]
Birthdate [REDACTED]
Patient ID 366
Transducer

Test Date [REDACTED]
Age At Time Of Test [REDACTED]
Reliability
Test Method



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IP30



Symbol Key		
	Right	Left
AC unmasked	O	X
AC masked	△	□
BC unmasked	<	>
BC masked	[	]
Sound Field	S	S
Sound Field Aided	A	A
NR	*	*

In "masked" testing, the audiologist uses a special device to block sound from the ear that isn't being tested, so it doesn't pick up the sounds meant for the other ear. "Unmasked" testing doesn't use this device, so both ears might hear the sounds.



Next Steps After Diagnosis

Hearing Devices

Your child can effectively develop speech, language, and reading skills with timely intervention and support. Fitting hearing devices within the first weeks of life helps activate and grow the auditory neural connections essential for development.

Available devices include:

- Hearing Aids
- Cochlear Implants
- Bone Conduction Hearing Devices

Hearing aids and bone conduction hearing devices can be fitted shortly after birth, while the cochlear implant process, suitable for severe to profound hearing loss, can occur from 6 months of age. For families aiming for a listening and spoken language outcome, it is crucial to fit appropriate hearing technology as early as possible. **These devices should be worn all waking hours,** and the child should be in a conversation-rich environment.



Follow-Up Steps

1. Confirm Diagnosis

Schedule a follow-up appointment to confirm the diagnosis. It's best to do this before leaving the clinic.

2. Hearing Aid Evaluation

Once hearing loss is confirmed, schedule a hearing aid evaluation immediately. Early fitting of hearing devices is crucial for brain stimulation.

3. Maintain Contact:

Get the audiologist's contact information for any questions that may arise after your appointment.



Building Your Child's Healthcare Team

Building a comprehensive healthcare team is crucial when addressing your child's hearing loss and ensuring they reach their full potential in listening and spoken language (LSL) development. Here's a guide to the key members of your child's LSL team and their roles:

Pediatrician

Role: Medical doctor specializing in medical and preventative healthcare for children.

Involvement: Regular check-ups; may suspect hearing loss and provide referrals to specialists like pediatric audiologists or ENT doctors.



Pediatric Audiologist

Role: Specializes in evaluating and diagnosing hearing loss in children and managing hearing health and technologies.

Involvement: Referred by a hospital or pediatrician or found through health insurance. Provides ongoing care similar to a pediatrician, with occasional visits for adjustments and monitoring of hearing aids or cochlear implants.



Otolaryngologist

Role: Medical doctor specializing in the anatomy and function of the ear, nose, throat, head, and neck.

Involvement: Referrals by other healthcare professionals to diagnose and treat ear-related issues, including surgical cochlear implantation. Collaborates with the pediatric audiologist for appropriate hearing technology.



Auditory-Verbal Therapist

Role: Specializes in teaching deaf and hard-of-hearing children to listen and communicate.

Involvement: The therapist works closely with parents and/or caregivers to teach LSL techniques during interactions with the child.

Speech-Language Pathologist (SLP)

Role: Assesses, diagnoses, and treats speech, language, and other communication disorders.

Involvement: The SLP works directly with your child to support speech and language development from early intervention (0-3 years) through school-age (3+), as needed.

Patient Navigator

Role: Provide emotional, educational, and mental health support services for your family.

Involvement: This House Children's Hearing Center-specific role offers comprehensive support beyond medical care. From navigating school systems to advocating for your child and providing guidance for self-care, the patient services team is with you for every step of the hearing health journey.





Supporting Your Baby's Development

Language is an organized system of communication used to share information. Spoken language includes sounds, words, and grammar to express thoughts and emotions. It also involves facial expressions, gestures, and body movements.

The language environment at home is the foundation of an infant's brain growth and can be a strong predictor of a child's language and reading. Frequent family conversations, reading aloud, and singing are beneficial. Your auditory-verbal therapist will teach you listening and spoken language strategies and techniques to make these activities second nature for you and your child.

- **Create Back-and-Forth Conversations:** Talk with your baby and observe their responses.
- **Fill Their World with Words:** Narrate everything happening around them.
- **Be Expressive:** Use engaging speech styles to capture their attention.
- **Consistent Use of Hearing Devices:** Keep hearing devices on to ensure your child doesn't miss any learning opportunities.

By following these steps and ensuring regular check-ups and interventions, you can effectively support your child's hearing and language development.



HOUSE CHILDREN'S
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Thank You!

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