



Implications of Unilateral Hearing Loss

What is Unilateral Hearing Loss (UHL)?

Unilateral hearing loss (UHL) means that hearing is normal in one ear but there is hearing loss in the other ear. The hearing loss can range from mild to profound. Many children with UHL are identified at birth through newborn hearing screening programs. We know that early identification and intervention of hearing loss results in extremely favorable outcomes, and we now have an opportunity to intervene earlier for children with UHL.

How Common is UHL?

The estimated incidence of unilateral hearing loss in newborns is 0.8 to 2.7 per 1,000 births. For school-aged children, the estimated incidence ranges from 30 to 56 per 1,000 children.

Prevalence estimates in school-aged children range from 10 to 15 (per 1,000) for mild bilateral hearing loss and 30 to 56 (per 1,000) for unilateral hearing loss

What are the Implications of UHL?

- **Loss of binaural summation:** two ears are better than one, meaning that the input from both ears together results in a 3-6 decibel gain and makes listening easier
- **Loss of squelch effect:** with two normal hearing ears, the brain has the ability to suppress sound/noise on one side while attending to a priority signal near the other ear. Our brains help separate out what we pay attention to in the world. With two typical hearing ears, we are able to prioritize the signal we wish to pay attention to.
- **Increased negative effects of noise:** listening in a noisy environment challenging for everyone, but is especially challenging for a child with UHL. Background noise can make it difficult for children with UHL to hear and understand what is said to them.
- **Difficulty localizing sounds:** the ability to identify the location of a sound source. Children with UHL may struggle to locate where a sound is coming from due to diminished access to sound bilaterally. Localization is especially important when listening in groups of people or noisy environments. Children who have difficulty localizing sound may miss some of the message. Localization is also important for safety. If your child is near the street, riding a bike, or even learning to drive, he or she may have trouble localizing a horn.
- **Ease of Listening:** listening is more difficult in most situations for a child with UHL, which can result in frustration and fatigue.
- **Additional impact of the head shadow effect:** “head shadow” is a term that describes the way in which a sound that has to go through or around the head in order to reach the ear. The head can account for a significant decrease of overall volume and creates a filtering effect. The filtering effects of head shadowing cause perception problems with distance and direction of a sound source.

But My Child Turns When I Call His Name!

Children with UHL may demonstrate responses that differ very little or in subtle ways from children with typical hearing. This can be confusing for parents and families. It is important to consider the difference between sound detection and sound comprehension. Children with UHL generally are able to detect a wide range of sounds; however, they have more difficulty clearly understanding what was said. With infants and toddlers, it can be near impossible to determine how clearly they heard a signal because they are too young to provide feedback. Did they hear every sound and word that was spoken, or did they hear enough of the signal to deduce meaning? For example, if you give the direction, "Go get your shoes," did your child hear and understand every word that was spoken, or did he simply hear "shoes" while you were standing with your coat and car keys and determine he needed to find his shoes in order to leave?

What are Some of the Risks of UHL?

- Children with UHL are at risk for decreased speech recognition in noise
- Children with UHL are at risk for developing delays in their speech and language skills
- Children with UHL are 10 times as likely to be held back at least one grade compared to children with normal hearing (Cho Lieu, 2004).
- In addition, children with UHL may experience academic difficulties including poor performance on basic skills tests, low teacher ratings of communication and attention, grade failure, and social emotional difficulties including low self-esteem, low energy, and high stress.
- Newborns who refer in one ear on the newborn hearing screening are at risk for bilateral hearing loss. Children with UHL need close monitoring of the better hearing ear to check for progressive hearing loss. (Marilyn Neault)

Will My Child Wear Hearing Technology?

When considering amplification for children with UHL, medical professionals must consider diagnostic factors and be able to determine the type, degree, and configuration of hearing loss.

The National Workshop on Mild and Unilateral Hearing Loss identifies the following as possible advantages of fitting children with UHL with amplification prior to 18 months of age:

- The potential for auditory deprivation may be minimized
- The impaired ear can have the opportunity to benefit from amplification in case the hearing loss is progressive or becomes bilateral
- The adjustment to wearing hearing technology may be easier on the child

The possible advantages of waiting until after 18 months of age to fit children with UHL with amplification:

- More reliable and precise audiometric information can be obtained
- Early word recognition abilities can be assessed
- Speech and language skills can be monitored
- Child is more mobile and the signal to noise ratio may be less optimal, thereby potentially increasing the need for amplification

What Type of Hearing Technology Might My Child Wear?

- **Hearing Aid:** A hearing aid is a device that is worn behind the ear and amplifies sound.
- **Softband Baha:** For children with unilateral microtia/atresia, a softband Baha may be worn. A softband Baha is a bone conduction hearing aid worn on a headband that transmits sound through bone and to the innermost part of the ear.
- **Cochlear Implant:** Historically, children with UHL were not considered cochlear implant candidates. Recently, however, cochlear implant candidacy requirements have changed and some implant centers are recommending a cochlear implant evaluation for children with UHL if the loss is in the severe or profound range (sometimes referred to as **single sided deafness**).

What Can I Do to Help My Child With UHL?

- When possible, limit background noise. Turn the television or radio off if no one is using them, position your child away from things that make noise such as a dishwasher or air vent, etc.
- Similarly, position your child so that you talk to him or her on the side of the better ear.
- Point to your ear when you hear certain sounds and say, "I hear that!" to help draw your child's attention to the sounds in his or her environment.
- Talk about your daily routine out loud to help expose your child to new words and phrases (e.g., "I'm making a sandwich right now"). Describe what your child is doing, seeing, etc by using rich vocabulary. Use repetition and help advance your child's vocabulary by introducing new words and concepts.
- If your child has hearing technology, perform daily checks and make sure your child keeps it on during all waking hours.
- Follow up with all audiological appointments as needed. If you have doubts or concerns about the recommendations you have been given, consider getting a second opinion. Recommendations regarding treatment for children with UHL can vary greatly across professionals in the field. Obtaining a second opinion may offer you another perspective and allow you and your family to make an informed decision about how you'd like to proceed.