

Unilateral Hearing Loss in Children

What is Unilateral Hearing Loss (UHL)?

Unilateral hearing loss (UHL) is hearing loss in one ear only, ranging from mild to profound in degree, while the hearing in the opposite ear is normal. If the hearing loss is profound in either ear, the hearing loss is named Single Sided Deafness (SSD).

What are some Causes and Types of UHL?

A hearing evaluation will specify the type (i.e., conductive, sensorineural, or mixed) and degree of the hearing loss. The exact cause of UHL varies among children and depends upon the medical/case history. Children can be born with a UHL (congenital) or acquire a UHL later in life. For more information about types and causes of hearing loss, see articles on this topic in this toolkit.

How does UHL affect a Child?



Because children with UHL have one ear with normal hearing, they typically hear the more clearly when in close proximity to the person speaking, and in a quiet environment. In less than ideal listening situations, children with UHL experience greater hearing difficulty than children with binaural (two ears) hearing.

Unilateral hearing loss (UHL) is having hearing loss in one ear only. Hearing in the opposite ear is normal.

A child with UHL may experience difficulties with the following tasks:

- Locating the source of a sound.
 - With one-sided hearing, children hear sounds in their better ear. Therefore, the child perceives that the sound is coming from the direction of the ear with normal hearing. As a result, the child might have to scan the environment visually to find the location of the sound source. This difficulty with locating (i.e., localizing) the sound source poses a safety risk for children with UHL. For example, children with UHL are unable to determine the direction of approaching cars that are out of their visual field. For that reason, children with UHL should be equipped with mirrors on their bicycles and taught the importance of using them.
- Understanding distant or soft-spoken speech.
- Listening within noisy or reverberant (echo-y) environments.
 - In these conditions, a child with UHL may have difficulty paying attention or following directions.
- Hearing and understanding speech directed towards the ear with hearing loss.
 - Due to this difficulty, the child should be seated appropriately in relation to the person speaking. The child's better hearing ear should be towards the talker.

Will UHL Affect a Child's Speech and Language Development?

The impact of UHL varies widely. Some children with UHL develop speech and language as expected. At the stage of language development where children start to put two words together (around two years of age), some children start to experience challenges.¹ Additionally, they may experience particular challenges in expressive and receptive language.² Receptive language means the ability to understand or comprehend language heard or read. Expressive

language means being able to put thoughts into words and sentences. Early intervention services for UHL may help reduce these challenges.

Will UHL Affect a Child's Academic Performance?

Many children with UHL do well academically. However, children with UHL typically have more difficulties in language-based subjects, such as reading, writing, and spelling, in comparison to their peers with typical hearing.³ Children with UHL are more likely to repeat a grade level. In addition, a typical learning environment is challenging for children with UHL. Parts of what the teacher says may be missed because of background noise and distance. As a result, a child with UHL might need to focus more of his or her energy on listening instead of learning the concept. Please review the *Communication Strategies* section in this article to learn how children with UHL can be helped in their learning environments.

What is the Psychosocial Impact of UHL?

People involved in the child's life should be informed of the UHL to provide communication, safety and psychosocial support.

UHL can be deceptive. Children with UHL generally hear well in quiet situations when in close proximity to the talker. In adverse listening conditions, however, they experience greater difficulties than their peers with typical hearing. As a result, children with UHL may be accused of *selective hearing* (only hearing/listening to what he or she wants to hear). In reality, it is because their ability to hear well is situational - in other words, it depends on the situation (i.e., noisy vs. quiet environment, distant vs. close speech, etc.). Children with UHL must place more energy on listening, which becomes tiring. Their fatigue can be mistaken for being uncooperative, inattentive, or unmotivated.⁴ Furthermore, a child with UHL might exhibit other behavioural issues (i.e., "act out") due to the frustration that she experiences in adverse listening conditions.⁵ The people involved in the child's life should be informed of her UHL and these possible psychosocial issues. The list of

communication strategies should also be shared with these individuals so that those involved in the child can also put the effort in to help the child hear more readily, just as the child must put additional effort in to hear in challenging listening environments.

What are some Special Considerations for a Child with UHL?

Anyone with UHL should use hearing protection in environments with high noise levels, such as music concerts or when operating loud machinery. Hearing protection is especially crucial for a child with UHL in order to prevent additional hearing loss. An audiologist can recommend appropriate hearing protection devices for a child with UHL.

Another factor to consider is middle ear fluid and/or infections (i.e., otitis media), which can result in a temporary reduction of hearing. Middle ear fluid and/or infections should be aggressively managed to reduce the impact on a child's UHL. The child's primary care physician should be consulted if middle ear fluid is suspected in the child's ears.

Can a Child with UHL Benefit from Amplification?



A child with UHL may benefit from using one of the following devices. An audiologist and/or ENT will discuss which option will be the most appropriate for a child with UHL, if any.

Discuss your child's amplification options with your ENT and audiologist.

- **Hearing Aid** - Depending on the type and degree of UHL, a hearing aid may be appropriate. A hearing aid might help a child with UHL hear environmental sounds and understand speech in her impaired ear. If a child has SSD, a CROS (contralateral routing of signal) hearing aid may be an option. With a CROS, a transmitter on the deaf ear send signals to a hearing aid worn on the hearing ear. Please refer to your audiologist for more information on this technology.

- **Osseointegrated Auditory Device** - This device, more commonly known as a BAHA (Bone Anchored Hearing Aid), is either worn on a soft headband or surgically implanted in the bone behind the impaired ear. The microphone on the BAHA collects incoming sound. The processor then transmits the information to the child's inner ear(s) by vibrating the skull bone (i.e. bone conduction). BAHA candidates include children with conductive or mixed hearing losses or single sided deafness (SSD). Effectiveness of a BAHA for SSD in children in some cases (i.e. profound, sensorineural UHL or SSD) is unclear. Please refer to your audiologist for more information.
- **Remote Microphone Hearing Assistance Technology (RM-HAT)** - RM-HAT might help a child with UHL overcome the difficulties experienced in challenging listening environments, such as excessive background noise, reverberation (echo) and lack of proximity to the speaker. See the *Assistive Technology (AT)* section of this toolkit for more information.

What Communication Strategies are Helpful?

Strategies to use at Home

- Be mindful of the position of a child with UHL when you are conversing with her, such as at the dinner table or when riding in the car. Ensure that her better ear is towards the speaker and away from sources of noise (e.g., dishwasher, radio, TV, open windows, fans, etc.).
- Do not talk to a child with UHL from a different room (move closer!).
- Reduce the amount of background noise in the home.
- Reduce loud environmental noises whenever possible. Turn off loud appliances (e.g., dishwasher, washing machine, dryer, TV, radio, etc.) when speaking to a child with UHL or when she is working or focusing on schoolwork.

- Place thick curtains on the windows (to absorb sound and reduce the 'echo' in the room).
- Place carpet on the floors and sound-absorbing textiles on the walls.
- Change light bulbs or fixtures if they are buzzing.
- Ensure that the room has good lighting and is free of reflective materials and glare so that a child with UHL can see all visual cues.

Strategies to use at School

- Information about UHL should be shared with the child's intervention or educational team. The team should be informed of the potential impact of UHL on development and behaviour, as well as the listening challenges she may experience in learning environments. Continual communication with the team will ensure that she is receiving appropriate and effective accommodations in her learning environment in order to succeed academically. Materials are available from Alberta Hands & Voices' lending library, including presentation materials on UHL to share with your child's team.
- Preferential seating is critical. A child with UHL should be seated near the teacher, with his good ear directed towards the teacher at all times. The child should be seated away from noise sources such as fans, media equipment, windows, and doorways. He should be able to easily turn and face his peers during discussions. Keep in mind that ideal seating may need to change depending on the activity.
- Implement the buddy system. For example, older children with UHL should be allowed to copy class notes from another classmate. A younger child may benefit from a peer who can guide him or her through daily activities.
- Whenever possible, auditory (sound) information should be supplemented with visual aids (e.g., pictures, an overhead projector, or a whiteboard/SMART board) and written materials to help reinforce concepts or directions.

- Small group or individual instruction time in a quiet environment may be beneficial.
- Reduce background noise in the environment.
 - Cover the legs of chairs and desks with felt, tennis balls, or HushUps.
 - Keep the windows and hallway doors closed.
 - Change light bulbs or fixtures if they are buzzing.
 - Turn off loud equipment (e.g., overhead projectors, computers, etc.) in the room when not in use.
 - Ensure that the room has good lighting and is free of reflective materials and glares so that a child with UHL can see all visual cues.

Strategies to use in all Settings

- Be aware that a child with UHL may have difficulty locating the source of a sound. She may not be able to tell from which side of the room someone is speaking unless she can see the speaker.
- Maintain eye contact. Be aware of your rate of speech; do not speak too fast or so slowly that your words are over-exaggerated.
- Ensure that you have the child's attention before speaking. Use a cue or a signal, such as a tap on the shoulder, to signify that she needs to focus on what will be said.
- Give information/instructions in short, concise steps.
- Check for understanding regularly by asking the child to summarize what was said.
- If your message was not understood, do not keep repeating it verbatim. Instead, rephrase it.
- Turn on captioning when watching TV or movies.

- If a hearing aid and/or assistive technology (FM or DM technology) has been recommended, encourage its routine use.
- The importance of self-advocacy should be emphasized early on. A child with UHL should be encouraged to ask for clarification if she does not understand or misses what was said. She should also be encouraged to tell the teacher if her hearing aid or assistive technology is not functioning appropriately. See the *Encouraging Your Child to Self-Advocate* article in this toolkit.
- Those involved closely in the child's life should make efforts to optimize the child's listening environment by using the strategies in the previous lists.

Additional Resources

Other articles also available from the Alberta Hands & Voices Lending Library

Accommodations for Students with Hearing Loss, Supporting Success for Children with Hearing Loss

<http://successforkidswithhearingloss.com/relationship-hl-listen-learn/accommodations>

References

¹ Kiese-Himmel, C. (2002). Unilateral sensorineural hearing impairment in childhood: Analysis of 31 consecutive cases. *International Journal of Audiology*, 41, 57-63.

² The Colorado Home Intervention Program (2005). Services to children with unilateral hearing loss. Retrieved from http://www.csdb.org/Early%20Education/m_unilateral_loss.html.

³ Culbertson, J.L. & Gilbert, L.E. (1986). Children with unilateral sensorineural hearing loss: Cognitive, academic, and social development. *Ear and Hearing*, 7(1), 38-42.

⁴ Keller, W.D. & Bundy, R.S. (1980). Effects of unilateral hearing loss upon educational achievement. *Child Care Health Development*, 6, 93-100.

⁵Stein, D.M. (1983). Psychosocial characteristics of school-age children with unilateral hearing loss. *Journal of Academy of Rehabilitative Audiology*, 16, 12-22.

-Adapted from [*Unilateral Hearing Loss in Children, Best Practice Guidelines for Professionals, University of Wisconsin*](#)