Unilateral Hearing Loss

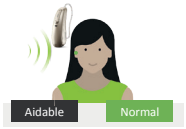
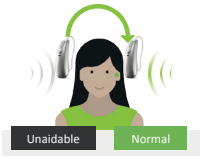
Unilateral hearing loss (UHL) refers to any degree of hearing loss in one ear with the contralateral ear presenting with normal hearing.[1] Audiometric results from the Canadian Health Measures Survey revealed that 40% of adults have at least a slight hearing loss, with 37% of that group presenting with a UHL.[2] Depending on the degree of hearing loss, a conventional hearing aid or device could be used for the poorer ear. This is referred to an aidable hearing loss.

Unaidable UHL is characterized as a profound sensorineural hearing loss with poor word discrimination in one ear and normal hearing in the other. It has also been referred to as single-sided deafness, profound UHL, and limited useable hearing unilaterally.[3,4]

Facts & Stats

- Individuals with UHL are more likely to have difficulties following conversations in noise and report tinnitus present than those with bilateral hearing loss.[5]
- UHL has been shown to have negative impacts to one's mental and emotional wellbeing.[6,7]
- Individuals with unaidable UHL have been associated with withdrawal from and within social situations.[6,8]
- Single sided deafness negatively impacts the ability to discriminate between interaural time and level differences, which creates challenges with sound localization and speech perception in noise.[4,6,9,10]
- Increased listening effort required by UHL can lead to high levels of auditory fatigue.[4,6]

Solutions

Aidable hearing loss	Traditional hearing aid Provides audibility of sound to the side with hearing loss so that one can listen, communicate, and participate in everyday life.	
Unaidable hearing loss	Contralateral Routing of Signal system (CROS) CROS microphone is worn on the patient's unaidable ear, picks up sounds and voices, and wirelessly transmits them in to the hearing device on the normal hearing side.	
Aidable and unaidable hearing loss	Remote microphone systems Speech is picked up by a microphone and is transmitted directly into the hearing device to minimize the effects of distance and noise.	

What You Can Do To Help

Unilateral hearing loss can occur from birth or develop later in life; sometimes suddenly and sometimes gradually. Even with the perception of handicap, hearing device for UHL usage is very low.[11] CROS is one of the solutions for unaidable UHL. It is a non-invasive approach to improve speech intelligibility in noise when speech is presented to the unaidable side. There is growing evidence that highlights improved ease of communication and sound quality with a CROS system.[4,12]

In addition, the use of remote microphone systems has shown to provide benefits and significantly improve speech recognition in higher noise levels for children and adults with unilateral hearing loss.[13, 14,15] Creating awareness and encouraging seeking aural rehabilitation from a hearing care professional could help to minimize the negative impacts of UHL.

References

1. Bagatto, M., DesGeorges, J., King, A., Kitterick, P., Laurnagaray, D., Lewis, D., Roush, P., Sladen, D. P., & Tharpe, A. M. (2019). Consensus practice parameter: audiological assessment and management of unilateral hearing loss in children. International Journal of Audiology, retrieved from https://www.tandfonline.com/doi/full/10.1080/14992027.2019.1654620, accessed January 5, 2022.
2. Statistics Canada: Health Fact Sheets Hearing Loss of Canadians, 2012 to 2015, (2016). https://www150.statcan.gc.ca/n1/pub/82-625-x/2016001/article/14658-eng.htm, accessed January 10, 2022.
3. Oosthuizen, I., Picou, E.M., Pottas, L., Myburgh, H.C., & Swanepoel, D.W. (2021). Listening effort in school-aged children with normal hearing compared to school aged children with limited useable hearing unilaterally. American Journal of Audiology, Vol 30, 309-324. https://doi.org/10.1044/2021_AJA-20-00082
4. Snapp, H. A., & Ausili, S. A. (2020). Hearing with One Ear: Consequences and Treatments for Profound Unilateral Hearing Loss. Journal of clinical medicine, 9(4), 1010. https://doi.org/10.3390/jcm9041010
5. Pierzycki, R.H., Edmondson-Jones, M., Dawes, P., Munro, K.J., Moore, D.R., Kitterick, P.T. (2020). Associations between hearing health and well-being in unilateral hearing impairment. Ear & Hearing, 42(3): 520-530. doi: 10.1097/AUD.0000000000000969
6. Lucas, L.,Katiri, R., Kitterick, P.T. (2017). The psychological and social consequences of single-sided deafness in adulthood. International Journal of Audiology, 57: 21-30. doi:10.1080/14992027.2017.1398420.
7. Wie, O.B., Pripp, A.H., Tvete, O. (2010). Unilateral deafness in adults: effects on communication and social interaction. Ann Otol Rhinol Laryngol, 119 (11): 772-781.
8. Galloway J, Zhang V, Marnane V, Hou S, Stewart G, Bardy F.(2019). The impact of unilateral hearing loss on adult life. Hearing Review, 26(4)[Apr]:10-14.
9. Stewart, E. and Woodward, J. (2021). Out of the [Head] Shadow: A systematic review of CROS/BiCROS literature. Hearing Review, 28(8): 22-25.
10. Speech-Language & Audiology Canada. (2020). SAC Position Paper on Unilateral Hearing Loss in Children. Retrieved from https://www.sac-oac.ca/sites/default/files/resources/SAC-OAC-Unilateral-Hearing-Loss-in-Children-EN.pdf, accessed January 11, 2022.
11. Golub, J.S., Lustig, L.R., Lalwani, A.K., Lin, F.R. (2018). Prevalence of adult unilateral hearing loss and hearing aid use in the United States. Laryngoscope, 128(7): 1681-1686. https://doi.org/10.1002/lary.27017
12. Stewart E, Woodward J. (2021).Out of the [head] shadow: A systematic review of CROS/BiCROS literature. Hearing Review, 28(8):22-25.
13. Rance, G. (2018). Remote microphone listening devices for children and adults with unilateral hearing loss. Phonak Field Study News, retrieved from https://www.phonakpro.com/content/dam/phonakpro/gc_hq/en/resources/evidence/field_studies/documents/fsn_remote_microphone_listening_devices_for_children_and_adults_with_uhl.pdf, accessed on January 14, 2022.
14. Appleton-Huber, J. (2019). Roger improves speech recognition in noise for cochlear implant users with single-sided deafness. Phonak Field Study News, retrieved from https://www.phonakpro.com/content/dam/phonakpro/gc_hq/en/resources/evidence/field_studies/documents/roger_improves_speech_recognition_in_noise_for_cochlear_implant_users_with_singlesided_deafness.pdf, accessed on January 14, 2022.
15. Thibodeau, L. & Anderson, S. (2019). Benefits in speech recognition in noise with wireless remote microphones in a simulated group setting for adults with hearing loss. Phonak Field Study News, retrieved from https://www.phonakpro.com/content/dam/phonakpro/gc_hq/en/resources/evidence/field_studies/documents/FSN_BtB_Roger_group_setting_speech_recognition_benefit_210x280_EN_V1.00.pdf, accessed on January 14, 2022.