Medical Audiology Services

Hear the best you can!

Hearing (re)habilitation Cochlear Implant and Bone Conduction Implant (Baha)

By Dayse Távora-Vieira M.Aud.SA., B.Sp.Path., BSc Physio., BSc.Ng

Cochlear Implant

Prevalence of hearing loss increases with age. Hearing impairment in the elderly population may lead to social isolation, depression and consequently a decrease in the quality of life.

A hearing aid is the easiest method to assist the elderly hearing-impaired population. However, an important sector of this population has a degree of hearing loss that does not allow them to benefit from a conventional amplification approach. Cochlear implants should be considered as an option for hearing rehabilitation in the elderly with severe bilateral sensory neural hearing loss and age itself should not be considered as a contra-indicating factor. This is assuming no other probable cause for deafness has been diagnosed.

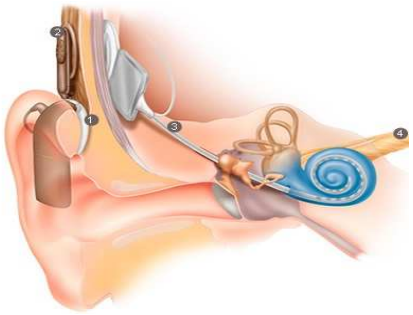
Advances in surgical technique, improvement in technology, and experience from implant centres have contributed to broaden cochlear implant candidacy criteria. This has lead to the understanding that early implantation may increase the likelihood of better outcomes including easier adjustment to the implant.

Cochlear implant technology is only the beginning of hearing rehabilitation. Counselling, auditory training and communication strategies are key components in optimising the benefits of the device. The application of this rehabilitation improves outcomes and accelerates the recipient's progress.

Similar to children, adults need to learn to hear through the implant and to recognize sounds that might not have been heard for a long time or never heard at all. Auditory training should be customized for the patient considering their particular needs as well as their short and long-term goals.

Improvement in hearing facilitates better communication skills and greater independence. It also has a positive impact on the individual's self-esteem at a personal and social level.

How a cochlear implant works:



A **sound processor (1)** captures sound and turns it into digital code. The **coil** (2) transmits the sound to the **implant** (3). The **implant** converts the digitally-coded sound into electrical impulses and sends them along the electrodes placed in the inner ear.

When to refer a patient for CI assessment:

Patients should be referred when displaying a bilateral moderate to profound sensory neural hearing loss and receive little or no benefit from hearing aids.

Patients with a mild to moderate hearing loss in the low frequency region and profound hearing loss in the high frequencies, who do not receive much benefit from hearing aids may be a candidate for combined acoustic-electric stimulation.

Baha - Bone Conduction Implant

Baha or bone conduction implant may represent an adequate hearing rehabilitation approach for patients with conductive or mixed hearing loss who cannot wear conventional hearing aids. This includes those patients suffering from chronic otitis media, congenital atresia, cholesteatoma, otosclerosis, etc. In addition, patients with profound unilateral deafness have been successfully implanted with Baha for the last few years.

Baha bypasses the external and middle ear, providing direct sound transmission to the inner ear.

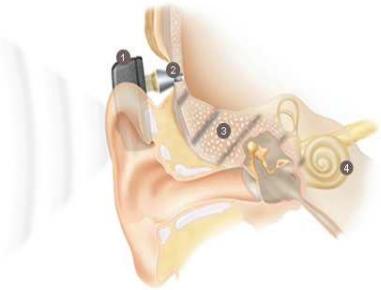
About the Author

Dayse Távora-Vieira is a senior audiologist at Medical Audiology Services.

Dayse is one of Perth's most highly regarded clinical and research audiologists. She gained her Masters degree in Clinical Audiology at the University of Franca, Sao Paulo, Brazil. Her clinical and research interests include tinnitus management and implantable hearing devices. She has published many articles in peer reviewed journals and presented her work at international conferences. She has recently completed a book chapter on "Textbook of Tinnitus Treatment".

The benefits of Baha include lack of occlusion of the ear canal, comfort and a natural sound. Baha candidates also have an opportunity to trial the sound processor on a headband before surgery.

How Baha works:



A **sound processor (1)** captures sounds and converts them into vibrations. A **connecting abutment (2)** transfers the sound vibrations from the sound processor to the titanium implant**.** The implant is placed in the bone behind the ear where it fuses with the bone to form a very strong bond. The implant transfers the sound vibrations through the bone **(3)** directly to the cochlea **(4),** bypassing the outer or middle ear completely.

When to refer for Baha assessment:

* Anatomic malformation of external and/or middle ear.
* Chronic middle ear conditions that preclude usage of conventional hearing aids.
* Unilateral deafness.

Medical Audiology Services
51 Colin Street West Perth WA 6005
P: 08 9321 7746 **www.medicalaudiology.com.au** **F: 08 9481 1917**