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### 1. Implantable bone conduction hearing devices

Bone conduction implants have been used widely and successfully for several years by people who cannot wear conventional hearing aids for various reasons, including those with hearing loss in one ear only. These types of devices use your body's natural ability to send sound through the bone directly to the hearing part of your healthy ear. The newest bone conduction implant arrived in Australia this January. It is called **BONEBRIDGE** (Med-El, Austria)

**Bonebridge** consists of 2 parts:

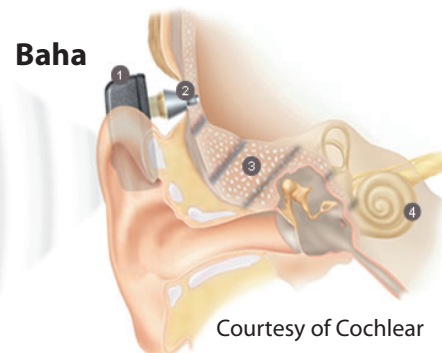
1) An audio processor which is worn externally, and 2) An internal implant. The audio processor, which is held in place by magnetic attraction, records the sound and converts it into signals which are transferred to the implant. The implant is placed in the bone and converts these signals into mechanical vibrations, that are transmitted to the inner ear on the healthy side.

In addition to unilateral deafness, Bonebridge aims to assist people with conductive or mixed hearing

loss as a result of malformation of the ear canal and/or middle ear, chronic external ear conditions, etc. Among the greatest advantages of Bonebridge is that the implant is placed under intact skin. It is cosmetically appealing, easy to use and the surgery is a short and gentle procedure.



There are two more options of implantable bone conduction hearing devices. **Alpha 1 (Sophono, USA)** has also recently arrived in Australia. The implant is placed under the skin and the speech processor is attached using magnetic connection. Quite well known, **Baha (Cochlear, Australia)** has been used for several years for those who cannot wear conventional hearing aids. One difference between Baha and the other two devices is that Baha uses an abutment that protrudes out of the skin.



## 2. What's New in The World of Hearing Research?

### *Bringing back hearing following noise exposure*

Aging, noise, some medications and infections can damage specialised hair cells in the inner ear, causing permanent hearing loss. Hearing aids and cochlear implants help, but unfortunately do not restore normal hearing.

Contrary to previous thinking that such damage is irreversible, scientists from Harvard University and Massachusetts Eye and Ear Infirmary showed that it's possible to partially restore hearing in adult mice by injection of a drug ( $\gamma$ -secretase inhibitor). Mice that had their hearing damaged through loud noise were given the drug which turned other cells into new hair cells. Furthermore, the new hair cells worked just like normal hair cells, resulting in better hearing!

While we are a long way off restoring hearing in humans in this way, this study is an important early step towards regenerating damaged hair cells.

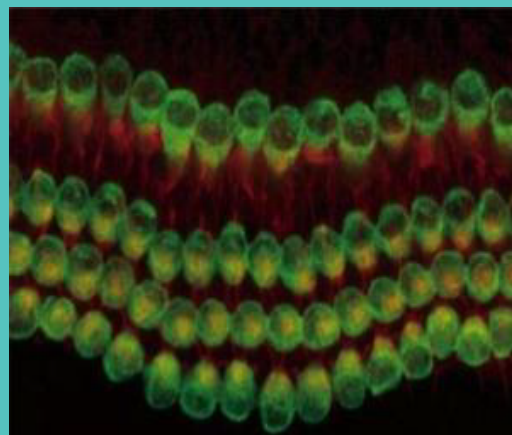
Mizutari, K., Fujioka, M., Hosoya, M., Bramhall Hirotsuka, N., Okano, J., Okano, H., Edge, A. (2013) Notch Inhibition Induces Cochlear Hair Cell Regeneration and Recovery of Hearing after Acoustic Trauma. *Neuron*, 77. 58.

### **Cochlear Implant support group meeting:**

**Date:** April 4 **Time:** 3:00 - 5:00 PM **Venue:** Subiaco Art Center

This meeting is a great opportunity to meet people who are cochlear implant users. You can share experiences, common concerns, coping skills, etc. Contact us on **9321 7746** if you would like to attend.

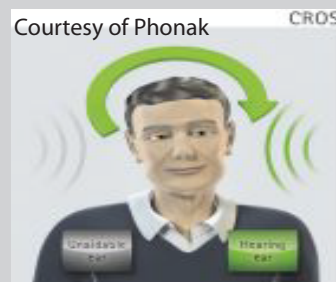
## Healthy ear hair cells



www.sciencedaily.com

## 4. CROS wireless hearing aids:

Those patients with unilateral hearing loss who do not wish to have any surgical procedure, discussed in Section 1, may also benefit from a CROS wireless hearing aid. This is a device that consists of a transmitter that sits in the non-hearing ear and a hearing aid that sits in the better hearing ear.



The transmitter captures sound and transfers it to a hearing aid/receiver. The advantage of CROS aid is that it does not require a surgical procedure and it still allows you to hear the sounds coming from the deaf side. This is also an option for people with asymmetrical hearing loss, i.e., one ear is much poorer than the other ear and cannot achieve much benefit from a conventional hearing aid.

## 3. Hearing loss and brain decline

In a recent study published in the journal *JAMA Internal Medicine*, researchers in U.S. found that adults with hearing loss are at a greater risk of dementia than those with good hearing. The level of hearing loss was directly linked to the level of cognitive decline in older adults; those with more severe hearing loss developed problems with memory and problem solving on average 3.2 years before those with good hearing. The researchers suspected that the link was caused by isolation and inactivity which sets in with hearing problems.

So, keeping our hearing good through hearing preservation and good early audiological help may be important not only to our communication abilities, but also to our brains!

Lin, F & Polley, D. (2013). Hearing loss in Older Adults: Who's listening? *JAMA Internal Medicine*, 307(11):1147-1148.

**Services provided by Medical Audiology: Adult and paediatric hearing assessments; cochlear implant and Baha; Balance assessment; hearing aids, tinnitus management; protective earplugs; pre/post employment; assistive listening devices.**

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If you know anyone who might enjoy our newsletter or if you would like to be removed from our mailing list, please let us know. **Phone 9321 7746 or email [reception@medicalaudiology.com.au](mailto:reception@medicalaudiology.com.au)**