

Information for Parents



What is a bone conduction hearing aid?

A bone conduction hearing aid sends sound directly to the cochlea (inner ear) by vibrating the bones of the skull. This means the sound transmission bypasses any blockage in the middle or outer ear; in other words it overcomes a conductive hearing loss.

The output of bone conduction aids is restricted compared with air conduction hearing aids. They work best if the cochlear (sensorineural) part of the hearing loss is normal, mild or moderate in degree.

When, and to whom are bone conduction hearing aids fitted?

Bone conduction hearing aids are fitted to children who have a conductive hearing loss and who are unable to wear or benefit from a conventional air conduction hearing aid.

For example, children who have:

- Ear canal atresia (no ear canals) and are therefore unable to wear an earmould in their ear.
- Microtia (very small ears and ear canals) and are unable to obtain a satisfactory fitting earmould.
- Persistently discharging ears which interfere with successful use of an air conduction hearing aid.
- An ear condition that is made worse when the ear is closed off with earmoulds.

More recently, bone conduction aids have been proposed as an option for children who have normal hearing in one ear and no useful hearing in the other ear (total unilateral hearing loss).

Benefits and limitations of bone conduction hearing aids

With a bone conduction hearing aid the bone conductor vibrator vibrates the entire skull, sending sound to each cochlea. For children who have good cochlear (sensorineural) hearing in both ears, this means that sound will be heard by both ears, and not just by the ear behind which the vibrator is placed. Where there is a total hearing loss in one ear a bone conduction hearing aid transmits sound to the good ear by vibrating the skull and stimulating the cochlea on the better side. The interactions become more complex when each ear has different degrees of sensorineural hearing loss.

The properties of bone conducted hearing mean that the fitting of a bone conduction hearing aid will not always have the same outcome as fitting a conventional air conduction hearing aid to an ear. This is because in order to perform complex listening tasks, the brain relies upon analysing separate signals from each ear to determine the direction of a sound source (localisation) and understand speech in the presence of background noise. Bone conduction hearing aids stimulate both ears' cochleas at the same time therefore some of these important cues that the brain needs are reduced or lost. The impact that this has on an individual's ability to understand and hear will be determined by many factors including the nature and degree of their hearing loss.

Bone conduction hearing aids available from Australian Hearing

Australian Hearing selects bone conduction hearing aids for our fully subsidised range that:

- Meet the primary communication goals of children of particular age groups.
- Have features for which there is research evidence to suggest predictable benefit for most children.

Bernafon Extreme 121 bone conductor

(Available to all children)



Extreme 121 bone conductor which is worn either on a steel spring headband or can be threaded into a soft headband.

The most commonly fitted bone conduction hearing aid consists of a conventional behind the ear hearing aid that is connected to a vibrator, and both are worn on a spring steel headband or can be fitted into a modified soft head band. The headband holds the vibrator firmly on the skull so that sound is transmitted effectively to the cochlea.

In some cases the hearing aid, cable and vibrator can be placed inside a baseball cap to improve the appearance of the aid or they can be placed in a soft headband for improved retention on small children.

Contact Mini bone conductor

(Available fully subsidised to children under 5 years of age)



Contact Mini bone conductor in a soft headband. It can also be placed on a plastic headband.

This device is a small hearing aid that allows it to be worn more securely by young children, thus allowing them consistent access to the amplification.

It is only suitable for children whose sensorineural hearing thresholds are in the normal or mild hearing loss range.

The Contact Mini is available to older children as a "top up" aid.

Softband Baha™

(Available as a top-up device)



Baha™ Softband.

Image courtesy of Cochlear Ltd.

Current data suggests that the hearing benefits of a Softband Baha™ are equivalent to those available through Australian Hearing's standard range.

Clients who wish to obtain this aid for the cosmetic benefits that it offers may choose to purchase it as a top up aid.

Baha™ for unilateral hearing loss

(Available as a top-up device)

There is a growing interest amongst ENT surgeons and some clients about the applicability of the Baha™ for unilateral hearing loss.

Australian Hearing does not provide a Baha™ for unilateral hearing loss as there is insufficient evidence to support the Baha™ or bone conduction aids in general as being a better option than CROS aids (a hearing aid that sends sound to the better ear, with a satellite microphone picking up sound on the hearing impaired side). Those clients who wish to try a bone conduction aid for unilateral hearing loss do have access to our fully subsidised range as appropriate for their age.

The Baha™ has some potential benefits, but also potential disadvantages. The Baha™ or bone conductor would enable a client to detect speech on the hearing impaired side, however by the same token it allows the client to detect background noise on that side so while there might be some gains to be had in improved speech detection ability in quiet, there will also be losses in the client's speech perception ability in noise.

A bone conduction hearing aid transmits sound to the good ear by vibrating the skull and stimulating the cochlea on the better hearing side. This means that the user is not able to take advantage of the binaural information that the brain uses to improve auditory processing. It also means that the client is

likely to perceive the signal as being presented to their better ear. Some clients may notice a difference in sound quality which helps them to know when a speaker is on the same side as their Baha™.

Bone Anchored Hearing Aid (Baha™)



Baha™ and its usual location on the head.

Image courtesy of Cochlear Ltd.

The Baha™ was originally developed to be used in conjunction with a titanium fixture that is surgically placed in the skull behind the ear. For children who are too young or are unsuitable for surgery the aid can be clipped to a specially-designed elasticised headband (Softband).

When the Baha™ is worn with the titanium implant it has several benefits compared to a conventional bone conduction hearing aid, including the ability to aid greater degrees of sensorineural hearing loss, improved comfort and appearance. Clients also report improved clarity of hearing in both quiet and noisy situations.

[Children who are over 5 years old and are suitable for Baha™ surgery can apply for a fully subsidised Baha™ through our special request program.](#)

Australian Hearing has a special program that supplies the Baha™ for children over 5 years of age who have no other option than to wear a bone conduction hearing aid for many years, and who meet other criteria including being medically fit for surgery.

Research to date indicates a higher degree of fixture failure for children under 5 so younger children are not currently eligible for a fully subsidised Baha™. Further details are provided in a separate document.

About Australian Hearing

Australian Hearing is the largest hearing services provider in Australia, and offers a range of leading hearing aid technology to provide eligible people with the best possible hearing solutions to manage their hearing impairment and deliver a better quality of life.

For full details of our eligibility criteria visit www.hearing.com.au or call 131 797.

To find out more about our products and services, call **131 797**.

Visit **www.hearing.com.au** to find a centre located near you.

If you require an interpreter, call 131 450 (TIS National) and ask to be connected to Australian Hearing. This is a free service.

Arabic

لخدمات الترجمة الشفهية، يرجى الاتصال على الرقم أعلاه.

Greek

Για υπηρεσίες διερμηνεία, παρακαλούμε επικοινωνήστε με τον πιο πάνω αριθμό.

Italian

Per i servizi interpreti, chiama il numero indicato sopra.

Macedonian

За преведувачки услуги ве молиме јавете се на горе наведениот број.

Serbian

За услуге тумача, молимо позовите горњи број.

Simplified Chinese

如需口译服务，请拨以上号码

Spanish

Para solicitar los servicios de un intérprete sírvase llamar al teléfono que se indica arriba.

Traditional Chinese

如需口譯服務，請撥以上號碼

Turkish

Tercümanlık hizmetleri için lütfen yukardaki numaya ile ilişkiye geçin.

Vietnamese

Muốn sử dụng dịch vụ thông dịch, xin gọi số điện thoại ở trên.