

Bone Conduction Hearing devices

What are they?

As their name suggests, these are specialist hearing aids which make use of the skull bones of the wearer to enable them to hear sounds. They are fitted to deaf children for whom regular 'air conducting' hearing aids would be unsuitable.

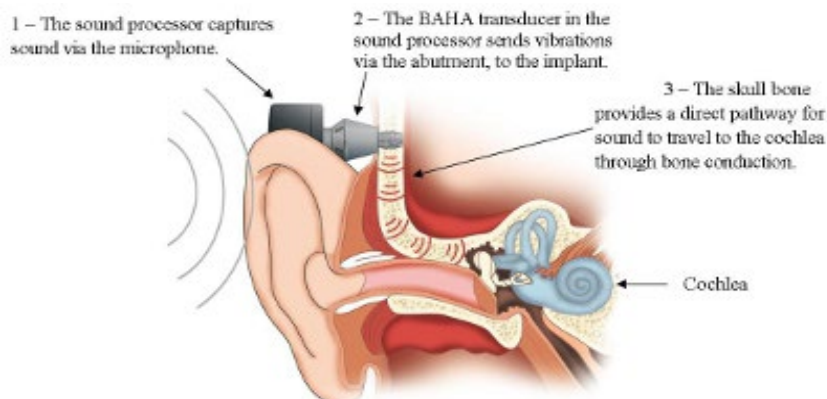
Often children will only be fitted with one bone-conducting aid especially if their deafness is one-sided (unilateral). Increasingly however, children are now given two as this can help them especially with localising where a sound is coming from.

Various manufacturers produce these aids but the principle behind them is identical. In Hertfordshire the vast majority of children use 'Baha' aids from Cochlear, but there are a few children who use the 'Ponto' system from Oticon.

Why are they prescribed?

Some children have useful hearing in their inner ear (cochlear) but sounds are blocked from reaching this by problems with their middle or outer ear. This 'conductive' deafness can be caused by a variety of medical conditions and some are permanent. This is certainly the case with microtia/atresia, where the outer ear or ear canal is malformed or missing. In such cases an alternative way to get the sound through to the inner ear is needed and bone-conducting hearing aids often provide the solution.

How do they work?



Sounds enter the microphone on the hearing aid. These sound waves are changed into stronger vibrations which travel through the bones of the skull and reach the inner ear (cochlear) which uses them to send signals to the brain where hearing results.

The system relies upon a good connection between the hearing aid and the skull. This can be achieved by:

- Attaching the hearing aid to a soft band (see below)
- A surgical procedure which involves inserting a titanium screw or magnet in the mastoid bone. The hearing device is then attached to this.

Such implant sites may need regular, ongoing care from the child's family to prevent infection.

'Softbands' for younger children.

Surgical implants into the skull are not possible with children under the age of four or five years and yet it is vital that they have good access to sound from as early as possible. A solution to this is for the aid(s) to be worn on a tight-fitting, soft band around their heads. In this case the aid clips onto the band and is held in place pressing directly onto the mastoid bone behind the ear (see picture below). If the band slips it will need to be carefully repositioned to ensure the child is receiving the maximum benefit from the aid(s).



Using the hearing aid

There are naturally variations between different makes and models so refer to online guides (see websites below) or ask parents or your visiting Teacher of the Deaf for exact operating details. However the following general points would apply in most cases:

- Particular care is needed when removing or replacing the aids from the fittings.
- Parents need to supply the school with spare batteries.
- Usually the volume control buttons are deactivated for young children.
- Radio aid systems can be used with the aids, following adjustments being made at the hospital, but usually entail the selection of specific programs on the aids each time they are used.

Fault finding

Common problems which can occur include:

- 'Buzzing' noises if the aid is too close to an object, usually clothing. Adjust collars etc. as required.
- The child becomes unresponsive (or reports the aid is not working!). Try changing the battery.
- The child reports (or you suspect) that the radio aid system is not working. Has the correct program been selected on the aid?

If there are still problems or the child is unhappy with the sound or is less responsive than usual, report the problem to the parents who can listen through the aid with the equipment provided to them. The aid may need to be repaired by the issuing hospital.

Deaf-friendly teaching

As with all hearing aids, bone-conducting aids will only provide part of the help the deaf child in your class will need to make good progress. Your visiting Teacher of the Deaf will discuss with you 'deaf friendly' teaching ideas including correct positioning, lighting, the use of visual aids and limiting background noise. These strategies, combined with the correct use of well-maintained aids, will ensure that the child is given the best possible chance to be fully included at school.

Useful websites

www.earfoundation.org.uk

www.cochlear.com

<https://www.medel.com/hearing-solutions/bone-conduction-system>

www.ndcs.org.uk

www.oticonmedical.com

