

**Bone Anchored Hearing Aid  
CROS Hearing Aids**

# **Paediatric Hearing aid management for single sided deafness**

Information for patients, relatives and  
carers

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# Glossary

**Baha:** Bone anchored hearing aid

**Cochlea:** Part of the inner ear that converts mechanical energy (vibrations) into nerve impulses sent to the brain, also known as the organ of hearing.

**CROS:** Contra lateral routing of signal

**ENT:** Ear, nose and throat

**Sensorineural deafness:** A permanent hearing as a result of damage to the hair cells within the cochlea or the hearing nerve (or both)

**SSD:** Single sided deafness

**Unilateral hearing loss:** Only affecting one ear

# **Advice for patients**

## **Who is a candidate for a bone anchored hearing aid (baha)?**

Suitability depends on the type of hearing loss, and whether an ENT consultant has recommended this is the best course of management.

## **Single Sided Deafness (SSD)**

This type of hearing loss can be due to several causes such as trauma, a tumour on the hearing nerve, and congenital unilateral sensorineural hearing loss in one ear.

## **What can we do for patients with this type of hearing loss?**

We have three options a baha (bone conduction hearing aid), a CROS (contralateral routing of signal) hearing aid, or monitoring of unilateral hearing loss.

## How bone conduction works

Bone conduction sound is conducted through the bone directly to the cochlea, bypassing the outer and middle ear. The baha system uses this natural process by amplifying the sound signals, and converting them into vibrations, and transmitting them to an implant in the bone, or softband.

**The baha attract system:** This transmits the sound vibrations to the inner ear through a magnetic connection between the sound processor and the implant under the skin. The benefit is that there is no abutment penetrating the skin. When patients are considering this option the patient needs as near normal bone conduction as possible, ideally all the frequencies need to be better than 20db. Results with BC direct have shown poorer performance at 4khz with the magnets so any sensorineural hearing loss will be affected more, this will have an impact on speech clarity.

**The baha connect system:** This transmits vibrations through an abutment which connects the sound processor to the implant on the abutment. The main benefit is maximum transmission of vibrations, providing maximum amplification.

**The baha softband:** This is a flexible headband to carry the sound processor, which transmits the vibrations to the bone through the skin. This enables early aided of young children before surgery is carried out.

## **Candidacy: Single sided sensorineural deafness**

- Good hearing in one ear, motivation, benefit of baha is improved listening noise.

The bone anchored hearing aid has an accompanying wireless accessory for you to enjoy all aspects of the aids new technology.

This accessory has been provided by Cochlear and is not issued by York Audiology department.

The accessory is under warranty for one year and during that time we are happy to send it for repair if it develops a technical fault. Children benefit from using the mini microphone. This transmits speech and sound directly into your sound processor over a distance of 25 metres (clear line of sight). This can be especially useful in the classroom environment.

# Evaluating baha

At your assessment appointment a full history will be taken in relation to your hearing and any difficulties you may be having. Further hearing tests will be carried out to determine your suitability for a hearing aid. If it is felt appropriate that benefit can be obtained from a hearing aid, you will be offered the choice of aid. You will be shown the various options of baha, including colour choices if available. If a baha is chosen you will then be given a trial of the baha to use at home/school for two weeks. A home trial log should be completed and returned to the department.

Audiology tests will be performed whilst you are in clinic, we will endeavour to complete as much testing as possible on your first appointment, but sometimes we may require you to return on a separate appointment to complete this.

## **Audiology information required**

- Full pure tone audiogram
- Soundfield hearing test with and without a hearing aid
- Speech testing & Questionnaires



# Counselling

- Realistic expectations should be set and commitment to aftercare. Once the hearing aid is fitted you will be reviewed in three months to ensure everything is ok, and to make any adjustments if necessary. Regular maintenance and attendance of follow up appointments is something that you and your child need to be fully committed to.
- A follow up appointment will be made to measure the outcome of the hearing aid trial; if this has been successful a hearing aid will be ordered for you. Your next appointment will be for this to be fitted. If you also decide that you would like to proceed with a surgical option we can fit the baha to a softband, and refer you the ENT consultant to discuss your suitability for surgery.

# Following surgery: Fitting the hearing aid

Approximately 8-10 weeks after surgery the abutment will be secure enough to attach the baha, timings are pretty similar for the magnetic option as well.

- You can wear your baha aid all day long, but take it off for sleeping.
- When taking part in activities where you could lose the hearing aid (contact sport) it's probably best to remove it.
- The hearing aids are not waterproof; never wear it in the shower/bath or in the swimming pool.
- To avoid feedback with the baha do not let the object come into contact with the processor, i.e. hat, ensure the battery drawer is fully closed.
- Ensure the hearing aids are kept clean.
- Keep hair products away from the hearing aids i.e. hairspray.
- Always keep the safety line attached to the baha.

# **CROS hearing aid (Contralateral routing of signal)**

CROS hearing aids are suitable for patients with a single sided hearing loss.

This system consists of two parts. The cros aid with a microphone to pick up sounds and voices from the non-hearing ear, and wirelessly transmits them to the hearing aid on the other ear. The hearing aid receives the signal from the non-hearing ears and plays in into your good ear, this gives you the feeling that you are hearing in both ears.

Having a conversation or sat in a classroom can become easier because you are not having to reposition yourself with your better ear.

- A cros aid requires no surgical procedure
- You will have to wear an ear piece in each ear, either a life tip or earmould.
- Both devices sit neatly behind each ear.
- The cros system will be fitted in clinic as a trial.

## **Audiology information required**

- Full pure tone audiogram
- Soundfield hearing test with and without a hearing aid
- Speech testing
- Questionnaires

A home trial log should be completed and returned to the department.

You will then be reviewed at the end of your trial period to see if you wish to go ahead and use the cross aid on a permanent basis.

## **If you decide not to try any form of hearing aid what can we do to help?**

Careful classroom placement is crucial in enabling your child to reach their full potential. Most children will manage one to one ok, but start to struggle when they are in the presence of noise. Hint and tips to help assist your child:

- Establish eye contact, and speak at the child's level. Gaining visual attention as well as auditory attention
- Use words like "listen" "get ready" before giving information.
- Sitting at the front of class, away from any other distracting noises.
- Use a daily/weekly schedule to ensure the child/student knows what is expected.
- Asking your child to repeat an instruction back to you to ensure that they have it correctly.
- Flow of information to the teaching staff about your child's hearing loss.

## **References**

Clinical commissioning guidance, bone anchored hearing aids 2013

Cochlear BAHA systems candidate selection guide

Oticon – The bone anchored hearing system

# Agreement form

Please can you read and sign the following forms for the service

You have been issued a NHS hearing aid as a **trial** only

Bone anchored hearing aid

CROS hearing aid

You (parent/guardian) agree to return the hearing aid device within two weeks to the Audiology department. If the device isn't returned on time, you may be charged to cover the cost of the equipment.

You (parent/guardian) agree to attend **assessment, fitting and follow up** appointments for your aftercare, as part of your commitment to using the hearing aid. You (parent/guardian) agree to proper maintenance of the implant site with good regular hygiene.

Please sign below if you understand the above conditions to your hearing aid trial

Patients name .....

Date .....

Patient signature .....

Hospital no .....

Issuing Audiologist .....

## **Our Policy on Baha 4/5 Wireless Accessories**

You have been issued today with a new Baha 4 and accompanying this is a wireless accessory for you to enjoy all aspects of the aids new technology.

This accessory has been provided by Cochlear and is not issued by the Audiology department.

The accessory is under warranty for one year and during that time we are happy to send it for repair if it develops a technical fault.

Unfortunately if a fault develops when the accessory is no longer under warranty then we are not responsible for its maintenance or for the replacement of the device.

All wireless accessories are available to purchase and if you wish to do so we are happy to provide details about where to look for information to enable you to do so.

**\*Please note that York Teaching Hospital will not be held accountable for any damage to the device not covered by the warranty.**



Type of accessory issued

.....

Aid and accessory serial numbers

.....

Signature of issuing audiologist

.....

Warranty end date.....

Please sign below to say that you understand this information.

Print name .....

Signature .....

Date .....

# Paediatric Home Trial Log

It is important to monitor how effective you find the aid in your normal everyday listening situations.

Try and test it in a variety of situations and complete your personal log with:

- The date
- The amount of time it was worn for
- The type of listening situation
- Overall opinion

## Example:

Date	Time	Situation(s)	Benefit
17/04/2015	2 hours	Watching television	<input type="checkbox"/> Perfect <input type="checkbox"/> Great Benefit <input type="checkbox"/> Some Benefit <input type="checkbox"/> No Benefit

## Tips:

Check placement of processor

Set volume to your preference

Try and use as many different listening situations as possible, for example:

- Nursery/school
- Playtime
- One to one Conversations
- Group Conversations
- Television
- Music
- Noisy Environments e.g. shopping, restaurants

<b>Date</b>	<b>Time</b>	<b>Situation(s)</b>	<b>Benefit</b>
			<input type="checkbox"/> Perfect <input type="checkbox"/> Great Benefit <input type="checkbox"/> Some Benefit <input type="checkbox"/> No Benefit

<b>Date</b>	<b>Time</b>	<b>Situation(s)</b>	<b>Benefit</b>
			<input type="checkbox"/> Perfect <input type="checkbox"/> Great Benefit <input type="checkbox"/> Some Benefit <input type="checkbox"/> No Benefit

<b>Date</b>	<b>Time</b>	<b>Situation(s)</b>	<b>Benefit</b>
			<input type="checkbox"/> Perfect <input type="checkbox"/> Great Benefit <input type="checkbox"/> Some Benefit <input type="checkbox"/> No Benefit

<b>Date</b>	<b>Time</b>	<b>Situation(s)</b>	<b>Benefit</b>
			<input type="checkbox"/> Perfect <input type="checkbox"/> Great Benefit <input type="checkbox"/> Some Benefit <input type="checkbox"/> No Benefit

<b>Date</b>	<b>Time</b>	<b>Situation(s)</b>	<b>Benefit</b>
			<input type="checkbox"/> <b>Perfect</b> <input type="checkbox"/> <b>Great Benefit</b> <input type="checkbox"/> <b>Some Benefit</b> <input type="checkbox"/> <b>No Benefit</b>

If you're using the aid for single sided deafness:

<b>Conversation</b>	<b>Benefit</b>
How much did the aid help you hear general conversation when the person was talking on your 'deaf' side?	<input type="checkbox"/> Perfect <input type="checkbox"/> Great Benefit <input type="checkbox"/> Some Benefit <input type="checkbox"/> No Benefit

<b>Direction</b>	<b>Benefit</b>
How much did the aid help you tell what direction a sound was coming from?	<input type="checkbox"/> Perfect <input type="checkbox"/> Great Benefit <input type="checkbox"/> Some Benefit <input type="checkbox"/> No Benefit

Name:.....

Hospital  
Number:.....

Type of Aid:.....

## Further Comments

Delete as appropriate:

I wish to proceed / I do not wish to proceed / I require a further appointment in Audiology to discuss my options.

Please complete the form and return to:  
Stacey Gurnell/Tracy Devine Paediatric Audiologist  
Audiology Department  
York Hospital  
York Teaching Hospital NHS Foundation Trust  
Wigginton Road  
York  
YO31 8HE



## **Tell us what you think of this leaflet**

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact:

Stacey Gurnell, Paediatric Audiologist, Audiology Department, The York Hospital, York Teaching Hospital NHS Foundation Trust, Wigginton Road, York, YO31 8HE, telephone 01904 631313 or email [Stacey.gurnell@york.nhs.uk](mailto:Stacey.gurnell@york.nhs.uk)

## **Teaching, training and research**

Our Trust is committed to teaching, training and research to support the development of health and healthcare in our community. Healthcare students may observe consultations for this purpose. You can opt out if you do not want students to observe. We may also ask you if you would like to be involved in our research.

## **Patient Advice and Liaison Service (PALS)**

PALS offers impartial advice and assistance to patients, their relatives, friends and carers. We can listen to feedback (positive or negative), answer questions and help resolve any concerns about Trust services.

PALS can be contacted on 01904 726262, or email [pals@york.nhs.uk](mailto:pals@york.nhs.uk).

An answer phone is available out of hours.

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或發電

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