

# Bone anchored hearing systems

## What is a bone anchored hearing system?

A bone anchored hearing system, is effectively a middle ear “bypass”. It comes in three parts:

- **The implant** – is a tiny titanium screw implanted into the skull – it provides an anchor for the abutment and the sound processor
- **An abutment** – is attached to the implant into which the sound processor will then attach.
- **The sound processor** – acts as the middle ear – converting the sound waves into vibrations, passed through the implant to the bone, and from there to the working inner ears.
- **For young children, a softband is available** – the sound processor is placed on an elasticated softband which can be worn from a few weeks old.



## Evidence tells us...

- Improved speech reception thresholds <sup>1,2,10,16,17</sup>
- Consistently high levels of satisfaction reported <sup>1,7,8,15</sup>
- Provides improvements in hearing in noise and difficult situations for children and adults <sup>9,12,21</sup> with unilateral loss
- Enhanced participation in various everyday situations <sup>3,16</sup>
- Significant improvement in quality of life (QoL) for older (60+) users <sup>4</sup> and children <sup>7,16</sup>
- Improved behaviour in children with severe behaviour difficulties <sup>6</sup>
- Can be surgically fitted from the age of 4 and shows clear benefit for the vast majority <sup>6</sup>
- Significantly improved scores on GHABP <sup>10,13</sup> and APHAB
- High percentage (92%)<sup>9</sup> of users report improvements in QoL <sup>10, 14, 16</sup>
- Low rate of complications <sup>13,15,16</sup>

• Recommended by Surgeons and professionals in the field <sup>1-18</sup>

## Did you know?

- There are about 15,000 users of bone anchored hearing systems in the UK
- They are suitable for those who cannot be aided by the usual air conduction hearing aids
- Increasing numbers of children are considered – and can be fitted by around four years of age when the bones of the skull are mature
- Increasing numbers of young children are receiving soft-bands – from a few weeks old
- Bilateral systems are becoming available
- Bone anchored hearing systems can be used with FM systems and accessories
- Bone anchored hearing systems can be used for single-sided deafness, where it will transmit the sound to the good hearing ear.
- There are around 100 centres in the UK, so there is always expertise in your local area.
- The sound processor is a state of the art hearing device with fully automatic signal processing and adaptive directional microphones.



# Considering a bone-anchored hearing system?

Usually the middle ear, the ear drum and small bones behind it, convert sound waves carried along the ear canal into vibrations. These are then passed to the inner ear to be converted into electrical stimuli, and carried to the brain to be recognised as sound. Where there is deterioration of the middle ear parts, or the external parts leading to the middle ear, this part of the process of hearing can be significantly reduced or lost, leading to a “conductive hearing loss”. In some cases, the inner ear may be working well, but sufficient vibrations cannot reach the cochlea. In these cases, a bone anchored hearing systems may be of significant benefit.

A person can be fitted with a bone anchored hearing systems if they can benefit from bone conducted sound, but have difficulty in benefitting from an air conduction hearing aid.

## They may be those who:

- Are born with genetic and congenital syndromes which affect the development of the skull bones and the inner and outer ears
- Have chronic ear disease such as chronic secretory otitis media – “glue ear”, with cholesteatoma and any degenerative disease of the middle ear parts
- Have had trauma which has damaged the middle ear parts
- Have single-sided deafness due to disruption of the hearing nerve or cochlea function, for example acoustic neuroma, or infections which have destroyed the hearing nerve or cochlea function

There are various sound processors available for different levels of hearing loss.

## Surgery

Surgery, for the placement of the implant, is a minor procedure, usually a day case and often under a general anaesthetic. In young children there is sometimes a second stage, when the abutment will be placed.



“ I wish I had had it years ago . . . now I can hear my grandchildren – then I could have heard my own children . . . ”



“ I think it's given me my confidence back. I will now go into any work situation, any social situation and it probably sounds silly but it has also given me the confidence to say, "I'm sorry I didn't hear that". ”

## Living with bone anchored hearing systems

It takes practice to get used to attaching the sound processor, but this becomes straightforward, and the wearer usually comments that they don't “feel” it.

### Wearers can:

- Swim, bathe and shower
- Perm and colour their hair
- Play sport, although they may have to remove the sound processor

However, care must be taken with the abutment, with care becoming part of the wearer's daily routine:

### Daily routine:

- Checking the site daily, to check hair has not become caught round it
- Keep chemicals away from the site
- Use clean water to flush site after shower, washing hair, swimming
- Use cotton buds, or very soft brush to clean the site
- Use “baby wipes” to clean the area
- Ensure that any signs of infection are reported and treated immediately

# The Bone anchored hearing systems referral pathway

## Stage of the journey

**Referral**

**Assessment**

**Shared Decision**

**Trial of Sound Processor**

**Surgery**

**Processor Fitting**

**Life Long Maintenance**

## Issues to consider

When hearing aids are not enough, a bone conduction hearing system might be a valid option?

An audiological test and thorough inspection of the middle ear is essential for a good assessment. If the Air-Bone gap is greater than 30Db, a bone conduction hearing system will outperform a conventional hearing aid.

Multi disciplinary approach leads to the best audiological outcomes.

With the use of a softband it is possible to try the bone conduction hearing systems processor prior to surgery in various situations.

Local or general anaesthetic.

With new implant technology, the processor can now be fitted after 6 weeks.

Cleaning of the implant is essential for optimal results, access to spares and repair service is essential

## Thinking about a bone anchored hearing systems?

### Don't delay referral...

If as a parent, adult or professional, you think a referral should be made for a bone anchored hearing systems, what should you do?

If you think a bone anchored hearing systems should be considered, then contact your local ENT Consultant or Audiology service to obtain a referral – there are many centres in the UK and there will be one near you – see map on next page.

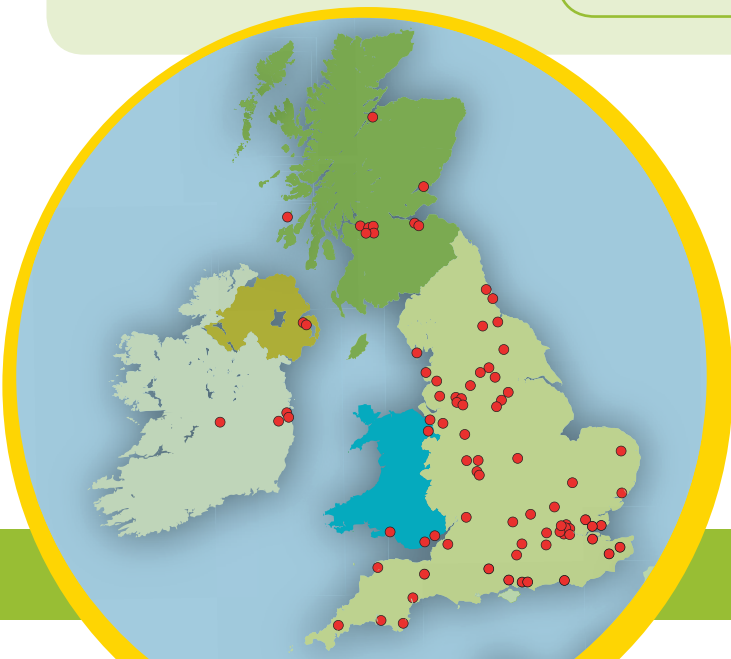
A careful assessment will be made and there will be an opportunity to discuss the options available. Make sure you ask about outcomes at the centre, devices used and long term care provided. As well as the professionals, it will be important to meet bone anchored hearing systems users and their families. There are independent groups who advocate for bone anchored hearing systems who are happy to share their experiences. The Ear Foundation BAHA forum is a useful source of information from others.

## Centres for bone anchored hearing systems in the UK

The name and details of centres supplying bone anchored hearing systems can be found at [www.cochlear.com](http://www.cochlear.com)



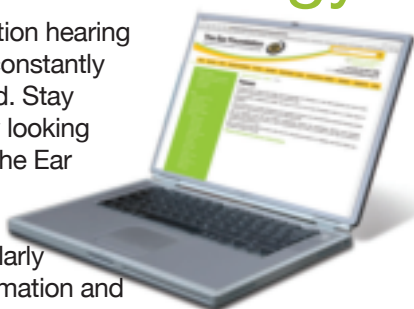
The Ear Foundation®



# New technology

Bone conduction hearing systems are constantly being updated. Stay up-to-date by looking on the web. The Ear Foundation's website provides regularly updated information and a forum on which you can ask questions on any topic to do with direct bone conduction.

[www.earfoundation.org.uk/hearing-technologies/baha/forum](http://www.earfoundation.org.uk/hearing-technologies/baha/forum)



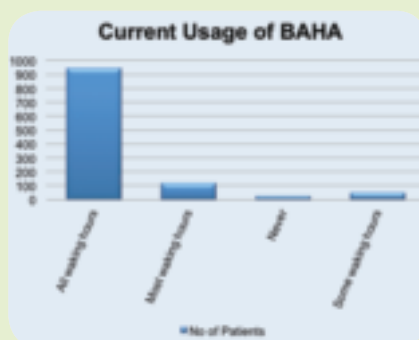
“It was my friend straight away. It was by my bed. On in the morning . . . off last thing at night.”

# National Registry of bone anchored hearing systems users

The Ear Foundation has established the National Registry of bone anchored hearing systems Users, in order to gather useful, anonymous, information. We are grateful to all those centres who have entered data.

From the entries of 1,800 patients you can see the main indications, that useage rates are high and that bone-anchored hearing systems are increasingly used for those with unilateral hearing losses.

The Ear Foundation bone anchored hearing systems forum is a useful source of information from others.



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