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GWASANAETH MEWNBLANIADAU
CLYWEDOL DE CYMRU
SOUTH WALES AUDITORY
IMPLANT SERVICE

Bone Conduction Hearing Devices and Middle Ear Implants



South Wales Auditory Implant Service
Satisfaction Questionnaire

Contact details

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About us

The South Wales Auditory Implant Service is a well-established specialist implant centre offering a range of hearing implants including cochlear implants and bone conduction implants. Adult patients are seen in the main outpatient department and children are seen in the Noah's Ark hospital.

The implant program includes an Audiological Consultant, ENT Surgeons, Clinical Scientists, Specialist Audiologists, Rehabilitationists, Qualified Teachers of the deaf and Specialist Speech and Language Therapists.

What is bone conduction?

We hear via two routes: air conduction and bone conduction and both work together to help us hear.

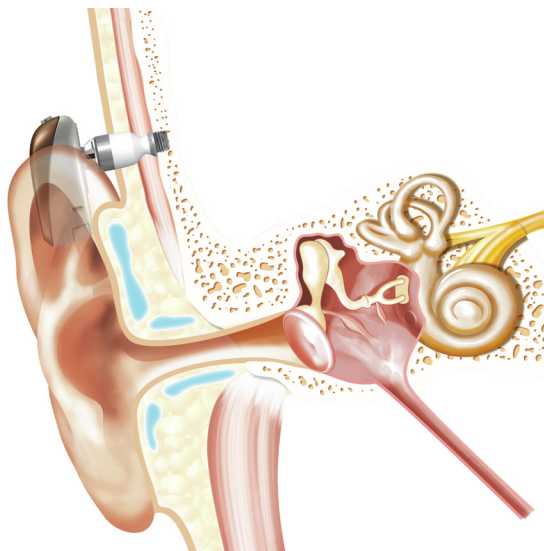
Certain medical conditions in the outer and middle ear can interrupt the sound we hear by air conduction, preventing the sound getting into the inner ear. Bone conduction can bypass the problems in the outer and middle ear and deliver the sound via vibrations across the skull to the inner ear so we can hear.

How do bone conduction implants work?

Bone conduction systems consist of an external processor that collects the sounds that we want to hear and changes these sounds into vibrations. The processor connects to either an abutment or a magnet system and the vibrations created by these processors are transmitted across the skull to the inner ear so we can hear.

There are two types of bone conduction hearing implant systems: **Percutaneous Connect** and **Transcutaneous magnetic systems**.

1. Percutaneous Bone Anchored Hearing Aid (BAHA) Connect system



©Cochlear Limited 2026. Image courtesy of Cochlear Limited

The BAHA Connect System uses a small abutment that provides connection between the implant and the sound processor. It is easy to use and requires little daily care; you simply snap the BAHA Sound Processor onto the abutment. The external processor detects sounds and changes it into vibrations. The processor sends vibrations through the abutment to the implant then through the skull to the inner ear enabling us to hear.

There are two manufacturers that make the connect system: Oticon BAHA and Cochlear BAHA. Both systems work in the same way.

2. Transcutaneous Bone Conduction Hearing Aid Magnetic system



Image courtesy of MED-EL

The Magnetic Implant system consists of internal implant which has a magnet and transducer. The external processor has a magnet which attracts to the internal magnet. The external processor detects sounds and changes it into vibrations. The processor sends signals through the skin to the implant and the internal processor creates the vibrations which travel across the skull to the inner ear enabling us to hear.

There are 3 types of bone conduction magnetic implant systems: Osia, Sentio & Bonebridge. All 3 systems work in the same way.



Cochlear Osia
implant system

©Cochlear Limited 2026. Image
courtesy of Cochlear Limited



Oticon Sentio
implant system

Image courtesy of Oticon Medical



MED-EL Bonebridge
implant system

Image courtesy of MED-EL

Middle ear implants: SOUNDBRIDGE

If you are found to be suitable for either a Percutaneous connect system or a Transcutaneous magnetic system, you will to some degree have a choice as to what implant system you have but you will be guided by the multi-disciplinary team as to which one would suit you better.

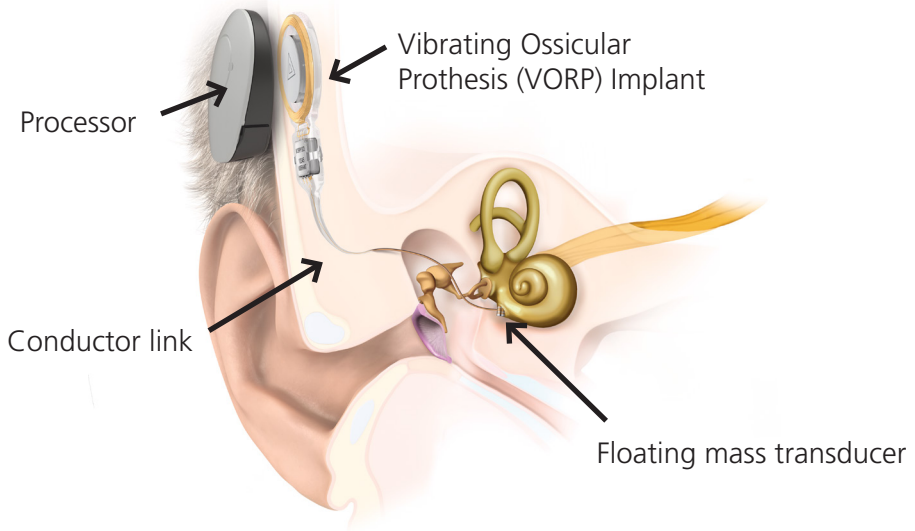
The SOUNDBRIDGE is a middle ear implant system for people who have not had any benefit from hearing with air conduction and/or bone conduction hearing aids or cannot use them for medical reasons. This is often the case with permanent hearing loss after middle ear surgery or when hearing aids cannot be worn due to chronic ear canal inflammation.

The SOUNDBRIDGE is designed for people with mild to severe sensorineural, conductive or mixed hearing loss.

The SOUNDBRIDGE is a direct-drive, semi-implantable middle ear device. Direct-drive means that the implant attaches directly to middle ear ossicle or round window. The SOUNDBRIDGE bypasses the ear canal and eardrum by directly vibrating the small bones in the middle ear. No ear mould is needed with this device.

Middle ear implants: SOUNDBRIDGE

The SOUNDBRIDGE system consists of an external sound processor and internal implant.



Images courtesy of MED-EL

The internal implant consists of two parts, the vibrating ossicular prothesis (VORP) which sits behind the ear under the skin and the floating mass transducer (FMT) which is attached to the middle ear bones.

The implant turns the sound waves picked up by the SAMBA processor into mechanical vibrations that get sent to the cochlea and then to the brain, just like in the natural hearing process.

Middle ear implants: SOUNDBRIDGE

The SAMBA 2 audio processor picks up sound waves from the environment and transmits it across the skin to the internal VORP. This signal is then delivered to the FMT which mechanically stimulates the middle ear ossicles or round window mimicking the natural hearing process.



Image courtesy of MED-EL

Non-implantable bone conduction devices

Some patients may gain benefit from bone conduction hearing aids but may not want surgery. It is possible to hear via bone conduction by using a headband. The sound processor is attached to a headband or soft band to be worn. The device sends vibrations across the skin to the bone where they are detected by the cochlear and perceived as sound. This is a good alternative long term option for patients who don't want or can't have surgery.



Image courtesy of Sonovo Group Ltd: sonovo.co.uk

Referral

You have been referred for consideration for a bone conduction implantable device. The patient pathway can take up to 26 weeks from referral. This amount of time is necessary to determine if you would benefit from a bone conduction hearing implant.

Initial Audiological assessment and discussion of results
(6 weeks from referral)



2-4 week home trial with Bone conduction
device on a headband

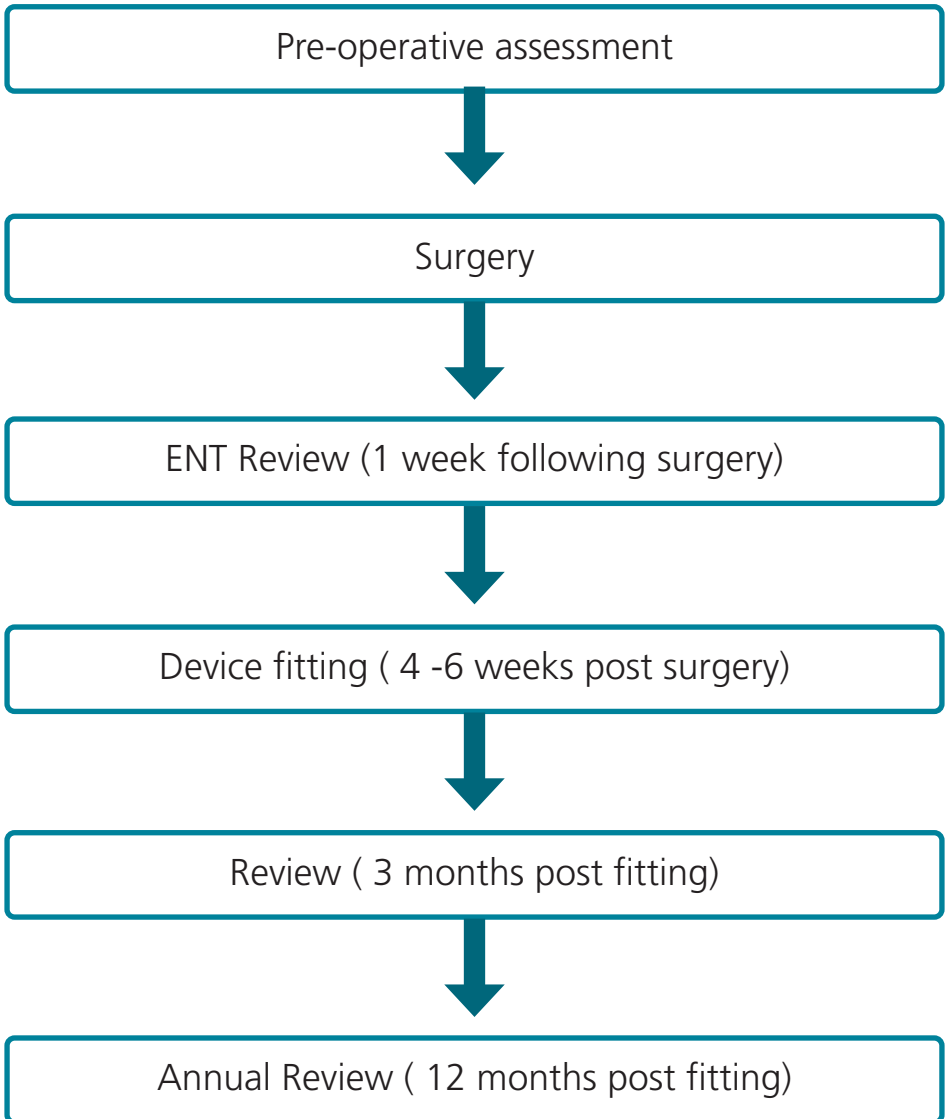


Review following home trial.
If suitable, option to meet with existing user



Multidisciplinary meeting with consultants
and audiovestibular physician, and family/friends
for decision on surgery.
If suitable you will be listed for surgery
If not suitable, you will be referred back to Audiology

Referral



Audiological Assessment

Before being referred to the implant programme you will have been diagnosed with a mixed/conductive hearing loss and having trouble wearing traditional hearing aids or gaining very little benefit from them. Patients with single-sided sensorineural hearing loss will also be considered for bone conduction hearing devices.

Your Audiologist will look at your audiological records, and you may be fitted with suitable new hearing aids which you need to wear for a set amount of time prior to assessment. Once your Audiologist is happy that you have been optimally aided but still getting little to no benefit from them, or can't tolerate them they will then proceed with the bone conduction assessment.

During the assessment our Audiologists will perform hearing tests with and without your hearing aids and perform a bone conduction speech test. These tests will determine whether your bone conduction levels are within the fitting criteria for a bone conduction implantable hearing device.

As part of the assessment a bone conduction hearing device will be programmed and fitted to a headband for you to trial in clinic. You will then be given the opportunity to take the device home for 2-4 weeks trial. You will be

Audiological Assessment

asked to keep a log of your experiences to help you reflect on the benefit you have had from the device.

Following the home trial, your Audiologist will review you and discuss your experience with the device. If you have had a positive experience and you wish to proceed you will be given an appointment to come back to clinic to meet with a multi-disciplinary team including an ENT Surgeon and Audiological physician.

If you find the bone conduction hearing device beneficial but don't want to proceed with surgery, then the MDT may discuss the option of you wearing the bone conduction device on a headband long term to help you hear.

Medical Evaluation

Our ENT Consultant Surgeons and Audiological physician will consider your medical history and discuss all suitable options with you. They will explain the operation procedure and risks involved. X-rays and CT scans may be requested and evaluated by the surgeon. We may request information from other medical professionals.

Medical Evaluation

Once the surgeon is happy to proceed you will be listed for surgery. You will be sent for a pre-operative assessment to assess your overall health and suitability for surgery.

The wait time for surgery does vary so we are unable to inform you how long you will have to wait.

As mentioned earlier, there are different types of bone conduction implants, and your Audiologist and Surgeon will discuss these options with you to decide which option is be most suitable for you.

What happens during the operation?

On the day of the surgery the team will answer any questions you may have and ask you to sign a consent form.

Then, you will be taken to theatre for the operation. The operation lasts about 1 hour. You will likely be discharged on the same day. You can choose to have general or local anaesthesia, and your Surgeon will help you decide which is more appropriate. The decision will be based on your medical history and the type of implant you are having.

What happens during the operation?

During the operation, a small area of your hair will be shaved to help the surgeon insert the implant. The wound will be closed using stitches which will usually dissolve within 2 weeks.

After the surgery your head will likely be wrapped in a bandage to protect the incision site, and you will be given instructions on how to care for the implant site along with medication and possible activity restrictions.

Once you take the bandage off, you may have some swelling around the incision site. You may have some discomfort for up to 48 hours after the surgery. You will be advised to keep the implant site dry for at least a week after the operation to help with the healing process.

An appointment will be given for you to come to hospital approximately 2 weeks post operation for a wound check. If your Surgeon is happy, they will contact your Audiologist so that a date can be arranged for you to have your hearing processor fitted. This is usually 6 weeks following surgery.

Your fitting Appointment

The audiologist will check your scar and look in your operated ear. Your new hearing processor will be connected to the implant and programmed using computer software. Hearing tests will be performed to ensure the processor is set correctly to improve your hearing.

Review

You will be given an appointment to attend the Audiology clinic for a review 3 months after your device fitted. Your Audiologist will ask you to complete some questionnaires and will carry out some hearing tests. Your Audiologist can adjust your processor if needed. If you and your Audiologist are happy with your progress, you will be reviewed 1 year post fitting.

After this, you will be reviewed every 3 years in clinic. If you develop a problem with the processor or your implant site, you can access the service by telephone or email. Our contact details can be found on page 2.

Ongoing repairs & batteries

For general device repairs and batteries, please contact the Audiology department.

If you feel your hearing has deteriorated, you can request an appointment by contacting the Audiology department. Our contact details can be found on page 2.

If you develop concerns

If you develop a problem with your abutment/implant site including pain, swelling or discharge you are advised to contact the Audiology or ENT department for advice and support:

Audiology Department: 02921 843179

E-mail: Implantable.Devices.cav@wales.nhs.uk

ENT Department: 02920 743471

If the implant site is actively bleeding, you are advised to go straight to A+E for treatment.

Once you have been discharged from A+E, please contact either the Audiology or ENT department on the numbers above so that we can arrange the appropriate aftercare.

