Bone Conduction Hearing Devices and Implants (BCHDs and BCHIs)

Information for Patients

Hearing with bone conduction
How does the human ear work?
1. Sound is ‘funnelled’ into the ear canal by the external ear (pinna). It travels down the ear canal where it strikes the ear drum.
2. This causes the eardrum and middle ear bones (ossicles) to vibrate.
3. The hearing organ (cochlea) detects these vibrations and converts them into electrical impulses.
4. These impulses are sent to the brain via the hearing nerve where they are interpreted as sound.

What is a Bone Conduction Hearing Device? (BCHD)
• Conventional hearing aids send sound down the ear canal, ear drum and middle ear to the cochlea.
• BCHDs are a type of hearing aid which are positioned on the bone behind the ear.
• BCHDs send sound directly to the cochlea using vibrations sent through the skull, bypassing the middle ear.
How does a BCHD/BCHI work?

1. The sound processor picks up sound and converts this into vibrations.
2. These vibrations are transferred to the abutment and fixture and sent into the bones of the skull.
3. The vibrations pass through the skull to the cochlea which is encased in bone.
4. The cochlea detects these vibrations (similar to those from the ear drum and ossicles) and converts them into electrical impulses which are sent to the brain to be interpreted as sound.

Who might benefit from a BCHD?

Patients with a conductive hearing loss

This may be caused by a problem with the ear canal, the middle ear, or both.

A conventional hearing aid may struggle to overcome these problems and the sound may not be delivered correctly.

However, a BCHD would bypass this and send the sound directly to the cochlea via the bone surrounding it.
Patients unable to wear a conventional hearing aid
Reasons may include:
• Very frequent ear infections
• Severe allergies
• Absent or extremely small outer ear or ear canal
• A BCHD is not worn within the ear, therefore, leaving the ear open.

Patients with single sided deafness
Some patients have useful hearing in only one of their ears and gain no benefit from a hearing aid in their non-hearing ear.
As they can only hear sound through one ear they struggle in noisy environments and find it difficult to locate sounds.
A BCHD can be implanted on the poorer hearing side.
As a BCHD sends vibration of sound through the skull to both ears at the same time, they will be heard in the better ear.
This allows the patient to detect sounds on the poor side and hear them on the good side.
Comments, compliments, concerns or complaints

South Tees Hospitals NHS Foundation Trust is concerned about the quality of care you receive and strives to maintain high standards of health care.

However we do appreciate that there may be an occasion where you, or your family, feel dissatisfied with the standard of service you receive. Please do not hesitate to tell us about your concerns as this helps us to learn from your experience and to improve services for future patients.

Patient Advice and Liaison Service (PALS)

This service aims to advise and support patients, families and carers and help sort out problems quickly on your behalf.

This service is available, and based, at The James Cook University Hospital but also covers the Friarage Hospital in Northallerton, our community hospitals and community health services. Please ask a member of staff for further information.

If you require this information in a different format please contact Freephone 0800 0282451