

# Paediatric Hearing Implant

## Service: Assessment for cochlear implants

### Information for parents

This leaflet explains more about the assessment process for having your child fitted with a cochlear implant. If you have any further questions, please speak to a doctor or nurse caring for you.

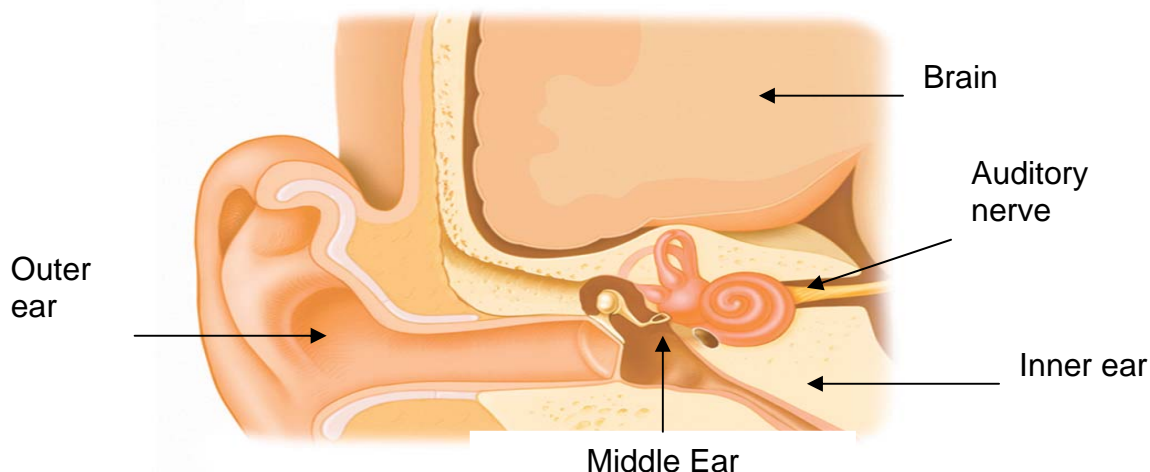
#### What is a cochlear implant?

A cochlear implant is an electronic device used to replace the damaged hair cells in the inner ear. It is made up of two parts. The external portion includes a speech processor, the transmitting coil, and the microphone. The internal portion includes the receiver and electrode.

#### How does the ear work?

The ear is made up of three parts, the outer (external) ear, the middle ear and the inner ear.

1. The part we can see is the outer ear which also includes the ear canal. The outer ear captures sound energy and funnels it to the ear drum. When the sound energy reaches the ear drum, it causes the ear drum to move and vibrate.
2. In the middle ear there are three tiny bones connected to the ear drum. When the ear drum vibrates, it causes the three bones to vibrate as well.
3. As these bones vibrate, they push against the inner ear (cochlea). The cochlea is a fluid-filled organ and contains many sensory cells called hair cells. As the three bones push against the cochlea, the fluid inside the cochlea begins to move which causes the hair cells to move and bend. The movement of the hair cells stimulates the auditory nerve (which controls hearing), allowing the nerve to send a message to the brain for processing.



\*Image taken from Tools for Schools, Advanced Bionics

In the case of severe to profound deafness, the hair cells and part of the auditory nerve are affected. This is called sensorineural hearing loss. This damage prevents the sound signals from being transmitted to the brain.

## How does a cochlear implant work?

A cochlear implant can assist with hearing in the case of sensorineural hearing loss. It works in the following way:

1. Sounds in the environment are picked up by the microphone which sends a signal to the speech processor.
2. The speech processor filters the sound into coded signals.
3. The coded signals are then sent to the transmitting coil which sends the signal through the skin to the implanted receiver.
4. The receiver electrically activates the electrode array which in turn stimulates the auditory nerve.
5. Nerve impulses are sent to the brain where they are interpreted as sound.

\*image taken from Cochlear Corporation's literature



## Who can attend / receive the service?

Children who have bilateral profound sensorineural hearing loss and who are not able to hear speech properly using conventional hearing aids may be referred for cochlear implant assessment.

- **Bilateral** means that both ears have a hearing loss.
- **Profound** means that the hearing loss is 90dB or greater. This means that the child may not be able to hear anything softer than 90dB.
- **Sensorineural** means that the cochlea or auditory nerve isn't working correctly.

There is a section later in this booklet that offers a list of helpful terms.

## **If my child receives a cochlear implant, will they be able to hear and talk like normally hearing children?**

A cochlear implant does not restore normal hearing. Once a child receives a cochlear implant, they will be able to hear sounds that they were not able to hear with their hearing aids. Although your child will be able to hear more sounds, they will need to be trained to use and understand these sounds. Receiving a cochlear implant is simply the first step in a very long process. Your child will only learn the meaning of sounds and words through intensive rehabilitation. The degree of success your child will have in developing listening and speech skills cannot be predicted, however, with the proper training and support your child will have the best chance of being a successful implant user.

## **The assessment process**

Before we can offer cochlear implantation we will need to establish whether this procedure is right for your child. You will also need time to decide if you feel cochlear implantation is right for your child. We will assess your child over a number of appointments, sharing information and feeding back results with you throughout the assessment. We will take time to listen to your concerns and answer any questions you have. The team works within the 18 week pathway from receipt of referral to treatment however, the assessment may be slowed down for many reasons, including parental request or for young babies who may be too young for surgery. The assessment may also be accelerated for medical/audiological reasons, or in post-meningitis cases, for example.

Following assessment your child will either be listed for surgery or discharged. Test results will be explained as the assessment progresses. On completion of the assessment a team report is sent to parents and all other professionals listed on your child's 'Copy Correspondence' list (included later in this document).

### **Initial assessment (two hours)**

Before this meeting, information will have been requested from the local professionals involved in your child's care. It is vital that parents return the Copy Correspondence list so that the local professionals may be contacted in good time.

The initial meeting will take place with an audiological scientist, a speech & language therapist, a teacher of the deaf and a clinical psychologist who will:

- explain the assessment process
- take a full case history
- discuss issues surrounding cochlear implantation
- carry out some audiological assessment, for example a hearing test.

### **Medical assessment (30 minutes)**

Initial meeting with the ENT (ear, nose and throat) surgeon which will involve discussion of:

- your child's medical case history
- medical issues surrounding the Magnetic Resonance Imaging (MRI) scan
- your approval for your child to have an MRI scan (including signed consent).

### **Audiology assessment (two hours per appointment)**

Further clinic appointments will be needed to assess your child's hearing, amplification needs, and functional aided hearing. The number of appointments required will vary from child to child and will depend on a number of factors, such as their age.

### **Speech and language assessment (two hours)**

An evaluation of speech and language will be carried out at the clinic, your home and/or your child's school. The therapist will also liaise with the local speech and language therapists involved with your child's care.

### **Teacher of the deaf assessment**

A visit to your home and your child's school will occur to:

- liaise with other professionals working with your child
- demonstrate the cochlear implant device to your child's teachers
- evaluate how your child's education is provided.

### **MRI, CT scan and Auditory Brainstem Response (ABR) tests**

An MRI scan, CT (Computer Tomography) scan (if appropriate), and ABR (Auditory Brainstem Response) hearing test (if appropriate) will be administered under general anaesthetic. These tests will check your child's cochleae and hearing nerves, and test how the hearing nerves respond to sound, to give an objective hearing test result, i.e. one that does not involve a response from your child.

The results of the scans will be available to the consultant within a week of the scan date. You will receive feedback from the scan at your next appointment with the team.

### **Clinical psychology (two hours)**

The paediatric clinical psychologist will meet with you to discuss:

- The effects of your child's deafness on the family, as well as how the implant may affect this.
- Your thoughts and hopes about implantation.

### **Information day (four hours)**

You will be invited to attend an information day, which is also open to extended family, to find out more about cochlear implantation. This will help you to be better informed for the decision making process.

### **Wrap up (two hours)**

If you decide to go ahead with the cochlear implant, an appointment with an audiological scientist and your team speech and language therapist will involve discussion of:

- surgery (an additional leaflet will be provided)
- preferred sound processor colour
- predicted hearing and speech outcomes for your child.

### **Final ENT appointment (30 minutes)**

A final appointment with the surgeon will involve discussion of:

- medical issues surrounding cochlear implant surgery
- surgical consent (you will be asked to sign a consent form).

Once consent is signed you will typically be offered an operation slot within eight weeks. The admissions team will try to give you as much notice as possible. The device will then be activated around four weeks after surgery.

## What ongoing support can I expect for my child following surgery?

The following is an approximate outline of the contact you can expect with the team following your child's cochlear implant. You can contact the department at any stage should you have any questions or concerns.

Timeline	Team contact
10 days after operation	<ul style="list-style-type: none"><li>• Medical follow-up</li><li>• Rehab appointment (device activation and implant system user guidelines)</li></ul>
4-6 weeks after operation	<ul style="list-style-type: none"><li>• Switch-on device over two days and written report</li></ul>
1 week after switch-on	<ul style="list-style-type: none"><li>• Clinic session</li></ul>
1 month after switch-on	<ul style="list-style-type: none"><li>• Clinic session (with audiologist and speech and language therapist)</li></ul>
For the first 6 months, as needed	<ul style="list-style-type: none"><li>• Teacher of the deaf / speech and language therapist home and school visits</li><li>• Liaise with local professionals</li></ul>
3 months after switch-on	<ul style="list-style-type: none"><li>• Clinic session</li></ul>
6 months after switch-on (report)	<ul style="list-style-type: none"><li>• Clinic session</li><li>• Video recording at school or home</li><li>• Psychology review (as required)</li></ul>
Contact with team from this point will be as needed	<ul style="list-style-type: none"><li>• Teacher of the deaf / speech and language therapist school and home visits</li></ul>
1 year after switch-on (report)	<ul style="list-style-type: none"><li>• Clinic session (with audiologist and speech and language therapist)</li><li>• Video recording in clinic, home or school</li><li>• Teacher of the deaf visit/contact with school</li></ul>
18 months after switch-on (report)	<ul style="list-style-type: none"><li>• Clinic session (with audiologist and speech and language therapist)</li><li>• Teacher of the deaf visit/contact with School</li></ul>
2 years after switch-on (report)	<ul style="list-style-type: none"><li>• Clinic session (with audiologist and speech and language therapist)</li><li>• Teacher of the deaf visit/contact with school</li></ul>
Annually 6 years after implant is fitted, speech and language therapy will vary depending on need and school transition points	<ul style="list-style-type: none"><li>• Clinic session (with audiologist and speech and language therapist)</li><li>• Teacher of the deaf visit/contact with school</li></ul>

In cases where families live very far away from the hospital, contact will be through a combination of hospital appointments, implant team outreach support and liaison with local professionals.

## Where do I need to go?

The service is based in the ENT department, 2nd Floor, Lambeth Wing, St Thomas' Hospital, Westminster Bridge Road, London, SE1 7EH.

## What do I need to bring with me?

If your child has hearing aids already please bring these to the appointments. You will be asked to complete a list of other professionals that are involved with your child so we can contact them for relevant information. Please bring names and contact details for other professionals.

## Travel and accommodation costs

Some families are entitled to reimbursement towards travel costs. To find out if you are entitled to help with travel costs, please enquire at the travel office on the ground floor in South Wing (just past the lifts). If you are entitled to reimbursement for your travel expenses a form will need to be completed after each visit by the administration team in the audiology department and signed off by the clinician you have seen. Please remember to ask the receptionist when you arrive. Please note only one parent/escort's costs will be reimbursed.

Families who live a long way from the hospital occasionally need to make use of accommodation at St Thomas'. The Trust will cover the cost of one parent/escort to stay with the child. Should a second parent/escort wish to stay they will be required to pay.

## What do I do if I cannot attend an appointment?

If you cannot attend an appointment please let the department know as soon as possible. If you do not attend for two consecutive appointments without informing the department it is possible your child will be discharged from the service. Please call the administrators on 020 7188 6245 if you cannot attend an appointment.

## Who are the team?

Our internationally trained team provides professional and caring services to children and their families in a friendly environment.

<b>Consultant otolaryngologists</b>	<ul style="list-style-type: none"><li>• Ms Irumee Pai</li><li>• Mr Dan Jiang</li><li>• Mr Gavin Morrison</li></ul>
<b>Audiological scientists</b>	<ul style="list-style-type: none"><li>• Ms Katherine Wilson</li><li>• Ms Tisa Thomas</li><li>• Ms Marsha Jenkins</li><li>• Ms Stacey Cooper</li><li>• Ms Robyn Richards</li></ul>
<b>Speech and language therapists (SALT)</b>	<ul style="list-style-type: none"><li>• Ms Sandra Driver</li><li>• Ms Emma Stark</li><li>• Ms Hazel Walters</li><li>• Ms Lauren Fry</li><li>• Ms Kathryn Webb</li></ul>
<b>Teachers of the deaf (ToD)</b>	<ul style="list-style-type: none"><li>• Ms Heather Crofts</li><li>• Ms Linda Baxter</li><li>• Ms Kathy Owston</li><li>• Ms Jeanette Martin</li></ul>
<b>Administrators</b>	<ul style="list-style-type: none"><li>• Ms Susie Altham</li><li>• Ms Melika Emmanuel</li><li>• Ms Sandra Allen</li></ul>
<b>ENT (ear, nose and throat) nurse</b>	<ul style="list-style-type: none"><li>• Ms Carol Kimberlin</li></ul>

## Further information

### Contact us

If you have any questions or concerns about the assessment, please contact the team on 020 7188 6245 (Monday to Friday, 9am to 5pm) or email: [aiadmin@gstt.nhs.uk](mailto:aiadmin@gstt.nhs.uk)

### Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.

**t:** 020 7188 8748 9am to 5pm, Monday to Friday

**Patient Advice and Liaison Service (PALS)** – To make comments or raise concerns about the Trust's services, please contact PALS. Ask a member of staff to direct you to the PALS office or:

**t:** 020 7188 8801 at St Thomas' **t:** 020 7188 8803 at Guy's **e:** [pals@gstt.nhs.uk](mailto:pals@gstt.nhs.uk)

**Knowledge & Information Centre (KIC)** – For more information about health conditions, support groups and local services, or to search the internet and send emails, please visit the KIC on the Ground Floor, North Wing, St Thomas' Hospital.

**t:** 020 7188 3416

**Language support services** – If you need an interpreter or information about your care in a different language or format, please get in touch using the following contact details.

**t:** 020 7188 8815 **fax:** 020 7188 5953

**NHS Direct** – Offers health information and advice from specially trained nurses over the phone 24 hours a day.

**t:** 0845 4647 **w:** [www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)

**NHS Choices** – Provides online information and guidance on all aspects of health and healthcare, to help you make choices about your health.

**w:** [www.nhs.uk](http://www.nhs.uk)

### Become a member of your local hospitals, and help shape our future

Membership is free and it is completely up to you how much you get involved. To become a member of our Foundation Trust, you need to be 18 years of age or over, live in Lambeth, Southwark, Lewisham, Wandsworth or Westminster or have been a patient at either hospital in the last five years. To join:

**t:** 0848 143 4017

**e:** [members@gstt.nhs.uk](mailto:members@gstt.nhs.uk)

**w:** [www.guysandstthomas.nhs.uk](http://www.guysandstthomas.nhs.uk)

**Leaflet number: 2897/VER3**

Date published: August 2013

Review date: August 2016

© 2013 Guy's and St Thomas' NHS Foundation Trust

