



# North East Regional Cochlear Implant Programme

Information about Paediatric Rehabilitation,  
Switch-on and Tuning following  
Cochlear Implantation

Patient / Carer Information

Planned Care Centre  
Audiology Department

## What happens now my child has had their implant operation?

When the new processors arrive in our office, the implant keyworker who you have met during the assessment period will visit you to deliver them. This is so that you can become familiar with the parts and have an idea about the controls before the initial tuning. It is also so that your child can wear the processor(s) in the 'off' position for a few days before the initial tuning and get used to how it feels. This means there are not so many new experiences to cope with at the initial tuning.

Soon after the cochlear implant surgery, you will receive the first three tuning or mapping appointments with the audiologist along with the cochlear implant safety guidelines and warning card. **Please keep these safe and make sure you have read the safety guidelines.**

In the meantime, it is important the wound and scar are kept clean to avoid infection. You will be given instructions about this when your child is discharged from the hospital after surgery.

Should you notice anything unusual with the wound such as redness, swelling, hot to the touch or discharge, please contact the cochlear implant office immediately for advice **during office hours**. It may be essential for your child to be checked by one of our ENT surgeons to prevent or treat any infections which could cause further problems or delay your child's device switch-on.

**Out of office hours:** James Cook Hospital patients please contact the ward where you stayed (usually ward 22) through the hospital switchboard to ask advice. Freeman / RVI patients please attend local A&E, GP or walk in centre who will contact the Freeman Hospital ENT Registrar through the switchboard.

**First tuning appointment:** Switch-on or Initial Stimulation. This is when the sound processor (worn on the outside) is connected to the internal implant to introduce some stimulation and is approx three weeks after surgery.

## Why the wait of three weeks?

This is to give your child enough time to recover from surgery and for the wound to heal properly. There is also usually some swelling around the implant site which takes a few weeks to gradually settle down. This is important as it could affect the wearing of the coil or headpiece as sometimes even the strongest magnet is not enough to keep it in place. This would make it difficult for the sound processor to send the signals to the internal implant.

## What happens in the 'switch on' appointment?

Appointments usually last for 60 - 90 minutes, and sometimes longer when children have two implants. The audiologist will check the implant site. They will also check that the magnet strength for the headpiece or coil is just right. In some cases, a stronger magnet is needed initially, but may be reduced as the scar and swelling settles completely over time.

While the processor and coil are being worn the external sound processor will then be connected to the computer with a wire which allows the audiologist to start tuning. A quick test of the electrodes will be performed first to ensure that these are all working fine. There are occasions, although rare, where electrodes will have to be disabled if they show unusual activity. If this occurs, the audiologist will explain this to you in more detail.

Once this is done, the audiologist will start the mapping or tuning. This is the process of converting acoustical speech signals into electrical stimulation. To measure this, the stimulation will sound like beeps.

Children will be trained to respond in different ways, depending on their age. For example older children will either be asked to count the number and/or rate the loudness of the beeps. Sometimes a different type of measurement will be done where the child is not required to give a response.

This is called an objective measurement. Once these levels are established, the audiologist will then switch the processor on to 'live' but at very low levels to begin with. Initially, what your child will hear may just be noises. It will take a while for the brain to adapt to the sound of the cochlear implant.

During the first session, even a small amount of stimulation usually sounds loud. The levels will gradually increase over time as your child gets used to the implant. As the levels increase, the sound quality usually improves. Further testing will be regularly performed by the audiologist to ensure that the levels are set appropriately.

## How often does my child need to see the audiologist for tuning?

This varies for every child as it depends on how quickly the levels stabilise but you should expect to have more frequent tunings within the first year especially if your child has bilateral cochlear implants.

The number and frequency of your child's tuning appointments will depend on clinical need which will be decided by the audiologist. However, the standard guideline we follow are shown on the next page:

1st tuning (switch-on)	=	three weeks after surgery
2nd tuning	=	one week after switch-on
3rd tuning	=	two weeks after 2nd tuning
4th tuning	=	one month after 3rd tuning
5th tuning	=	five weeks after 4th tuning (three months post switch-on)
6th tuning	=	twelve weeks after 5th tuning (six months post switch-on)
7th tuning	=	twenty six weeks after 6th tuning (twelve months post switch-on)

Some children may require more tuning appointments than others to ensure that the levels are always set to be as good as possible. Once the audiologist is satisfied with mapping and there are few changes made at an appointment, your child will only be required to attend a tuning appointment once a year provided that there are no other problems with the cochlear implant.

## What is rehabilitation?

Rehabilitation is the process we use to enable your child to make the most of the new hearing they receive from their cochlear implant. Rehabilitation focuses on specific targets in a hierarchy of learning to listen skills. First we aim for your child to detect sounds, then to begin to discriminate sounds from each other. Then they will begin to recognise and identify sounds and be able to put a name to some of the sounds they hear. Their speech and language will begin to develop once they are able to do these things. Your child's awareness of sound and the ability to use it to understand speech and other sounds is developed at the child's own pace. We aim to make our sessions enjoyable and relaxed.

## How do we organise rehabilitation?

Your child's keyworker, who may be a speech and language therapist or a teacher of the deaf, will arrange to visit your child regularly at home or nursery / school. The visits will last approximately an hour and we are very keen that a parent or a staff member will be able to join us during the session. This enables the people who spend the most time with your child during the week to participate in sessions and to develop ideas for more listening games and activities they can do before the next rehabilitation visit.

## How long does the keyworker visit?

Intensive rehabilitation like this will continue until your child has made significant progress in their listening. Our visit schedule is determined by our guideline. Children will be given regular rehabilitation visits. We will discuss how and when these visits will take place with parents and local teachers of the deaf and speech and language therapists. The schedule of visits will be reviewed at intervals and continued as necessary up to a maximum of 40 visits over three years. After this local services will continue to visit a child at school or home. The implant team will offer an audiological annual review and will collect information on the progress of your child's speech and language from local services.

## Why does my child need rehabilitation?

When a child has their cochlear implant stimulated for the first time, they are rather like a newborn baby who has just been introduced to the world of sound. Newborn babies spend a lot of time lying in their cot or pram and making sense of sounds around them. Your child is probably far more active than this and their attention is taken up with learning lots of other new skills.

Previously your child gained information about the world around them through other senses, especially sight, but now they need to learn to listen. Being able to hear is not the same as listening to and making sense of sounds. They need to have their attention deliberately drawn to the sounds around them, sounds such as the 'phone, the washing machine, the toilet flushing, as well as noises of toys and of voices. After some time they will begin to recognise these and become more interested in speech. They may begin to babble and recognise their name being called and turn to look at you.

## How do implant keyworkers work with other teachers and therapists?

We liaise regularly with local Teachers of the Deaf and Speech and Language Therapists and in some cases make joint visits with them to see your child. Where children have been introduced to signing before they have an implant we will also discuss with parents and local teachers of the deaf how to proceed. It is usual for families to continue to use their signing alongside the child's growing awareness of sounds and speech.

## What can I expect in the future?

Children are individual and their development in listening and speech and language will be individual too. It is impossible to predict how well your child will be able to learn to do these things. We do know, however, that the best chance they have is if they wear their processor all day everyday from as early on after the initial stimulation as possible. We also know that parents spend far more time with their child than we do and so you are the most important person in helping your child learn to use their cochlear implant.

We will help and support you together with the others in our team, and those in the local services and together we can help your child reach their potential.

# What do I do if my child has any problems?

For any queries or concerns about your child's cochlear implant, please contact us in the office and we will try our best to answer your questions.

Please do not just turn up as it is likely that all the audiologists will be busy with other patients and will not be able to see you.

## 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.

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