



DeafHearie

Services for Deaf & Hard of Hearing People



Hearing Aids and Cochlear Implants

A Factsheet for Parents of Deaf and Hard of Hearing Children



Parents Corner



Hearing Aids and Cochlear Implants

This Factsheet provides information on hearing aids and cochlear implants. It includes guidance on the care and maintenance of hearing aids and provides tips on encouraging your child to wear their hearing aids/cochlear implant.

Hearing Aids

If your child has been diagnosed with a hearing loss, the audiologist will assess if hearing aids are suitable. Hearing aids are provided free by the HSE to all children who need them. Hearing aids are basically amplifiers, in other words they make sound louder. This means that they amplify all sounds in the environment, so it is important to be aware that hearing through a hearing aid is somewhat different from using natural hearing.

However the audiologist will programme the hearing aid to suit your child's hearing loss, with the focus on maximising access to speech sounds. Wearing two hearing aids may help balance sounds, improve your child's understanding of words in noisy situations, and make it easier to locate the source of sounds.

Behind the Ear (BTE) Hearing Aids

Audiologists generally prescribe only BTE hearing aids for children. A BTE hearing aid consists of three basic parts: a case, a tube and an earmould. The case is the part that sits behind the ear (pinna) and contains the electronic amplification system. A tube connects the casing to the earmould. Sound travels from the casing, through the tubing and into the earmould. The earmould fits into the outer ear, and it is important for the earmould to be a snug and comfortable fit if the aid is to work well. The audiologist takes an impression of the outer ear to create an earmould specific to each child's ear. Poor fitting earmoulds are the most common cause of problems with hearing aids, resulting in a 'whistling' sound caused by feedback. Other common problems include fluid and ear wax in the ear. Young children require replacing of earmoulds on a regular basis as they are growing, and young babies may require new earmoulds every two or three weeks.



The difference between 'analogue' and 'digital' hearing aids

'Analogue' and 'digital' refer to the way that sound is amplified by a hearing aid. Traditional hearing aids are now known as analogue aids, following the development and introduction of digital aids. Most children in Ireland are fitted with a digital aid. In a digital hearing aid a mini-computer amplifies the sound. The sounds are picked up by the microphone and are then converted into electrical signals, as with an analogue aid. In a digital aid, these sounds are converted into electronic data.

The hearing aid is programmed to change the data to facilitate your child's type of hearing loss - maybe they need more amplification at the high frequencies or filtering of background noises. The data is then converted back into sound and sent into the ear through the ear mould.

Most digital hearing aids do not have a volume control, as they are programmed to adjust automatically to the sounds in the environment. They may have a programme button for use in different situations. The audiologist will explain about the different programmes and when they should be used.



Hearing Aids and Cochlear Implants

Cochlear Implant

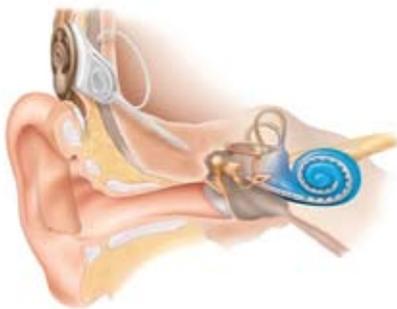
What is a cochlear implant and how does it work?

A cochlear implant is a small electronic device that sends an electrical signal through an electrode implanted into the cochlea (inner ear), this signal is sent straight to the auditory nerve which bypasses the damaged parts of the middle ear and/or damaged or absent hair cells. If the auditory nerve is still working the cochlear implant can provide access to sound to a person who is profoundly deaf or severely hard of hearing. An implant does not restore or create normal hearing. Instead, under the appropriate conditions, it can give a Deaf person a useful auditory understanding of the environment and help the child to understand speech.

There is an internal and external part to the implant, the internal part is surgically placed under the skin behind the ear and the external part is worn on/behind the ear, magnets hold a disc in place on the side of the head, this unit is called a processor. The external part is removed when your child goes to sleep, bath-time, swimming etc.

An implant has four basic parts:

- A microphone, which picks up speech and environmental sounds.
- A speech processor, which selects and arranges sounds picked up by the microphone.
- A transmitter and a receiver/stimulator, which receives signals from the speech processor and converts them into electric impulses.
- Electrodes, which collect the impulses from the stimulator and send them to the brain.



The implant has both external and internal parts. The external parts include the microphone, the speech processor and the transmitter. The microphone and speech processor sit behind the ear similar to a BTE hearing aid. The transmitter is located on the side of the head a little above the ear. It is held in place by a magnet close to the receiver/stimulator. The receiver/stimulator is one of the internal parts of the implant located under the skin. It is connected by a wire to the electrodes, which is located in the cochlea, the inner part of the ear. The electrodes send impulses via the auditory nerve to the brain. The external part of the implant is removed when your child goes to sleep, bath-time, swimming and so on.

Who may benefit from a cochlear implant?

Both adults and children who are profoundly deaf or severely hard of hearing may be candidates for cochlear implants. Young children may also be candidates for implants. Cochlear implants, coupled with intensive pre/post-implantation therapy, can help young children to develop speech and receptive language, which in turn helps their developmental and social skills.

Children who receive implants are usually between 2 and 6 years old and when they are very young they usually do very well with their implants. With newborn hearing screening programmes some Deaf children are being implanted at 12 months of age. Older children who have had made good use of their hearing aids and have spoken language skills, may be able to benefit from an implant.

Children who were born hearing or with minor hearing losses, but whose hearing has deteriorated to severe or profound levels can do well with a cochlear implant. The sooner they receive their implant after the onset of deafness, the more success they are likely to achieve with the implant. Cochlear implants have been helpful to children worldwide who have lost their hearing for different reasons, including meningitis.



Who may receive a cochlear implant?

In Ireland the Cochlear Implant team works in Beaumont Hospital, Dublin. A detailed assessment is needed to find out whether your child is likely to benefit from a cochlear implant. The assessments are carried out by the cochlear implant team. As a general guideline, to be considered for an implant you need to meet the following criteria:

- Have severe to profound sensorineural hearing loss in both ears.
- Receive only marginal benefit from hearing aids.
- Be medically suitable for surgery.
- Be strongly motivated.
- Have a good support network from family, friends, or other professionals.

The implant team assesses each case individually and will look at these issues and at other factors which will affect whether or not your child is likely to benefit from a cochlear implant.

A cochlear implant is a surgical procedure. The decision to receive an implant should involve a lot of discussion with the cochlear implant team. Some may choose not to have a cochlear implant for a variety of personal reasons. Also, though surgical implantation is almost always safe, complications are a risk factor, just as with any kind of surgery.

An additional consideration is learning to interpret the sounds created by an implant. This process takes time and practice. Speech and Language Therapists and Audiologists are the professionals frequently involved in this learning process. Also, as parents you need to be aware that not everyone performs at the same level with a cochlear implant.

Hearing Aids and Cochlear Implants

Tips on Getting Your Child to Wear a Hearing Aid / Cochlear Implant

The purpose of a hearing aid/cochlear implant is to give your child the best opportunity possible of gaining knowledge of familiar sounds such as people's voices, speech sounds, household and environmental noises, and the source and direction of sounds. Therefore, it is crucial that you persevere in encouraging your child to wear their hearing aid/cochlear implant at all times when they are awake.

Each child reacts differently, some will wear the hearing aid/cochlear implant without any fuss, others will become upset or throw a tantrum, or some children will wear the aid in certain situations and not others. The age of your child may also influence how they react to wearing the aid for the first time. It is important to be mindful of the fact that each environment/situation produces its own set of listening challenges, which your child has to deal with. Some sounds can be too loud or too piercing for example, but your child needs to learn the skills to deal with these changes themselves and taking the hearing aid/cochlear implant out will slow this process down.

In the beginning, reward your child if they wear the aid for 5-10mins with lots of praise and hugs. Use reward charts if your child is of an age where they understand the concept. You may have to repeat this process several times throughout the day and it can become exhausting, so if you can, share this process with another family member. It is important to stay as calm as possible and be consistent.

Make It Fun!

When introducing the hearing aid/cochlear implant, make the situation fun, maybe by playing with a teddy/doll which has an imitation hearing aid/cochlear implant on. Let the child put the aid over your ear and play a game or read a story and then ask them to wear the hearing aid for the length of a story or game. Give them a break before re-introducing the aid for another period of time or play session.



Step By Step

Let your child hold/touch the hearing aid/cochlear implant, leave it on the table while they are playing, so they become familiar with it. Encourage your child to participate in the process of putting in/taking out their aid and make it fun. Have a special box that they have decorated to keep the aid in and put it in an area where the child can reach.

Try putting the hearing aid/cochlear implant in your child's ear before they wake up. Warming up the mould in your hands before putting it in your child's ear can sometimes help to make it more pliable and feel more comfortable in their ear.

Maybe you will need to introduce different parts of the aid separately i.e. the mould for one-day, then the hearing aid on another day. You could put the hearing aid on the ear in the 'off' position, to allow your child time to get used to the feeling of something on their ear. When your child is comfortable with the aid, turn the aid on at a low volume for a short period of time, then turn it off, but leave the hearing aid in place. Keep repeating this process, turning up the volume slightly each time.



If your child is reluctant to wear the hearing aid/cochlear implant for any length of time, use a timing device that vibrates/flushes/is visual, and ask them to wear it for the length of time set, and then lengthen the time as the day/week progresses.

When your child is wearing the hearing aid/cochlear implant, play with toys that involve listening to sounds or watch T.V./DVDs. Show them everyday things and name them when the sound is made i.e. the doorbell, phone ringing etc. This will help them understand the benefits of the hearing aid/cochlear implant, attach meaning to sounds and develop their listening skills. Talk to them all the time, make eye contact, allow time for them to reply – remembering it may take your child slightly longer to process information.

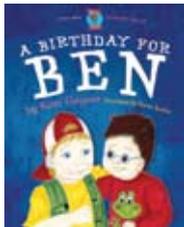


Hearing Aids and Cochlear Implants

Story Books to Help with Acceptance of a Hearing Aid or Cochlear Implant

Oliver Books

These books are written for children with a hearing loss and their peers, to raise awareness and understanding about hearing loss and being fitted with a hearing aid. Also covers attending school and using a radio aid. Available from www.deafhear.ie.

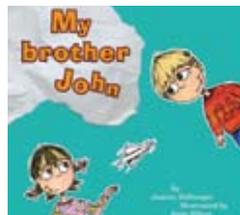


A Birthday for Ben

Hi! My name is Ben and last week was my 7th birthday. When you meet me, you might notice I am wearing something on my ear. Before you ask, it's not for listening to music or talking on the phone. It's to help me with my hearing! For children aged 4 to 8, this book introduces: •Hearing aids •Sign language •Lip-reading •Deaf culture. Available from Eason's or from www.specialstories.ie.

My Brother John

This book is about a boy who uses a cochlear implant and a hearing aid. It shows the fun relationship he has with his sister. "It is a fun book that's also a subtle deaf awareness aid."



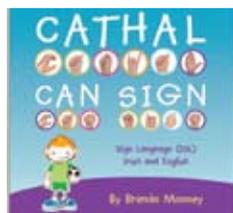
John Gets Ready for School

Caroline's brother John is deaf and he wears a hearing aid and cochlear implant. It's time for John to get ready for school. But John keeps getting it wrong! Whose clothes will he put on next? And will he remember to put on

his underpants! Both available from www.mybrotherjohn.co.uk, www.thehearfoundation.org.uk or www.amazon.co.uk.

Cathal Can Sign

This is an illustrated book for children to learn about Irish Sign Language and Gaelic, encouraging strong communication skills at a young age when children are the most receptive to learning new languages. The book uses clear photos of each sign and the illustrated character of Cathal and his family, to introduce basic vocabulary, including the alphabet, numbers, days of the week and family members. Available from www.cathalcansign.ie.



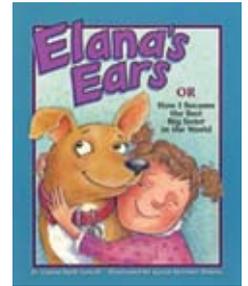
Cosmo Gets an Ear

This book explains audiologist's visits, the benefits of hearing aids and explaining to others about hearing aids. Available from www.amazon.co.uk.

Elana's Ears

Lacey's luxurious life as an "only dog" changes the day Mom and Dad bring home a new baby. While Lacey goes through all of the confusion and upset that any child feels when presented with a new sister or brother, she eventually starts to like having baby Elana around. Then Lacey realises

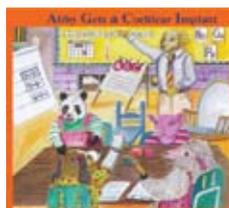
that Elana can't hear, and she vows to become "Elana's ears"- and the best big sister in the world. Lacey offers children a refreshingly honest and funny glimpse at parents, new babies, and growing toddlers. For parents, a comprehensive afterword describes children's common responses to new siblings and offers extensive how-to recommendations for making the adjustment as easy as possible. Available from www.amazon.co.uk.



Can you hear a Rainbow

Chris shares his thoughts and experiences of how he enjoys everyday life as a young boy, who happens to have been born deaf. He tells of using Sign, Lip-reading and other senses to communicate with his family and friends, with his team-mates on the football field, and at school with an interpreter. Suitable for age 7-11. Available from www.forestbooks.com.

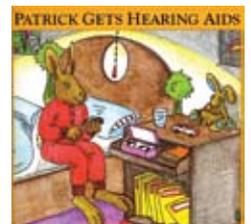
Abby Gets a Cochlear Implant



Abby has a progressive hearing loss and wears purple hearing aids. Her family has chosen for Abby to have a cochlear implant. The story describes the hearing testing, introduction to cochlear implants and the steps the family would take to explore this option of habituation for their child who has a hearing loss. Available from www.amazon.com.

Patrick Gets Hearing Aids

A picture book, aimed at youngsters with a hearing loss. Through a series of cartoons the book tells the story of Patrick the Rabbit and the changes in his life before and after he is fitted with a hearing aid. This is a useful tool in calming the fears a youngster may have at the prospect of visiting the doctor or audiologist. There is also a useful Speech and Hearing Checklist at the back of the book for parents to chart their child's progress in speech and hearing. Available from www.amazon.com



First Animal Sign Book



All children will love this original First Animal Sign Book, part of Simply Signing's innovative Zoo Animal Sign series. This vibrant book has been designed for all children and adults to enjoy together. Colourful pictures and simple text make this ideal for first readers and young children learning Irish

Sign Language. Also included in the book is the manual Irish Sign Language Alphabet as a learning tool. Along with the animal signs a selection of words have been spelled out using the ISL Alphabet to provide finger spelling practice. Available from www.simplysigning.ie

Hearing Aids and Cochlear Implants

Hearing Aid Maintenance

If the hearing aid is not kept clean, it could require repairs more frequently, so it is best to try and get into a daily routine of hearing aid maintenance. Consider getting a kit (see next page). The maintenance is best done when your child has gone to bed at night or if they are old enough you could involve them in this process.

If there is any earwax or other debris on the hearing aid or ear mould, wipe it with a soft, dry tissue. A wax-loop and wax-brush can be used for cleaning the mould. Do not insert anything (including the cleaning tools) into the hearing aid.



You can take off the tubing and mould from the hearing aid and clean in warm soapy water, you must dry it thoroughly with a dry cloth on the outside, and the puffer will remove the water from inside the tubing. The Hearing Aid must not come into contact with water.



When you are cleaning the hearing aid, check the mould for cracks or splits, if these appear your child will need to be fitted for a new mould. The tubing needs to be soft and pliable, if it goes yellow or hard the Audiologist, Visiting Teacher or DeafHear Support Worker can replace it for you. These problems will affect the quality of sound that your child will hear.

Store the hearing aid in a case/box with the battery compartment open in a cool, dry place. Do not store a hearing aid in direct sunlight.

Check that the battery is still working using a hearing aid battery tester on a regular basis. The battery should work for a minimum of a week, but this may vary due to the strength of the battery and how much power your child's hearing aid needs.

Your child will need to be fitted for a new mould on a regular basis to ensure a good fit. As the mould becomes too small the hearing aid may whistle more often and it will become uncomfortable for your child. This whistling is known as feedback. Feedback occurs when the microphone picks up the sound coming out of the hearing aid and amplifies it.

Some causes of Feedback'

- Poor earmould fit: This is the most common cause of feedback, as this can allow sound to 'leak', resulting in feedback. Earmoulds need to be replaced regularly. Young babies who grow rapidly may need their earmoulds replaced every month.
- Small ear canal: Some children have small or narrow ear canals which can cause feedback as sound is more likely to rebound off the walls of the ear canal.
- Earwax: if your child has earwax, it can cause the sound to be reflected, resulting in feedback. Do not try to remove earwax yourself. Ask your audiologist or family doctor to check for earwax.
- Feeding: feedback may occur when holding a young baby close, such as at feeding time. This might also occur when the baby is lying down. You may need to try and hold your baby in a different position, or remove the aids while feeding. If this problem persists, have a chat with your audiologist.

Weather conditions that can affect the hearing aid/cochlear implant

If it is raining or snowing protect the hearing aid/cochlear implant with a hat. Remember this will interfere with the level at which your child hears sounds.

In extreme cold, the hearing aid may make "popping" noises and then stop working. This happens when the battery becomes too cold. The hearing aid should begin working once your child returns indoors and it "warms up".



On hot/humid days, the hearing aid may stop working if sweat plugs the canal. Do not let your child wear the hearing aid/cochlear implant while bathing or swimming. If the hearing aid/cochlear implant becomes wet and stops working, remove the battery and dispose of it. Place the hearing aid in the storage case or dehumidifier box and let it dry overnight.



Hearing Aids and Cochlear Implants

Tips on keeping the hearing aid on your child's ear

Check the tubing on the ear mould, as it may need to be cut to a length appropriate to keep the aid in place. If the tube is too short or too long, it may cause an inappropriate fit and discomfort for your child. The Audiologist, Visiting Teacher or DeafHear Support Worker can do this for you.

Toupee tape (for hairpieces) or other double sided tape (with mild adhesive) can be used to attach the hearing aid behind the child's ear.

Eye glass chain/string can be attached to the hearing aid, and pinned to the child's shirt. If the aid falls off, it will stay with the child.

A very small amount of petroleum jelly rubbed onto the ear mould can help if there are areas of redness, chafing or friction in the ear.

You should ask your audiologist to check the fitting of the hearing aid if your child is having some discomfort.



Hearing Aid Care Kit

Oliver Paediatric Hearing Aid Care Kit Contents:

Battery Tester

Place battery in the appropriate slot and press. The scale indicates the battery status.

Air Puffer

Use the air puffer to remove moisture from the ear mould tubing. Water droplets can occur in the tubing, these can affect the functioning by blocking the transmission of sound.

Listening Tube

This is used to check the functioning of the hearing aid. Place the earpiece in your ear and the cupped end over the tip of the ear mould and turn on the hearing aid.

Kids Clip

This device helps to ensure that the hearing aid is not lost or broken if your child takes the hearing aid off or if it is knocked off while playing.

Dehumidifier

A hearing aid will function best and have a longer life expectancy when kept dry. You should use this equipment on a nightly basis. Put the capsules in the bottom of the tub underneath the plastic insert. Place the hearing aid with the battery compartment open (do not put in the battery), and put the lid on. Capsules can be re-used as they will change colour when they need to be changed.



www.deafhear.ie

35 North Frederick Street, Dublin 1. Tel: 01-8175700 Text: 01-8783629. Email: info@deafhear.ie

© This factsheet is the copyright of DeafHear.ie (registered as the National Association for the Deaf). Published 2011.