A close-up photograph of a man and a young girl. The man, on the left, is wearing a white t-shirt and has his head tilted down, smiling warmly at the girl. The girl, on the right, is also smiling broadly, looking up at the man. She has freckles and is wearing a white dress with a large white bow in her hair. The background is a soft, out-of-focus green, suggesting an outdoor setting like a park or garden. The lighting is bright and natural, creating a warm and affectionate atmosphere.

Understanding Childhood Hearing Loss

Information Booklet for
Families of Children Newly Diagnosed
with a Hearing Loss

chime.ie



Chime
The National Charity for
Deafness and Hearing Loss

2 Understanding Childhood Hearing Loss

This booklet is published by Chime in collaboration with the HSE, Department of Education and Skills, and Beaumont Hospital. It includes contributions from HSE Audiology Services, Speech and Language Therapy Services and Disability Services; the Visiting Teacher for the Deaf Service; and the National Paediatric Cochlear Implant Team. The booklet was first published by Chime in 2009.

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PHONAK
life is on



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Disclaimer

Our aim is to present information that is comprehensive, accurate, helpful and practical for parents and carers of children with hearing loss. However, Chime will not accept responsibility for any liability incurred as a consequence of relying on any matter, information or opinions contained on external websites or organisations published herein. While every effort is made to ensure that the information given in this booklet is accurate, it is not a legal document.

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Chime
The National Charity for
Deafness and Hearing Loss



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

CONTENTS

Subject	Description	Page Number
Introduction	The purpose and background to the development of this booklet	4
Coping with the Diagnosis	Information on diagnosis and coping strategies	5
Professionals	Roles of the professionals that may be involved in your child's life	6
Chime.ie	Services provided by Chime	7
How We Hear	An explanation of how the ear works	8
Types of Hearing Loss	A description of the main types of hearing loss	9
Levels of Hearing Loss	A description of the different levels of hearing loss	10
Sound Frequency and Volume	An explanation of Hertz and Decibels	11
Audiograms	How to read an audiogram	12
Hearing Screening and Audiological Tests	A description of the main screening and diagnostic tests for hearing assessment	13
Types of Amplification	A description of hearing aids, BAHA and cochlear implants	15
Hearing Aids and Cochlear Implants	Tips on getting your child to wear a hearing aid or cochlear implant	18
Books	A selection of books that may help with children's acceptance of a hearing aid or cochlear implant	19
Hearing Aid Maintenance	Tips on looking after the hearing aid	20
Communication	Supporting and developing your child's communication skills	22
Education	Department of Education and NCSE services and educational options	26
Assistive Technology for the Classroom	A description of the main types of assistive technology	28
Introduction to Entitlements	A description of the entitlements for which you may be eligible	29
Chime Resource Centres	Contact details for your local Chime Resource Centre	30
Useful Contacts	Contact details for main service organisations	31
Useful Websites	Useful websites and organisations	32
Glossary of Terms	A - Z description of terms used in this booklet	34
Notes and Contacts	Your list of personal notes and contacts	37
Audiological Report	A sample audiological report form	38

4 Introduction



The purpose of this booklet is to provide families with information about hearing loss. We consulted with families who have been through the process of having a child diagnosed with a hearing loss and they have made suggestions as to what information would be useful to them.

Since the booklet was first published in 2011, newborn hearing screening has been introduced by the HSE. This means that most children with hearing loss are diagnosed in the early months of life, and this edition of the booklet has been updated to reflect these important changes.

It can be difficult for families to come to terms with the diagnosis of a hearing loss and you will have questions about what lies ahead for your child. But be assured you are not alone and there is support and information available for you and your family.

This booklet includes explanations about the different types and levels of hearing loss and information on the variety of hearing tests that can be carried out to check the level of your child's hearing loss. It explains about audiograms, hearing aids and cochlear implants, and provides information about different communication approaches. There are also sections about entitlements and the roles of relevant professionals.

This booklet is published by chime in collaboration with the HSE, Department of Education and Skills, and Beaumont Hospital. It includes contributions from HSE Audiology Services, Speech and Language Therapy Services and Disability Services; the Visiting Teacher for the Deaf Service; and the National Cochlear Implant Team. The organisations and services involved in producing this booklet have agreed a Memorandum of Understanding to work together to provide a seamless and quality family centred service that reflects the needs and wishes of each individual family and each Deaf and Hard of Hearing child.

The principles of our partnership working are active parental involvement, informed parental choice, and a multi-disciplinary team approach. The desired outcome is that each family is supported to help their child with hearing loss achieve his/her full potential. Research has shown that timely and appropriate support that includes early diagnosis and quality family intervention, can enable each child with a hearing loss to develop on a par with hearing peers of similar ability.

More information can be found on:
www.chime.ie



The majority of children who are identified with a hearing loss are born to hearing parents, so you may have very little knowledge or experience of hearing loss, there might not be a history of hearing loss in the family and you may not know any other families in the same situation. It is possible that when you were actually given the diagnosis, you didn't take in fully what the professional said to you.



The time of diagnosis can sometimes be difficult for some parents and families. You may go through an array of emotions, which could include shock, denial, pain, guilt, disbelief, sadness, fear, anger, confusion, frustration, isolation, fear of coping, reflection, relief at getting a diagnosis, adjustment and acceptance. You may be confused by meeting all the professionals, new terminology, or anxious about making the right decisions for your child with limited experience and knowledge. With the introduction of Universal Newborn Hearing Screening (UNHS – see page 13), children born with a hearing loss are being identified by three months of age. An early diagnosis will be of great benefit to your child as a range of options can be offered in a time sensitive manner to provide the best outcomes for your child, although it may increase the feelings of shock for some parents.

For many parents this is an emotional period, and managing these feelings is an ongoing process. Be prepared for good and bad days and it is important to remember it is ok to have these feelings. On the other hand, you may not be feeling any of these emotions and you may have accepted the diagnosis without any major reaction. Be assured that there is no right or wrong way to react, and the way you are reacting is right and normal for you.



You may want to talk to other parents who have been in this situation, or to professionals who understand your situation, who will listen to you and support you. Please contact your local **chime** Resource Centre who can provide professional support to you and put you in touch with other parents and services.

Coping Strategies

Many parents have said that once they gained some knowledge of hearing loss, their child's communication needs and language development, they felt more in control and not as fearful. So try to get as much information as possible and take the time to read and understand it. Take the opportunity to speak to other parents - family and friends do mean well, but there is nothing like talking to someone in a similar situation.



If you want information or jargon clarified, write down questions you want to ask the professionals before each appointment and write a few notes on the answers they give you. You can use the 'Notes' pages and pocket at the back of this booklet to make notes and store information.



Be aware that there are different views and opinions on child deafness and approaches to managing hearing loss. Take the time to get as much information as you need. Do not be pressured into making a decision for your child; be sure that you have enough information to make an informed decision that is best for your child and family.

Remember your child doesn't know any different and will still want to do all the same things as their peers, it might just be in a slightly different way!

Roles of Professionals that Could be Involved in Your Child's Life

Audiologist

- specialises in the assessment of hearing ability to be able to provide a diagnosis of the type and degree of hearing loss. Children are referred to an audiologist when a hearing loss is suspected. Referrals are usually received from the Universal Newborn Hearing Screening Programme, Public Health Nurses and GPs. The role includes the assessment of hearing, provision of information about hearing loss and managing the hearing loss. This includes the prescription, fitting, verification and evaluation of hearing aids and/or other assistive technologies to ensure the child achieves the best outcomes. The national paediatric audiology service works with parents and other professionals to help achieve the best outcomes for children and their families.

Paediatrician

- a paediatrician is a specialist doctor who works with babies and children. The role of the paediatrician in evaluating a baby/child with hearing loss is to determine whether there is an identifiable cause for the hearing loss. This involves taking a history of the pregnancy and birth and considering the family history in detail. Blood and urine tests and an ECG are usually performed, as well as genetic testing for two of the most common genetic causes of congenital hearing loss. If further genetic testing is indicated, a referral is made to a Clinical Geneticist. Referral for an eye check is also recommended. The referral to the paediatrician is usually made after the infant has been diagnosed with hearing loss, but if this has not happened in your case you could request your GP to do so.

Speech and Language Therapist

- assesses and promotes the development of speech and language skills of children who have a hearing loss.



Public Health Staff

- includes the Area Medical Officer and Public Health Nurse. They carry out child developmental examinations of young babies and hearing screening of school children in order to refer appropriate cases to Audiology and/or ENT services.

Ear, Nose and Throat Consultant (ENT)

- specialises in the health, medical and surgical treatment of the ears, nose, throat and associated structures of the head and neck. They are based in hospitals and work as part of a multi-disciplinary team.

Chime.ie Support Team

- provides services to Deaf and Hard of Hearing people and their families. The services focus on supporting individuals and families to deal with their particular situation. The services are strictly confidential and are provided free of charge. (For more information, see page 7)

Visiting Teacher Service

- provides a service to children who are Deaf or Hard of Hearing. The service is staffed by qualified teachers with specialist skills and knowledge of the development and education of children who are Deaf/Hard of Hearing. The service offers longitudinal support to children, their families and schools, from the time of referral through to the end of post-primary education. Support includes information on communication, strategies for encouraging language development, direct teaching, contributing to children's Individual Educational Plans (IEPs) and recommendations and advice on the use of assistive technology and amplification equipment.

Referrals may be made by parents, audiologists, school principals, GPs, Cochlear Implant Team, National Council for Special Education, or any other agency involved with the child. The referral agent should have parental consent to refer the child to the service.

National Cochlear Implant Team

- provides a comprehensive family friendly service for the assessment and management of children with a severe-profound hearing loss. The service assesses children, including those with complex needs, for suitability for a cochlear implant. If deemed appropriate, the CI Programme provides the necessary medical, surgical and post-operative management and rehabilitation. Cochlear implantation in young children requires a unique combination of technology, skills and long-term child and family support, while the child learns to use the new auditory sensation provided by the implant system. The programme includes assessment, surgical intervention and all post-operative follow-up and management. Referrals are accepted from any medical or healthcare provider.

Since 1964 Chime has campaigned for full equality in all aspects of life for Deaf and Hard of Hearing people, and for parents and caregivers of children with a hearing loss to have appropriate supports and services for their children's development.

Family support services

Many parents experience a range of emotions when they discover that their child has a hearing loss. Chime provides a range of supports which you may find helpful at this time. The Family Support Service is a service for all parents/guardians of a child with a hearing loss, and focuses on helping individuals and families deal with their particular situation.

This service is available to provide support on a range of issues including coping with diagnosis, adjustment to deafness and hearing loss, behavioural issues, parenting, rights & entitlements, information & advice, social work & counselling, family therapy, personal & relationship difficulties, and advocacy.

Visit the Parents Corner section of our website at www.Chime.ie for further information, factsheets, news and events in your local area.



The **Chime** Family Support Service is comprised of professionally qualified Social Workers and Family Support Workers who are familiar with all aspects of deafness and hearing loss.

This service is strictly confidential and is provided free of charge and through the communication method of your choice, i.e. Irish Sign Language, Lip-reading etc.

Information weekend for families with a child newly diagnosed with a hearing loss

The weekend brings families together from across the country, giving you the opportunity to gain information about supports available locally and nationally from professionals and peers. The weekend is led by experienced Chime staff and they are available to provide support and information as required.



The schedule begins on a Friday evening and finishes on a Sunday afternoon. It incorporates a mixture of workshops, presentations and informal discussions. Childcare is provided while you attend the workshops/presentations.

Parents of a child with a hearing loss have often said it helps to talk to another parent who has been through a similar experience to their own. As this weekend is often the first time parents have met with their peers, there is ample opportunity to talk to other families and discuss their experiences with people who understand.

There is a small charge for attending the event, which is subsidised by Chime, and this covers all accommodation, meals, childcare and information packs.

Resource centre activities

Each Chime Resource Centre has a programme of activities for families, these include:

Family Fun Days - Easter, Summer, Halloween, and Christmas - these events aim to bring families together socially. They provide opportunities for you to talk to other parents and for your child to meet other Deaf and Hard of Hearing children.

Summer Camps - these are usually 2-3 day events and provide opportunities for children with hearing loss and their siblings to meet other children in a similar situation to themselves in a fun environment.

Please look at our website www.Chime.ie for information on the services in your local resource centre.



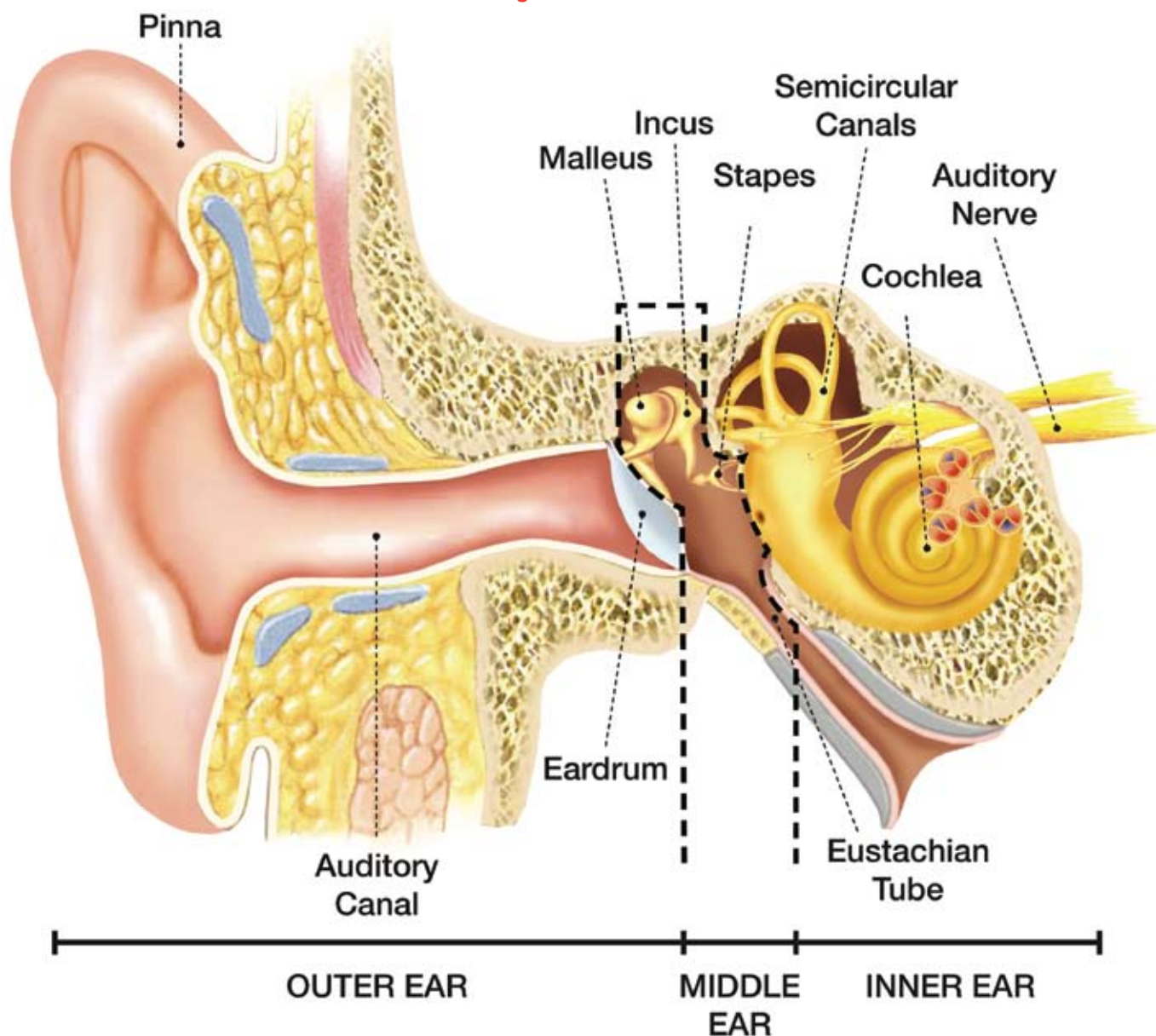
8 How We Hear

Before we can begin to talk about hearing loss, we must first understand how we hear. The ear is made up of three different sections: the outer ear, the middle ear, and the inner ear. These parts work together so you can hear and process sounds. The outer ear, or pinna (the part you can see), picks up sound waves and funnels them down the ear canal towards the ear drum (tympanic membrane).

When the sound waves hit the eardrum, they cause it to vibrate. These vibrations cause the three tiny bones in the middle ear to vibrate. These bones are called the ossicles (malleus, incus and stapes, commonly known as the hammer, anvil and stirrup). They conduct sound vibrations across the middle ear, which is air-filled, and on into the inner ear (cochlea).

The stapes sits in the oval window and when it vibrates it causes the fluid in the cochlea to move like a wave. This wave travels along the cochlea and causes the sensitive hair cells in the cochlea at a particular point to vibrate. The point at which the hair cells vibrate depends on the frequency of the sound. The function of the hair cells is to change sound waves into electrical impulses that then travel along the auditory nerve to the brain. A person 'hears' sound when the electrical impulses reach the brain.

Diagram of the Ear



There are three primary types of hearing loss: Conductive, Sensorineural and Mixed.

Conductive: This describes a condition in which sound is not conducted efficiently through the outer ear canal to the eardrum and the bones or ossicles of the middle ear. This results in the inability to hear faint sounds; sounds not being effectively delivered to the inner ear and/or a reduction in sound levels. This type of hearing loss can often be medically or surgically corrected.

Causes of conductive hearing loss

A common cause of conductive hearing loss in children is persistent middle ear infections that lead to otitis media effusion (commonly known as glue ear). Young children are prone to inflammation of the middle ear (otitis media) because the eustachian tube is less developed and at an angle where bacteria, viruses, and other irritants may enter from the nasal passageway. This can lead to middle ear infections which in turn can result in persistent fluid in the middle ear thickening (otitis media effusion), affecting the functioning of the middle ear. Other causes include frequent colds and flu, foreign bodies in the ear, trauma to the ear or head and otosclerosis (a condition in which the bones of the middle ear become immobile because of the abnormal growth of the bone surrounding them).

Sensorineural: This describes a condition in which the problem lies within the cochlea (inner ear) or in the nerve pathways (auditory nerve) which delivers the sound to the brain. Nerve deafness is quite rare and most inner ear hearing loss is related to loss or damage of the inner and/or outer hair cells of the cochlea. Sensorineural hearing loss is permanent and the only treatment is the fitting and use of a hearing aid that is capable of stimulating the cochlea, or the fitting of a cochlear implant.

Causes of sensorineural hearing loss

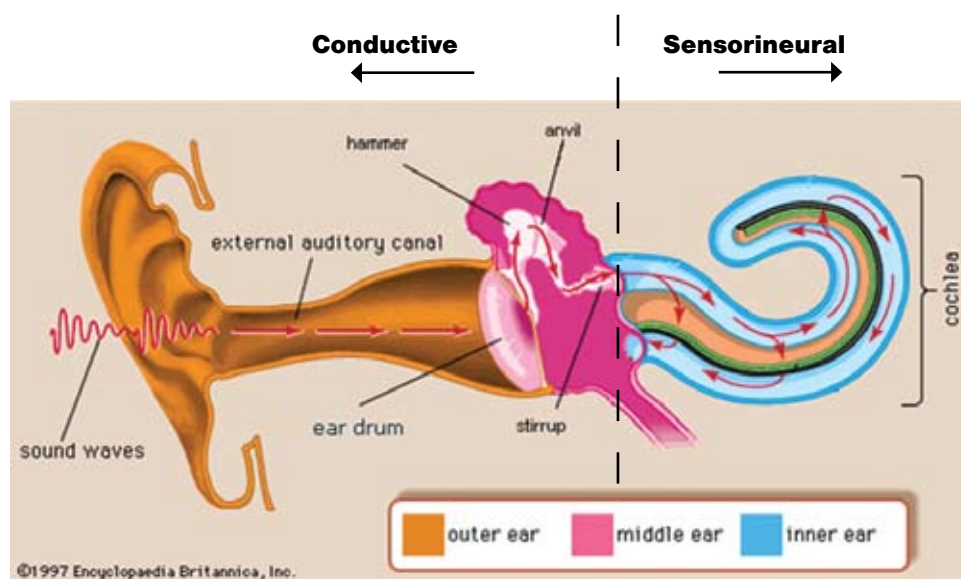
Congenital hearing loss, which is present from birth, can have a range of causes such as events during pregnancy or birth, prematurity, lack of oxygen, intrauterine infections, including rubella, or genetic factors. In some cases, the causes may not be known.

Sensorineural hearing loss is also a natural part of the ageing process and can also be caused by exposure to loud noise for extended periods of time. Other causes include viral infections of the inner ear, measles, mumps, chickenpox, head injuries, Ménière's disease (abnormal pressure in the inner ear). Certain drugs have a toxic effect on the structures of the ear and can cause sensorineural hearing loss.

Mixed: This type of hearing loss may occur when there is a sensorineural loss and a conductive loss present.

Auditory Neuropathy Spectrum Disorder (ANSD)

ANSD is a particular type of hearing problem where sound arrives at the cochlea, but does not travel normally through the nerve pathways to the brain. ANSD can affect children in different ways; some children may have mild effects while other children may have more severe effects. Children with ANSD may benefit from hearing aids or cochlear implants. Causes of ANSD include difficulties during or after birth, such as prematurity and severe jaundice, or genetic factors.



10 Levels of Hearing Loss

Hearing loss is often classified by means of different levels. The same definitions are not always used, but the following are among the most common.

Normal

On average, the quietest sounds heard by children with their better ear are up to 25 dB.

Mild

On average, the quietest sounds heard by children with their better ear are between 26 and 40 dB. The effects of a mild hearing loss are most noticeable when:

- Someone is speaking at a distance.
- The environment has a lot of background noise.
- The speaker talks quietly.

In these situations a person with a hearing loss may not be able to understand the conversation. Younger children may not be able to 'overhear' or 'listen in' to other conversations, and miss out on information in this way. Also quiet sounds in speech such as 's' and 'd' at the end of words may be more difficult for younger children to hear properly.

In summary, if the speaker is faraway, there is a lot of background noise or if the voice is quiet and low, then a person with a mild hearing loss may not be able to follow the conversation.

Moderate

On average, the quietest sounds heard by children with their better ear are between 41 and 70 dB. People who have a moderate hearing loss have difficulty keeping up with conversations when not using a hearing aid.

Most conversation is spoken at around 65 dB and will only partially be heard by someone with a moderate hearing loss who is not using hearing aids. The quiet parts of speech, such as word endings and certain consonants sounds such as 'f' or 'ch', will not be heard at all without hearing aids. Hearing aids provide excellent benefit for children with moderate hearing loss. Children with moderate hearing loss who do not have access to hearing aids will have difficulties developing speech and language skills on a par with their hearing peers.

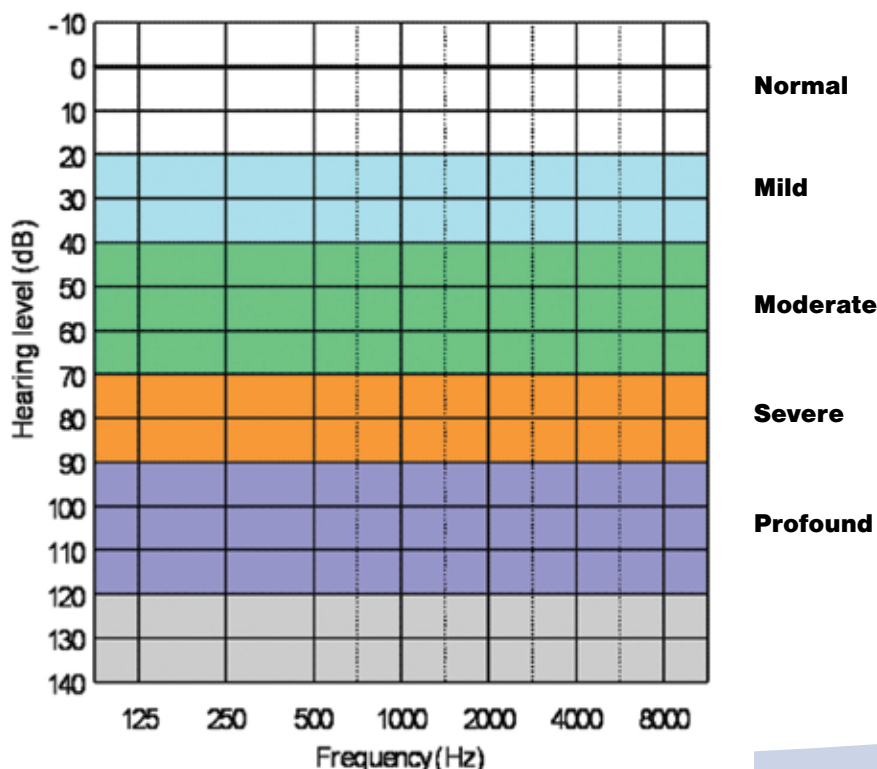
Severe

On average, the quietest sounds heard by children with their better ear are between 71 and 90 dB. Conversational speech (c. 65 dB) will not be audible to a child with a severe hearing loss. Children with severe hearing loss will benefit from hearing aids, but many also rely on visual clues and lipreading to help with understanding conversation. Some families may decide to use a combination of speech and sign language to support their child's language development, while some families only use spoken language.

Profound

On average, the quietest sounds heard by children with their better ear are at 91 dB or more. Conversational speech without hearing aids will not be audible to a child with a profound hearing loss. Children who have a profound hearing loss may benefit from powerful hearing aids or may be suitable for a cochlear implant. Families may decide to communicate with their child using speech only, sign language only, or a combination of sign language and spoken language.

The levels of hearing loss are shown on an **Audiogram**

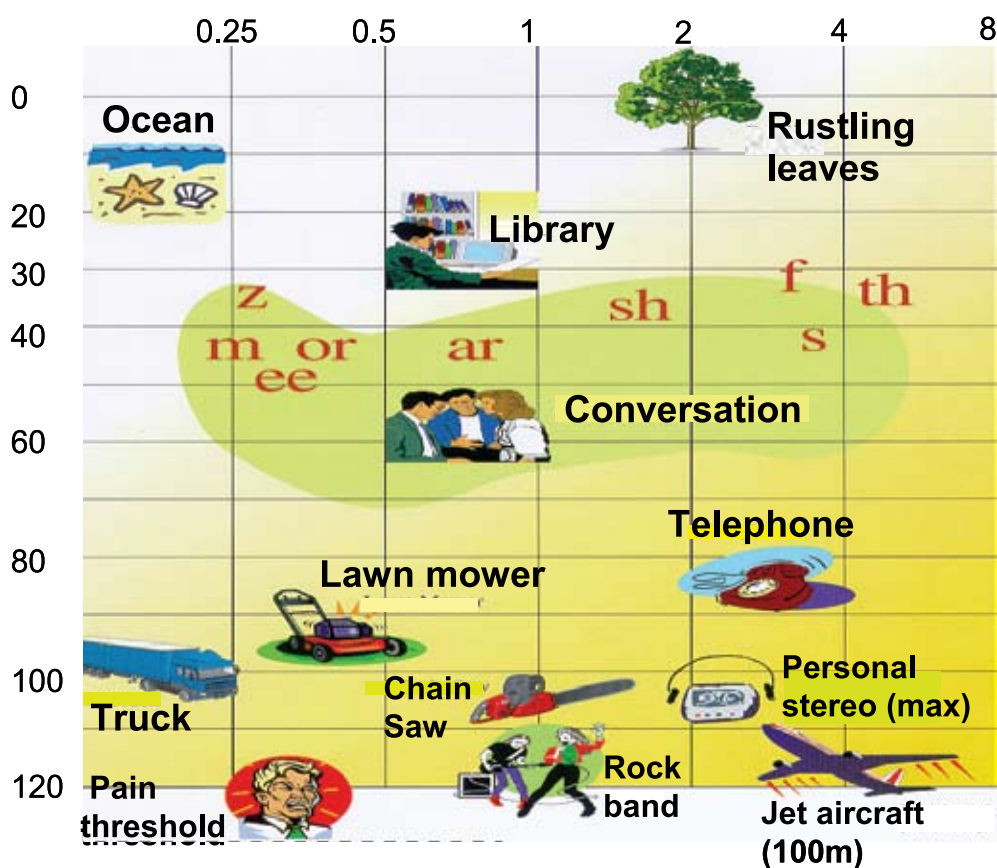


Sound is made up of vibrations of energy which knock together to produce sound waves. The waves travel by compressing on air particles, spreading outwards from the source of the sound.

Most sounds are made up of different frequencies; these give the sound its pitch. Frequency is measured in Hertz (Hz), as is shown across the top of the audiogram. Speech is made up of different frequencies from low pitch sounds (250Hz) up to high pitch sounds (4000Hz). High frequency speech sounds include 's' and 'f'.

Loudness is measured in decibels (dB) and is shown vertically on the left column in the diagram below. The sounds are getting louder as you move down the column. The diagram shows how loud some everyday sounds can be. Audiologists often describe loudness as 'intensity'.

Diagram illustrating the loudness and pitch of the sound components of speech and a variety of common sounds in our environment.



12 Audiograms

Understanding Audiograms

The audiogram is a graph on which a person's ability to hear different tones (frequencies or pitch) at different volumes (intensities) of sound is recorded.

Modes of testing

The standard hearing test is called 'pure tone audiometry'. Different types of earphones can be used to present sounds to the ears in different ways:

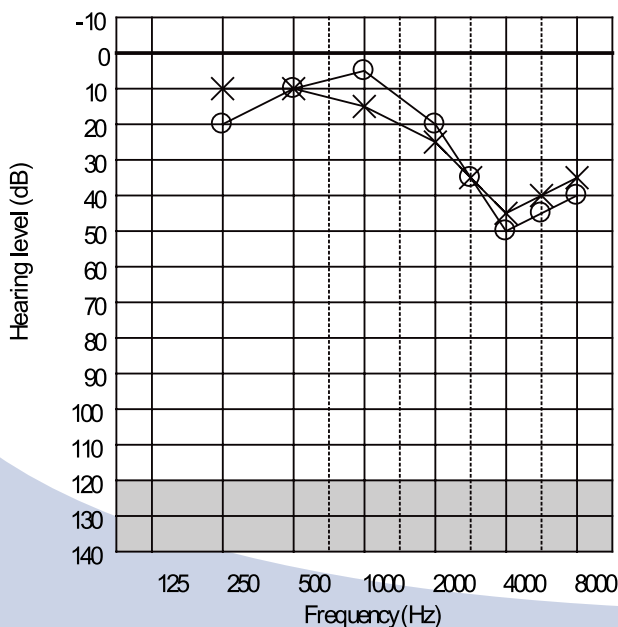
- Air conduction – what your child can hear through their external and middle ear. This can be measured by playing sounds through loudspeakers, which tests the better hearing ear. It is preferable to use earphones that either go over the ears or that can be placed in the ear canal, as this can enable each ear to be assessed separately.
- Bone conduction – vibrates the bone behind the ear to bypass the outer and middle ear in order to stimulate the inner ear directly. A headband with a small vibrator is placed at the back of the ear so that sound vibrations can pass directly to the inner ear.

By comparing the results of the air and bone conduction tests, the audiologist or ENT specialist can determine whether the hearing problem is a conductive or sensorineural hearing loss and the degree of hearing loss.

Symbols

Left ear air conduction, represented by an: **X**
 Right ear air conduction, represented by an: **O**
 Bone conduction, represented by an: **Δ**

A hearing loss may be unilateral (affecting one ear – also called single sided deafness or SSD), or bilateral (affecting both ears). The diagram below demonstrates that the person has normal hearing in the low frequencies and a bilateral moderate loss in the high frequencies.



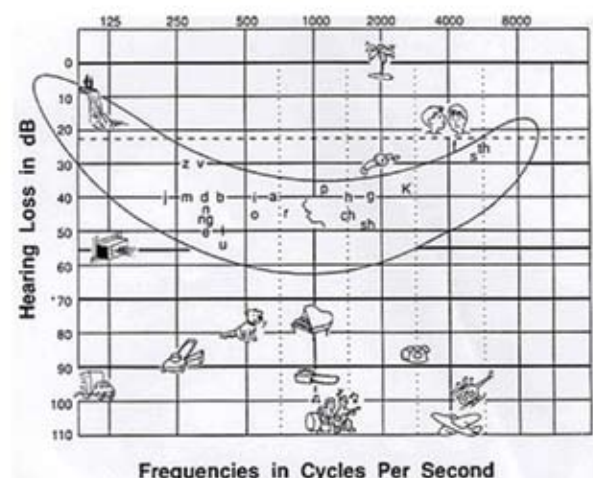
How the Audiogram Relates to Speech

This chart shows the frequency and loudness of individual speech sounds and is known as the 'Speech Banana'.

If you look at your child's audiogram you can begin to understand the sounds they can or cannot hear with or without their hearing aid, bone anchored hearing aid or cochlear implant.

The main function of any hearing device is to provide access to the important speech sounds (as represented by the speech banana), but it is important to be aware that they do not restore normal hearing. Hearing loss is not just the loss of sound intensity, but can also impact on the clarity of speech sounds. It can be helpful to discuss your expectations with the audiologist, visiting teacher or other professionals. It is important that you have all the relevant information on your child's hearing loss and the likely hearing gain of your child's hearing devices, so you can assist your child to get the most benefit from them.

Speech Audiogram





Universal Newborn Hearing Screening

Since 2013, all babies born in Ireland and eligible will be offered a newborn hearing screening at birth. The hearing screen uses sensitive equipment to automatically measure responses from babies' hearing system. This means that children born with hearing loss are usually diagnosed by three months of age. This is much earlier than was previously possible and means that Deaf children and their families can benefit from earlier support and intervention. International research shows that early diagnosis of hearing loss, combined with quality family-centred support programmes, results in hugely improved life outcomes for Deaf and Hard of Hearing children that are on a par with their hearing peers.

Automated Otoacoustic Emissions (AOAE)

A two-stage hearing screening programme is provided for newborn babies in Ireland. An Automated Otoacoustic Emissions (AOAE) test is the first test in the newborn hearing screening programme, and is usually carried out in the hospital. Otoacoustic emissions are weak sounds generated by the movement of the outer cells of the cochlea in response to sound stimulation. In this test the emissions, often called echoes, are measured by a sensitive microphone recorded from the ear canal. This is a simple, quick and non-invasive test which gives immediate results. Your baby stays with you at all times and is usually relaxed or asleep when the test is carried out. Most AOAEs are completed in maternity hospitals before mother and baby are discharged.

If the AOAE records a complete response, the baby has satisfactory hearing. Where the test does not produce a complete response it does not mean that the baby definitely has a hearing loss. For example, it is possible that the environmental conditions were not good at the time of the test, or that the baby was too active. The hearing screener may repeat the AOAE test or refer your baby for a further test called an Automated Auditory Brainstem Response (AABR) test which gives further information.

Automated Auditory Brainstem Response - (AABR)

An Automated Auditory Brainstem Response (AABR) screen measures neurological (electrical) responses from your child's hearing nerves and brain to a single level of sound. It is performed when well babies do not have a complete response to the AOAE screening test. It is also completed routinely with babies who have had more than 48 hours in the Special Care Baby Unit, as these babies can be at a higher risk of having a hearing loss.

The screener places sensors on the skin, one on the forehead, a shoulder, and the back of the baby's neck. At this stage sound is sent to the ear via an ear muff and the sensors pick up the brain activity in response to the sounds. The machine will give one of two results, a 'complete response' which indicates the hearing is satisfactory; a 'no complete response' means that the result is still not clear and the baby is then referred on for a more comprehensive audiological assessment to an audiologist.

If the baby records a complete response, the hearing screener will check with the baby's mother if there are any factors that may be associated with late onset hearing loss. If there are, the baby will be put on a waiting list to be seen at around nine months of age in Audiology Services for further hearing assessments.

Early Assessment Clinic Auditory Brainstem Response - (ABR)

This test is more detailed than the AABR test used in the hearing screening programme and is completed by an audiologist. The audiologist will use a range of intensities and, if required, frequencies of sound to measure your child's responses, the results of which are analysed on the computer and assessed. This test needs to be completed when your child is asleep and relaxed so that the results are not affected by movement or noise from the baby. The audiologist aims to perform this test with babies referred from the NHSP as early as practicable to maximise the time window when the baby is likely to sleep for the duration of the test, typically before three months of age. Older babies and toddlers who are referred for an audiological assessment will have age-appropriate hearing assessments.

14 Audiometry and Diagnosis

If your baby is diagnosed with a hearing loss, the audiologist will provide you with the results and a copy of your baby's audiogram. The audiologist may complete the audiology report form in this booklet for you (see page 38), so that you keep it safely. If your baby's hearing loss is significant the audiologist will recommend fitting hearing aids and referral to other professionals to support you and your baby to help ensure the best outcome for your child's development. The audiologist will seek your consent before proceeding with fitting hearing aids or making any referrals. The fitting of hearing aids will normally happen a few weeks after the diagnosis has been made. See the section on hearing aids for further information.

Diagnosis of Older Children

It is important that parents continue to be vigilant even though their child's hearing has been confirmed as satisfactory by the Newborn Hearing Screening Programme. Hearing loss can occur in early or late childhood, and the cause may be known or unknown. Causes of acquired hearing loss include meningitis or a serious accident. Such children will not be diagnosed through the Newborn Hearing Screening Programme. If you are concerned about your child's hearing at any stage, talk to a health professional about it.

Otoscopy

This test involves looking into your child's ear canal with a special magnifying torch called an 'otoscope'. This is to check for wax, blockages or any problems with the ear canal or eardrum which needs to be taken into account before proceeding onto other tests.

Visual Reinforcement Audiometry - (VRA)

This test relies on the baby's response to sounds and is carried out at the audiology clinic in a sound-proof booth. Your child sits on your lap and you are positioned between two loudspeakers. The audiologist produces a range of different intensities and frequencies of sound through the speakers and your child is shown how to respond to what they hear by turning towards the speaker and toy reinforcer. Once they have responded, your child is rewarded with the movement or lighting-up of an animated toy, which maintains their interest during the test. The purpose of this test is to determine the lowest volume at which your child responds consistently to a variety of sounds but does not give specific information about each ear, as the sound from the speakers goes to both.

More detailed assessment is obtained using either headphones or insert earphones to get information for each ear separately or the use of the bone conductor to determine if the problem lies within the cochlea or middle ear.

Conditioned Play Audiometry

This test involves your child listening to a range of intensities and frequencies of sound. The test is suitable for children who are too old to respond consistently to VRA. Again it can be performed with sound from different earphones to build up a picture of the child's hearing ability.

This test uses a play scenario to obtain a response. The child has to wait until a sound is heard and then performs an activity such as placing a peg in a hole or dropping a block into a bucket.

Tympanometry

This is an automated test to assess middle ear function. It measures the movement of the eardrum in response to a change in pressure and produces a graph. During this test a small rubber tip is inserted in the ear and your child will feel a slight pressure change. The sensation is a little like going up and down in an airplane which causes a bunged up type feeling in the ear.



Hearing Aids

Once the audiologist has assessed the results of the hearing tests, they can determine whether hearing aids will help your child. Hearing aids amplify all the sounds in the environment; 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

These hearing aids are worn behind the ear and are connected to a custom made silicone or acrylic ear mould that fits inside the outer ear. The components are held in a case behind the ear. Most children are fitted with digital BTE hearing aids due to technical advantages over in-the-ear (ITE) hearing aids.



Sound is picked up by the microphones, is amplified within the digital processing system and travels through the ear mould into the ear. BTE aids are used by people of all ages from mild to profound hearing loss. Incorrectly fitted or poorly fitting ear moulds may cause feedback, which is heard as a whistling sound from the hearing aid. It can also result from a build up of earwax or middle ear fluid.



Behind the Ear (BTE) Open Fitting Hearing Aids

If your child's hearing loss is in the mild-moderate range, an open fitting type hearing aid may be recommended. This still includes a BTE aid. Instead of using an ear mould, a very thin tube passes the sound into the ear canal, and this is held in position by a small dome.

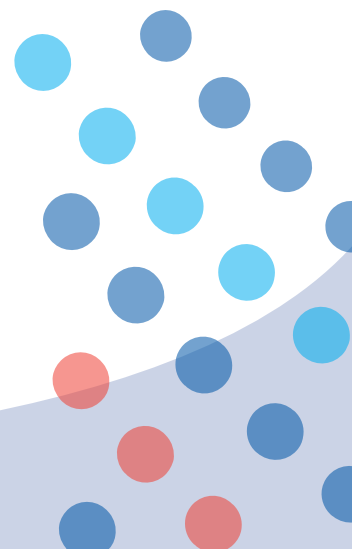


Prescribing, Verifying and Evaluating Hearing Aid Performance

Based upon the age and size of your child as well as their acoustical needs, the audiologist will select a hearing aid. The hearing levels that have been measured in your child's hearing assessment are used to scientifically prescribe the output of the hearing aid over a range of levels and frequencies. The audiologist will make careful measurements using a probe microphone system which take into consideration the size of each child's ear canal. A thin flexible tube is placed into the child's ear to record these responses.

This enables the audiologist to accurately fit the hearing aids to the child's hearing level and make sure that they can provide the best possible access to speech sounds. The audiologist may perform additional tests, using speech or speech like sounds called ling sounds to assess if the child is hearing well with the amplification from the hearing aids.

Some children may not have any ear canals (atresia) or are unable to wear a conventional hearing aid. This might be due to severe irritation of the ear canals, chronic long lasting middle ear fluid, or a very severe unilateral or bilateral conductive hearing loss. In these cases, children may be referred to one of the centres providing bone anchored hearing aid services for assessment.



16 Types of Amplification

Bone Anchored Hearing Aids (BAHA).

A bone anchored hearing aid is used by some children and adults who cannot wear a conventional hearing aid. A BAHA can be worn on a headband behind the ear or can be surgically attached to the skull bone behind the ear. The BAHA works by transmitting sound through the skull bones directly to the cochlea. It is a removable hearing aid that is attached to an implant and an abutment. A BAHA normally consists of three parts:

1. The implant: This is a small titanium screw/fixture that is implanted into the bone behind the ear. The metal becomes firmly anchored to the skull bone and integrates or (fuses) with the bone over a period of weeks.
2. The abutment: This is a socket that is on the outside of the scalp that is attached to the internal fixture (implant). The abutment goes through the scalp and is shaped to hold the snap-fit attachment on the sound processor. The abutment can be unfixed from the implant by the BAHA team if required.
3. The sound processor: This is the hearing aid part of the system. It has a snap-fit attachment at the back of the aid, which attaches on to the abutment. The sound processor is detachable.



Children being considered for a BAHA can have a trial using a test BAHA on a headband (called a softband). This allows parents, the visiting teacher and the audiologist to see how the child is responding. For young children, the soft-band may be the best option until the child is old enough to undergo surgery for the BAHA.

Some children may be suitable candidates for a Transcutaneous BAHA system. In this system a magnet is attached to the implant which holds the externally worn sound processor in place. It does not require an abutment to pass through the skin. The system potentially has a number of advantages over the conventional system, including a reduced risk of infection and easier attachment of the processor. This type of BAHA is however only suitable for certain types of hearing loss and requires a detailed hearing assessment.

If your child's hearing loss is severe or profound, then high powered digital hearing aids may not provide enough access to sounds for a child to be able to develop spoken language and a cochlear implant may be an option for those who wish to follow an aural-oral route. Alternatively, some families may prefer Irish Sign Language as the best option for their child to develop language.

Cochlear Implant

What Is a Cochlear Implant?

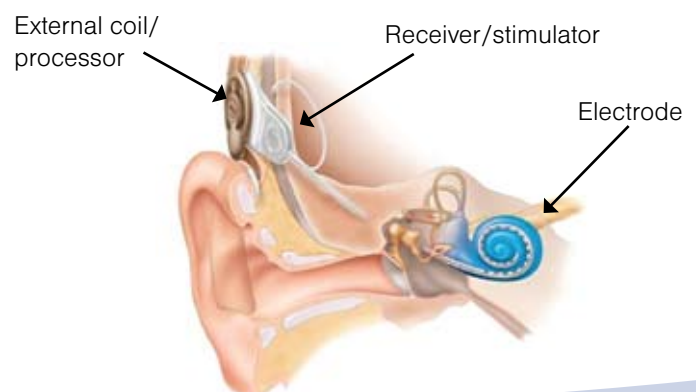
A cochlear implant is a highly sophisticated electronic device that provides a hearing sensation for people with a severe-profound hearing loss. It replaces the function of the damaged inner ear (cochlea) by electrically stimulating the hearing nerve to produce a sensation of sound. It can give awareness of everyday sounds and facilitate the development of spoken language.

The cochlear implant consists of both internally implanted and externally worn components. The internal part of the implant consists of a receiver and electrode array and is inserted into the cochlea by the ENT surgeon. The external part of the implant consists of a battery driven speech processor. The external parts of the implant are fitted about four weeks after surgery, and until then no hearing sensation occurs.



How does a Cochlear Implant work?

The ear level microphone picks up sound, which is then sent to the speech processor. The speech processor converts the sound signals into an electrical format. This information is then sent to the transmitting coil, and crosses the skin to the internal receiver stimulator via radio signal. This signal is then decoded to determine which electrodes should be stimulated and at what level. The appropriate electrodes in the cochlea are stimulated and they send electrical impulses to the auditory nerve. The auditory nerve sends the signals to the brain where they are interpreted as sound. This whole process happens at the same speed as normal hearing.



The external part of the implant is removed when your child goes to sleep or has a bath etc. Your child will be unable to hear sounds during these times. A cochlear implant does not restore or create normal hearing. Instead, under the appropriate conditions, it can give a useful auditory understanding of the environment and help the person understand speech. For young children, early fitting of a cochlear implant has also been shown to be crucial in supporting children to develop good speech.

Who gets a Cochlear Implant?

Deaf and severely Hard of Hearing people may receive cochlear implants. Both children and adults can be candidates for implants and over 200,000 people worldwide have received implants. Young children can also be candidates for implants. Cochlear implants, coupled with intensive post-implantation therapy, can help young children to acquire speech and language on a par with hearing peers. Earlier implantation is associated with better outcomes, and with the introduction of newborn hearing screening, fitting of cochlear implants can now take place at an earlier stage.

How does someone receive a Cochlear Implant?

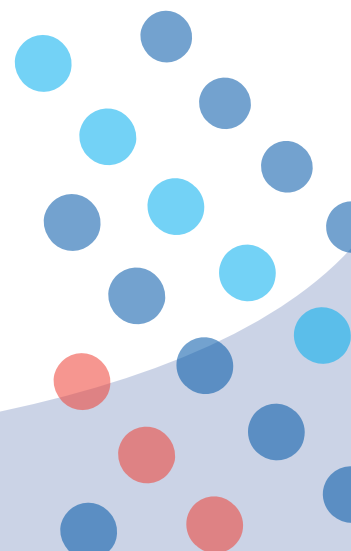
In Ireland the National Cochlear Implant Programme (NCIP) is based in Beaumont Hospital and the Children's University Hospital Temple Street, Dublin. A detailed assessment is needed to find out whether cochlear implantation is likely to benefit your child. The assessments are carried out by the Cochlear Implant Team. As a general guideline, to be considered for an implant you need to meet the following criteria:

- Severe to profound sensorineural hearing loss in both ears
- Receive only marginal benefit from hearing aids
- Medically suitable for surgery
- Strongly motivated
- Having a good support network from family, friends, or other professionals



The Cochlear 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. As parents you need to be aware that not everyone performs at the same level with a cochlear implant.

Cochlear implantation involves a surgical procedure. The decision to receive an implant should involve a lot of discussion with the NCIP. Some may choose not to have a cochlear implant for a variety of personal reasons. Although surgical implantation is almost always safe, there is a slight risk of complications, 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 & language therapists and audiologists are the professionals frequently involved in this learning process.



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

The purpose of a hearing aid or 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 direction of sounds. Therefore, it is crucial that you persevere in encouraging your child to wear their hearing aid or cochlear implant at all times when they are awake.

Each child reacts differently. While some will wear the hearing aid or cochlear implant without any fuss, others will become upset or throw a tantrum, and some children may wear the aid or implant in certain situations and not others. Following the introduction of newborn hearing screening, your child may be fitted with hearing aids by six months of age and may not show any signs of discomfort to the hearing aids.

It is important to be mindful of the fact that each environment and 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 or cochlear implant out will slow this process down. In the beginning, reward your child if they wear the aid or implant 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.

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



Let your child hold and touch the hearing aid or 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 and taking out their aid or implant and make it fun. Have a special box that they have decorated to keep the aid or implant in, and put it in an area where the child can reach.

Try putting the hearing aid or cochlear implant in your child's ear before they wake up. Warming up the mould in your hands before putting them 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 or implant separately i.e. the mould for one-day, then the aid or implant on another day. You could put it 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 or implant, turn it on at a low volume for a short period of time. Then turn it off, but leave it in place. Keep repeating this process, turning up the volume slightly each time.

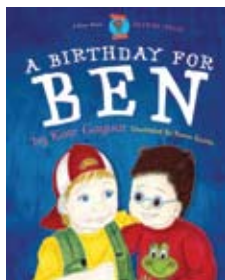


If your child is reluctant to wear the hearing aid or cochlear implant for any length of time, use a timing device that vibrates or flashes and is visual. Ask them to wear it for the length of time set, and then lengthen the time as the days and weeks progress.

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

A Birthday for Ben

It is Ben's 7th birthday, but he really doesn't want a birthday party. But when his friends have a surprise for him, he then learns just how easy it is for everyone to join in the fun. Available from your local Chime Resource Centre or at www.chime.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 Caroline. It is a fun book that also subtly helps raise deaf awareness. Available from your local Chime Resource Centre or at www.chime.ie.



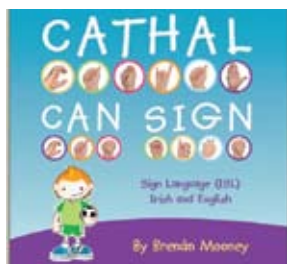
John Gets Ready for School

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! Available from your local Chime Resource Centre or at www.chime.ie.



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 your local Chime Resource Centre or at www.chime.ie.



Elana's Ears

Lacey's luxurious life as an 'only dog' changes the day Mom and Dad bring home new baby Elana. Initially Lacey is confused and upset, but then realises that Elana cannot hear. Lacey vows to become 'Elana's ears' and the best big sister in the world. There is also a section for parents describing children's common responses to new siblings. Available from www.amazon.co.uk.

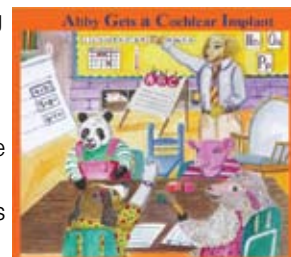


Can You Hear a Rainbow

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 language and other senses to communicate with his family and friends, with his team-mates on the football field, and at school with an interpreter. Available from www.forestbooks.com

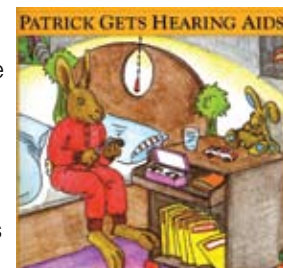
Abby Gets a Cochlear Implant

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.co.uk



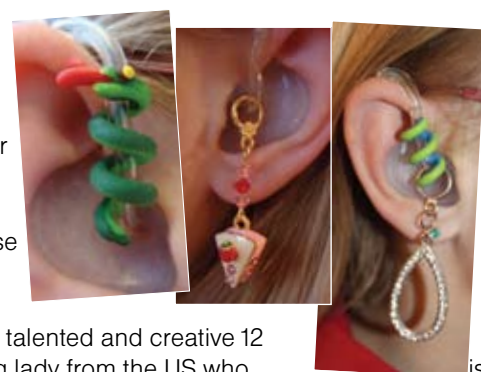
Patrick Gets Hearing Aids

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 for download from phonak.com



Bling for Hearing Aids and Cochlear Implants

chime stocks a range of Jewellery Charms and Tube Twists for hearing aids and cochlear implants. These products are handmade by Hayleigh, a talented and creative 12 year old young lady from the US who is deaf and wears hearing aids herself. The hearing aid accessories encourage children (and some older people!) who wear hearing aids to see their aids as a positive fashion accessory.



Toys with Hearing Aids:

A number of websites sell toys with hearing aids, including mytwinn.com and buildabear.com. These toys can be useful in helping your child adjust to wearing hearing aids, as well as creating awareness of hearing loss among siblings and friends.

20 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 cleaning the hearing aid. This 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. 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 **Chime** support staff can replace it for you. These problems will affect the quality of sound that your child will hear.

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

Check that the battery is still working by 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.

Weather conditions that can affect a Hearing Aid or Cochlear Implant

If it is raining or snowing protect the hearing aid or 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 aid or implant should begin working once your child returns indoors and it "warms up".



On hot or humid days, the hearing aid may stop working if sweat blocks the tubing or microphone. Do not let your child wear the hearing aid or cochlear implant while bathing or swimming. However, children with cochlear implant models Nucleus 5 and 6 can swim with their implants using the Aqua Accessory. If the aid or implant becomes wet and stops working, remove and dispose of the battery. Place the hearing aid in the storage case or dehumidifier box and let it dry overnight.

For more information on hearing aid maintenance and functioning talk to your visiting teacher or audiologist.

Paediatric Hearing Aid Care Kit

(available from Chime or at www.chime.ie)

Contents

- User Guide
- De-humidifier Box and Capsules
- Cleaning Brush
- Hearing Aid Clips
- Battery Tester
- Air Puffer



Battery Tester

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

Air Puffer

You 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. You 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 are knocked off while playing.

Dehumidifier

A hearing aid functions best and has a longer life expectancy when kept dry. You use this equipment on a nightly basis. You 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, they will change colour when they need to be changed.

Stetoclip

(available from Chime or at www.chime.ie). A stetoclip hearing aid listener helps parents to check that their child's hearing aids are working properly. This is especially important for young children who are unable to indicate if their hearing aids are not working properly.



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 your **chime** 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 or 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 a water-based jelly rubbed onto the ear mould can help if there are areas of redness, chafing or friction in the ear. (Petroleum jelly is oil-based and can interfere with the silicone used in making ear moulds).

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



Visit Parents Corner on www.chime.ie to view videos on hearing aid maintenance.

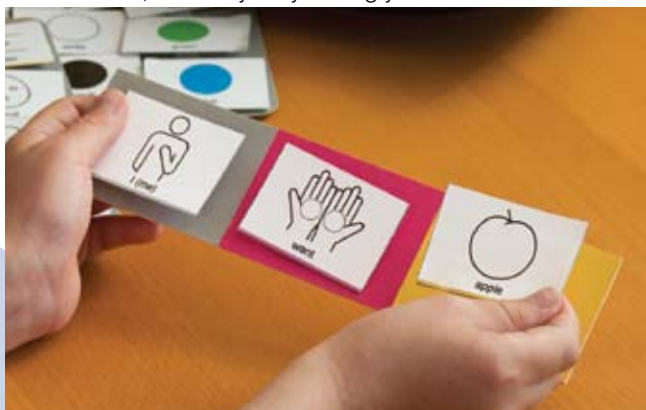
22 Communication

Acquiring and developing good communication skills is crucial for all children and their families. Children will learn their skills from you, the extended family and friends. The acquisition of good communication skills will help your child in all areas of their development including intellectual, emotional, personal and social skills. It is extremely important that you be persistent with your child regarding wearing their hearing aid or cochlear implant, as this will assist your child with their communication and listening skills.



Communication with your child with a hearing loss will start as it would with any other child, they will respond to your facial expressions, voice, eye-contact, body movement etc. It is essential that you continue to play games, sing and talk to your child. Be aware that the child will need to see your face. They will struggle if you are talking while looking the other way or have your back to them. When you become aware of your child trying to communicate with you, you should respond promptly and be encouraging. As well as verbal praise, it may be beneficial to use simple gestures or signs that are age-appropriate, such as 'thumbs up' or clapping.

Children with a hearing loss can learn to communicate through spoken language or sign language, or a combination of both, also known as 'total communication'. The decision as to how your child learns to communicate is primarily down to the parents, with guidance from professionals actively involved with your child's hearing loss. It is important to be aware that there is a history of debates regarding the best communication approach to use with Deaf and Hard of Hearing children. Some professionals may favour one method of communication over another, and they may strongly recommend that



you follow their guidance. It is vital that you ask all the questions you need to from all of the professionals involved. If possible talk to other parents of children with a hearing loss, in order for you to make an informed decision. The method of communication may change throughout your child's life, so don't feel that you can't change your mind once you have made a decision. You will be guided by what works for your child and for you as a family.

Visit the Parents Corner section of our website at www.chime.ie for further information, factsheets, news and events in your local area.



Children who have limited communication skills can be frustrated and you may find that your child has frequent tantrums or shows other signs of frustration. To keep these incidents to a minimum, it may be useful to use 'picture cards', and they will also help motivate your child to communicate with you.

The 'picture card' will show a picture of an item, person, venue or task that the child can recognise as something they want, e.g. a drink of milk, juice, or toys they play with. You and your child should verbalise and sign the word together. The cards can also be used for when you want to tell your child that it is time for a bath, for school, to get in the car or go swimming.

You can take photographs of the items, tasks, people or places that are significant in your child's life, or use pictures from magazines or catalogues to create your picture cards. Simply glue the pictures onto cards or create a small book. This system must be used in conjunction with your method of communication and not as a substitute for speech or sign. You must encourage your child to verbalise and/or sign the word in conjunction with showing you the picture. The cards can also be used to explain a sequence of events and this can sometimes help alleviate frustrations.

For example - the morning routine:

Get dressed Put in hearing aid Breakfast



Your child will get the most from their hearing aid or cochlear implant when they are in a good listening environment. An example of a good listening environment may be a room with soft furnishings, carpet and curtains, all of which absorb sound. You can also help by turning down any background noise, for example the television or radio, when you are having a conversation with your child.



DO.....

Keep still

When talking be brief and to the point



Keep good eye contact



Have good light on the speaker's face



**When in a group,
only one person should talk at a time**



**Place yourself at a
good distance from your child**



Take your time



Speak clearly



Your child is likely to use lip-reading skills that they learn instinctively.

A good lip-reading environment would be:

- ✓ a distance of one to two metres between you and your child
- ✓ good lighting so that your child can see your lips clearly and to ensure that your face is not in a shadow
- ✓ letting your child know you are starting to speak by tapping them gently on the shoulder
- ✓ moving down to your child's level
- ✓ providing plenty of extra clues - both visual and auditory

Lip-reading would be difficult if you:

- ✗ look away whilst talking
- ✗ mumble
- ✗ have an overgrown moustache or beard
- ✗ wear sunglasses so that it is not possible to read the expression of your eyes
- ✗ wear large dangling earrings which can occasionally catch the light
- ✗ stand in front of distracting wallpaper
- ✗ stand in front of a window or light source, placing your face in shadow
- ✗ have too many people moving behind the speaker
- ✗ talk with chewing gum or other food in your mouth
- ✗ put your hands over your mouth whilst talking
- ✗ have too many people talking at once
- ✗ use exaggerated mouth patterns as these can distort the speaking rhythm





Managing a topic in a conversation

When you change the subject in a conversation, always make sure that you let your child know, otherwise they may still be thinking about the first topic that you were talking about. As a guide it is useful to introduce the topic first before expanding on it, e.g. "Swimming, shall we go swimming today? What will we need to take with us for swimming?" It helps if your child has an idea of what you will be talking about before trying to lip-read the extra information. If necessary use a picture card so that they can make a connection with the words.

Remember

Listening and lip-reading are very tiring, so do not overload your child with too many oral instructions. Also, your voice may often not be the only sound being heard, as there may be additional sounds being amplified through the hearing aid or cochlear implant.



Your child may find it hard to understand speech when they are wearing their aid or implant in group situations, e.g. a children's birthday party or a noisy restaurant. This is because all sounds are amplified, not just speech sounds.

The design and layout of the environment can have a significant impact on communication for your child.

Have a good look around your home and pinpoint the busiest parts and the quietest parts. It can be very difficult for a child with a hearing loss to concentrate on listening to different sounds if the environment is very noisy. For a child wearing their hearing aid or cochlear implant, sounds can echo or be distorted and it can be quite distressing or frightening if there are sudden loud noises. Sounds also 'bounce' on hard surfaces and this can make it harder for your child to listen to individual voices, e.g. in a room with wooden floors and hard surfaces; or an open-plan area.



Listening conditions can be improved by:

- fitting blinds or curtains;
- carpeting floors;
- closing the window or door when there is a noise outside;
- adding soft furnishings - rugs, cushions, tablecloths.

Positioning in a room

- Remember, a child cannot see your face well if you stand in front of the light or a window.
- When in a group, it may be better to place your child with their back to the window so that they can see you and the other people and be aware of what is happening in the room.
- Pictures, photographs and posters can be distracting for a child with a hearing loss. Hang them a bit higher above your child's eye level so that they can concentrate on looking at you rather than being distracted by them.
- It may not be possible to alter everything; however being aware of the environment can help to make it more 'deaf friendly' for your child.

For more information on communication and communication options, visit Parents Corner on www.chime.ie

26 Education

Department of Education and Skills

The Department of Education and Skills is responsible for implementing government policy in education. In accordance with the Education for Persons with Special Education Needs Act (EPSEN) 2004, all children are educated in a mainstream setting, unless this would be inconsistent with the best interests of the child. In Ireland the majority of children with hearing loss are educated in mainstream schools. Additional supports for children are provided through the Visiting Teacher Service and the National Council for Special Education.

Visiting Teacher Service

The Visiting Teacher Service offers longitudinal support to children, their families and schools from the time of referral through to the end of secondary education. The work of a visiting teacher involves supporting the child, parents, guardians, teachers and other professionals involved with the child. Support may include home visits and school visits, and includes providing information on the development of the child's communication skills, supporting class teachers, making recommendations on assistive technologies and contributing to the child's individual education plan. For further information visit www.education.ie

The National Council for Special Education (NCSE)

The NCSE is a statutory body established under the EPSEN Act 2004. They aim to provide a timely and efficient service to schools in sanctioning teaching and Special Needs Assistant (SNA) resources to support children with special educational needs. They have a wide-ranging programme of research on the provision of special education which helps them formulate policy advice to the Minister for Education and Skills.

The Special Educational Needs Organiser (SENO)

Special Educational Needs Organisers (SENOs) are appointed by the NCSE to provide a direct service to the parents of children with special educational needs and to schools within geographical areas. This involves identifying the needs of children and deciding on the level of resources schools require to provide them with an appropriate education service.

The SENO provides a service to parents and children through the co-ordination of the delivery of services between the health sector and schools. This facilitates the inclusion of the child in the school system. Most importantly, they keep parents informed of what decisions are being made on their child's behalf.

For further information visit www.ncse.ie

The Individual Education Programme (IEP)

This is a written document prepared for a named student in accordance with the EPSEN Act 2004. It specifies the learning goals that are to be achieved by the student over a set period of time and the teaching strategies, resources and supports necessary to achieve those goals.

The people that can be involved or consulted in preparing the IEP are:

- Parents
- The Principal
- Class Teacher
- Visiting Teacher
- SENO
- Student (where appropriate)
- Other persons as recommended by the principal

Content of an Individual Education Programme (IEP)

The format of IEPs should include:

1. The nature and degree of the child's abilities, skills and talents;
2. The nature and degree of the child's special educational needs and how those needs affect his or her educational development;
3. The present level of educational performance of the child;
4. The special educational needs of the child;
5. The special education and related support services to be provided to the child to enable the child to benefit from education and to participate in the life of the school;
6. Where appropriate, the special education and related services to be provided to the child to enable the child to effectively make the transition from pre-school education to primary school education;
7. Where appropriate, the special education and related support services to be provided to the child to enable the child to effectively make the transition from primary school education to post-primary school education, and third level;
8. The goals that the child is to achieve over a period not exceeding 12 months.

Ref: www.ncse.ie and www.nda.ie



Mainstream

Mainstream is a term used to describe regular schools and classes. Most Deaf and Hard of Hearing children attend mainstream schools.

The visiting teacher supports the child in the mainstream setting and provides advice and training to teachers and other staff members, including special needs assistants (SNA), as appropriate. The visiting teacher models appropriate teaching methodologies and approaches and advises on the curricular and social implications of the child's hearing loss. They also make recommendations regarding assistive technology in the classroom as required.

Resource teaching is provided in line with Department of Education and Skills guidelines by a member of the school's special education team. This support may take place on a one-to-one basis, in small groups or as in-class support. Resource teachers work with the mainstream class teacher and the visiting teacher to plan and implement an appropriate programme for the child.



Unit for children with a hearing loss

The aim of a Unit for Deaf children is to allow a child with a hearing loss to access the full curriculum in a small class setting with additional supports and where appropriate to integrate with their hearing peers in a mainstream class setting.

A unit typically consists of up to six children with a hearing loss, and is usually facilitated by a teacher trained in working with children with a hearing loss and a special needs assistant (SNA).

The unit teacher follows the national curriculum in conjunction with the class teacher of your child's hearing peer group. The unit teacher would work with your child in a small group and/or on an individual basis, through the form of communication that meets the needs of your child: oral/aural communication; Irish Sign Language; and Total Communication.

All children in the unit are usually integrated into the mainstream class with their hearing peers for non academic subjects e.g. Art, P.E., dancing, football, swimming and athletics. They attend assembly and have lunch, playtime, school plays and events with their peer group class. Depending on the child they may also be integrated for more academic subjects e.g. maths, history, geography, science. Children would normally use their assistive technology when integrating in mainstream class.

School for Deaf Children

Schools for Deaf children enrol children who typically have severe or profound hearing losses. Children are admitted following an assessment by a team of medical and educational professionals. There is an ongoing assessment procedure to ensure that the students are making satisfactory progress.

The classrooms are equipped with either a group or radio aid system. This ensures that the students are exposed to amplified sound during the school day. Outside school the pupils wear their individual hearing aids or cochlear implants.

The teaching staff follow the national curriculum which is delivered within a small group setting or on an individual basis through the form of communication that meets the needs of the individual pupil: oral/aural communication; Irish Sign Language; and Total Communication.

They have the services of a full time home/school liaison person, and also have access to the services of a psychologist, audiologist, counsellor and speech and language therapist. Schools for Deaf children often have additional school based supports such as a home-school liaison teacher and speech and language therapy. The schools in Dublin have day and residential pupils, and the majority of children attending these schools have Irish Sign Language as their first language.



28 Assistive Technology for the Classroom

Most Deaf or Hard of Hearing children attend mainstream schools and many avail of personal communication systems or soundfield systems in the classroom. When a pupil with hearing loss needs technological support the visiting teacher will compile a report in consultation with the child's audiologist on the appropriate equipment for the child. The school will then include this report in an application to the local SENO seeking approval for this equipment. If approval is given, the school will receive funding for the equipment from the Department of Education and Skills.

Soundfield Systems

A soundfield system usually consists of four speakers placed strategically in the classroom, a base transmitter and a wireless microphone for the teacher. When the teacher speaks at a normal conversation level, their voice is amplified through the speakers to the whole class.

The teacher can move about the classroom while talking and this will not affect the level of sound produced by the speakers. It allows your child to have the opportunity to hear equally well wherever they are seated in the room.

When your child starts school you may find that they might have some difficulty hearing/listening in the classroom. This could be because they are in an environment which is prone to background noise such as the scraping of chairs on the floor, rustling of paper and children's voices. Soundfield systems have been shown to reduce the disruption of background noise in the classroom and improve learning conditions for all pupils.



Personal Communication Systems

Personal Communication Systems, formerly known as FM Systems, provide a direct link between the voice of the teacher and your child's hearing aid or cochlear implant. It consists of a wireless microphone and a receiver attached to your child's aid or implant. These systems are designed to improve the clarity of the teacher's voice for the child.

Interactive Whiteboards

An interactive whiteboard is a large interactive, touch-sensitive display that connects to a computer and a projector. A projector displays the computer's desktop onto the whiteboard surface where your child controls the computer using a pen, their finger or other device. The whiteboard is typically mounted to a wall. It allows pupils to engage and interact with the technology to become active participants in learning. The whiteboard can easily be connected to your child's personal communication system for audio output.

Classroom Tips

- Seat the child at the front and to the side so they can see who is talking.
- Keep the class quiet during instruction so that they can hear more clearly.
- Seat the child away from major noise sources (e.g. heating, open windows/doors).
- Teacher to be aware of light sources, e.g. not to stand in front of a window.
- Teachers should ask a child with hearing loss an occasional question to ensure the child is following the information, (while trying not to say 'Do you understand?').
- Teachers should try to rephrase a question or statement if the child does not understand the first time.

The visiting teacher will provide advice to the class teacher regarding optimal positioning of your child in the classroom and on a range of other issues that will help the school to understand and respond to the educational implications of your child's hearing loss.

Chime provides Schooltech, an assistive technology service providing expert sales and support in Personal Communication and Soundfield systems for schools. Contact schooltech@chime.ie or visit www.chime.ie for further information.



Assessment of Need

Under Part 2 of the Disability Act, children with disabilities are entitled to an independent assessment of their health and educational needs arising from their disability, which includes an assessment report and a statement of the services they need. To date, this section of the Act has only been applied to children aged under five years. The Assessment of Need is coordinated by an Assessment Officer, who is independent of the Health Service Executive.

Any parent who feels that their child aged under five may have a disability can apply for an assessment. You must apply on behalf of your child to the HSE in writing (through your Local Health Office, using the official application form) and the HSE must acknowledge your application within 14 days. The acknowledgement must tell you the date on which the assessment will start. An application can also be made by a guardian, visiting teacher, social worker or a personal advocate assigned by the Citizen's Information Board (Call 0761 07 4000, or visit www.citizensinformation.ie).

Domiciliary Care Allowance

The Domiciliary Care Allowance is a monthly payment made to the carer of a child with a disability who lives at home. Parents of a child with a hearing loss may qualify for this payment. Eligibility for the allowance is based on the degree of additional care and attention needed by the child rather than the type of disability involved. A medical assessment is carried out by the Department of Social Protection.

Domiciliary Care Allowance Section, Department of Social Protection, College Road, Sligo. LoCall: 1890 500 000 or Tel: 071 915 7100.

Carer's Allowance

Carer's Allowance is a means tested payment to people living in Ireland who are caring for a person who is incapacitated due to age, disability or illness. Applicants must be living with, or in a position to provide full-time care and support to the incapacitated person. They can not be engaged in employment, self-employment, training or education courses outside the home for more than 15 hours a week. Parents who apply in relation to providing care and support to their child with a disability must also be receiving Domiciliary Care Allowance in order to qualify.

Where to apply: Carer's Allowance Section, Social Welfare Services, Ballinalee Road, Longford. LoCall: 1890 92 77 70 or Tel: 043 334 0000.

Incapacitated Child Tax Credit

The Incapacitated Child Tax Credit can be claimed by a parent or guardian of a child in Ireland who is permanently incapacitated. Parents of a child with a hearing loss can qualify for this payment.

Home Tuition Scheme: Irish Sign Language Grant

Under this scheme home tuition in Irish Sign Language may be funded for young Deaf preschool and school aged children and their families. You can get more details on this scheme by contacting your visiting teacher, chime support worker, or the Home Tuition Unit, Special Education Section, Department of Education & Skills, Cornamaddy, Athlone, Co. Westmeath. Tel: 090 648 4187 or email: special_education@education.gov.ie

Information is correct at time of going to print.
For more or updated information go to:
www.citizensinformation.ie or www.welfare.ie



30 Chime Resource Centres

**Check www.chime.ie for information
on the services in your local resource centre.**

North West - Letterkenny

Providing services in Donegal

Unit 2, Spencer House, High Road, Letterkenny.

Tel: 074 9188252 **Fax/Text:** 074 9188240

Email: letterkenny@chime.ie

Midlands - Tullamore

Providing services in Laois, Offaly, Longford & Westmeath

14 Church Street, Tullamore, Co. Offaly.

Tel: 057 9351606

Fax: 057 9326425

Text: 057 9326421

Email: tullamore@chime.ie

Sligo

Providing services in Sligo & Leitrim

Abbeyville Centre, Abbeyville, Sligo.

Tel: 071 9194975 **Fax:** 071 9148868

Text: 086 7961324

Email: sligo@chime.ie

North East - Dundalk

Providing services in Louth, Meath, Cavan & Monaghan

14 Jocelyn Street,
Dundalk, Co Louth.

Tel: 042 9332010

Fax/Text: 042 9389186

Email: dundalk@chime.ie

Mayo

Providing services in Mayo

Mayo PCCC - Groundfloor, St. Mary's
Headquarters, Castlebar, Co. Mayo

Tel: 094 9049109 **Text:** 086 7961324

Email: mayo@chime.ie

West - Galway

Providing services in Galway, Mayo & Roscommon

9A St Francis Street, Galway.

Tel: 091 564871

Fax: 091 564873

Text: 086 8648659 **Email:**

galway@chime.ie

Mid West - Limerick

Providing services in Limerick, Clare & North Tipperary

Spring Rice House, Pery Street,
Limerick.

Tel: 061 467494

Fax: 061 467497

Text: 086 2229638

Email: limerick@chime.ie

South - Killarney

Providing services in Kerry

10 Flemings Lane, High
Street, Killarney, Co. Kerry.

Tel: 064 6620052 **Fax:**
064 6620053

Text: 086 8056202 **Email:**
killarney@chime.ie

Kilkenny

Providing services in Kilkenny, Carlow & South Tipperary

1st Floor, 44 Friary Street,
Kilkenny.

Tel: 056 7763508

Text: 085-8060911 **Email:**
kilkenny@chime.ie

Providing services in Dublin North Dublin North (Head Office)

35 North Frederick Street, Dublin 1.

Tel: 01 8175700

Fax/Text: 01 8783629

Email: info@chime.ie and

Dublin North, Cabra

Deaf Village Ireland,
Ratoath Road, Cabra, Dublin 7

Tel: 01 8175700

Fax/Text: 01 5491567

Email: info@chime.ie

Dublin South

Providing services in Dublin South, Kildare & Wicklow

Unit G-H, Exchange Hall, Belgard
Square North, Tallaght, Dublin 24.

Tel: 01 4620377

Fax: 01 4620378

Text: 086 1716284

Email: dublinsouth@chime.ie

Wexford

Providing services in Wexford

Lochrann Centre, Cinema Lane, Wexford.

Tel: 053 9152645

Fax: 053 9152646

Text: 086-8226108

Email: wexford@chime.ie

South East - Waterford

Providing services in Waterford, Carlow, Kilkenny & South Tipperary

2nd Floor, St John's Parish Hall
Catherine Street, Waterford.

Tel: 051 855777 **Fax:** 051 852132

Text: 085-8060911

Email: waterford@chime.ie



It is important that parents can contact the key personnel and services they need easily. Some regions have developed local information packs, while other areas are in the process of doing so. This page provides national and regional contact details for key services that may be required. Parents can use the notes/contacts pages at the end of this booklet to record contact details of services and professionals that are involved with their child.

Community Audiology Services:

Email: audiology@hse.ie

Community Health Organisation 1:

Donegal / Sligo / Leitrim / Cavan / Monaghan

- Nazareth House, Sligo. (071) 916 2647
- Primary Care Centre, Stranorlar, Co. Donegal. (074) 918 9562
- Community Services Building, 1 Drumlin Drive, Cavan Road, Cootehill. (049) 555 5582

Community Health Organisation 2:

Galway / Mayo / Roscommon

- St. Mary's HQ, Castlebar, Mayo. (094) 9049038
- 10 Ely Place, Sea Road, Galway. (091) 582111

Community Health Organisation 3:

Clare / Limerick / North Tipperary

- Vocational Training Centre, Dooradoyle, Limerick. (061) 482627

Community Health Organisation 4:

Kerry / Cork

- Unit 5 South Ring Business Park, Kinsale Road, Cork. (021) 492 7420
- Aras an Pobail, Dean's Lane, Tralee. (066) 718 4979

Community Health Organisation 5:

South Tipperary / Carlow / Kilkenny / Waterford / Wexford

- St Dymphna's, Athy Road, Carlow. (059) 917 8031
- Western Road, Clonmel. (052) 617 7332
- James Green, Kilkenny. (056) 778 4712
- Old School of Nursing, Waterford. (051) 848 999
- Grogan's Road, Wexford. (053) 918 5616

Community Health Organisation 6 & 7:

Dublin South / Wicklow / Kildare

- Sheaf House, Exchange Hall, Tallaght, Dublin 24. (01) 463 5260
- Bru Chaoimhin, Cork Street, Dublin 8. (01) 415 6592

Community Health Organisation 8:

Laois / Offaly / Longford / Meath / Louth / Westmeath

- Health Centre, Tullamore, Co. Offaly. (057) 935 9668
- Louth County Hospital, Dublin Road, Dundalk. (042) 938545

Community Health Organisation 9:

Dublin North

- 44 North Great George's Street, Dublin 1. (01) 8146122

National Paediatric Cochlear Implant Programme

Beaumont Hospital

Dublin 9

Ireland

Telephone : (01) 809 2191 / (01) 809 2013

Fax No.: (01) 809 2753

Text Phone: (01) 857 1027

Email: cochlearimplant@beaumont.ie

Visiting Teacher Service:

Inclusion Support Service

National Council for Special Education

1-2 Mill Street

Trim Co. Meath

Telephone: (046) 948 6400

Fax: (046) 948 6404

*Note: it is usually best to contact the local visiting teacher directly. At the time of going to print contact details for visiting teachers are available here: <http://www.education.ie/en/Parents/Services/Visiting-Teacher-Service>. However, please note that following a service review, operational changes to the Visiting Teacher Service are underway, and the service is moving from the Department of Education and Skills to the National Council for Special Education.

32 Useful Websites

Information

Chime.ie – Services for Deaf and Hard of Hearing People. The organisation's primary goal is an inclusive society where Deaf and Hard of Hearing people are fully integrated, with equality of opportunity and participation.

www.chime.ie

National Deaf Children's Society (UK) - leading charity dedicated to creating a world without barriers for Deaf children and young people.

www.ndcs.org.uk

Action on Hearing Loss (UK) - the largest UK charity in the sector works for a world where hearing loss doesn't limit or label people, where tinnitus is silenced and where people value and look after their hearing.

www.aohl.co.uk

Delta (UK) - is a national charity supporting Deaf children, their families and practitioners who wish to follow an auditory oral route from birth through education and beyond.

www.deafeducation.org.uk

Forest Books (UK) - books on hearing loss and deafness.

www.forestbooks.com

Alexander Graham Bell Association (USA) - an association for the Deaf and Hard of Hearing to help families, health care providers and education professionals.

www.agbell.org

Baby Hearing (USA) - information of screening, diagnosis, hearing loss, aids, speech and language and parenting issues.

www.babyhearing.org

Hands & Voices (USA) - is dedicated to supporting families with children who are Deaf or Hard of Hearing without a bias around communication modes or methodology. It is a parent-driven, non-profit organisation providing families with the resources, networks, and information they need to improve communication access and educational outcomes for their children.

www.handsandvoices.org

Hearing Families (USA) - this website is dedicated to supporting and strengthening families of children with hearing loss.

www.hearingfamilies.com

Help Kids Hear (USA) - this was founded by parents of hard of hearing children and is dedicated to helping other parents find information and resources they need in supporting a Deaf or Hard of Hearing child.

www.helpkidshear.org

Infant Hearing (USA) - information on newborn hearing screening and support for families.

www.infanthearing.org

Listen Up (USA) - information and products geared to the special need of children with a hearing loss and their families.

www.listen-up.org

National Institute on Deafness and Other Communication Disorders (USA)

- NIDCD is mandated to conduct and support biomedical and behavioural research and research training in the normal and disordered processes of hearing, balance, smell, taste, voice, speech, and language.

www.nidcd.nih.gov

Cochlear Implants

National Cochlear Implant Programme - is based at Beaumont Hospital and the Children's University Hospital, Temple Street in Dublin. It provides high quality care for adults and children with severe to profound hearing loss. The National Cochlear Implant Programme is comprised of a multidisciplinary team of highly trained and qualified professionals specialising in deafness, including ENT surgeons, audiological scientists, speech and language therapists, teachers of the deaf, psychologists, and administrators.

www.beaumont.ie

British Cochlear Implant Group (UK) - is a professional body representing all the Cochlear Implant Centres and other specialist medical practitioners throughout the UK.

www.bcig.org.uk

Cochlear.com (UK) - explains how a cochlear implant works and provides examples of personal stories.

www.cochlear.com/uk

Cochlear Implant Online (USA) - this website was founded in 2001 by Rachel Chaikof who was a 14 year-old cochlear implant user at the time. Rachel wanted to create a better awareness of cochlear implants and show that Deaf children can learn language through hearing and speaking.

www.cochlearimplantonline.com

The Ear Foundation (UK) - information on cochlear implants and BAHA.

www.earfoundation.org.uk

Education

Sound Advice - is a non-profit social enterprise (formerly Irish Deaf Kids) whose mission is to highlight hearing technologies and digital tools for young children and students to use in their everyday education, living and working routines. They also guide parents, educators and others on using technology.

www.sound-advice.ie

National Council for Special Education (NCSE) - is a statutory body established under the Education for Persons with Special Educational Needs Act 2004. Since their establishment they have concentrated on developing an organisation which provides a timely and efficient service to schools in sanctioning teaching and Special Needs Assistant (SNA) resources to support children with special educational needs. In 2015 a new Inclusion Support Service was established within the NCSE, incorporating the Special Education Support Service, the National Behaviour Support Service (NBSS) and the Visiting Teacher Service

www.ncse.ie

Special Education Support Service (SESS) - exists to enhance the quality of learning and teaching in relation to special educational provision. The service co-ordinates, develops and delivers a range of professional development initiatives and support structures for school personnel working with students with special educational needs in mainstream primary and post-primary schools, special schools and special classes. The SESS operates under the remit of the Teacher Education Section (TES) of the Department of Education and Skills.

www.sess.ie

Visiting Teacher Service - each visiting teacher covers a particular region and supports the children, parents and guardians, teachers and other professionals involved with the child.

www.education.ie

St. Joseph's School for Deaf Boys - the school is located in Cabra, Dublin. The mission of the school is to create a safe and supportive educational and social environment, and which meets the needs of our students, encourages positive social interaction and communication skills so that the students receive the best possible education and support services available.

www.stjosephsboys.ie

St. Mary's School for Deaf Girls - this school is also located in Cabra, Dublin. The school first opened in 1846. The primary aim of the school is, in co-operation with the parents, to enable each student to achieve her full potential.

www.stmarysdeafgirls.ie

Midwest School for Hearing Impaired Children - this school is located in Limerick and was established in 1979. The school currently caters for primary and post-primary hearing impaired pupils from the Mid-West region. Pupils are taught through sign language or orally, where appropriate.

www.limerickdeaf.utvinternet.ie

Deafness

Chime.ie - Services for Deaf and Hard of Hearing People. The organisation's primary goal is an inclusive society where Deaf and Hard of Hearing people are fully integrated, with equality of opportunity and participation.

www.chime.ie

Cork Deaf Association (CDA) - is committed to the empowerment of Deaf and Hard of Hearing people in Cork city and county through the provision of information, advocacy and support services.

www.corkdeaf.ie

Irish Deaf Society (IDS) - is a Deaf-led organisation which focuses on issues such as achieving equality and access for Deaf people and the recognition of Irish Sign Language.

www.irishdeafsociety.ie

Irish Deaf Youth Association (IDYA) - organisation for young Deaf people in Ireland aged between 18-30 years old.

www.irishdeafyouth.ie

Irish Deaf Sports Association (IDSA) - believes that through recreational opportunities, sports training and competition, Deaf and Hard of Hearing people can benefit physically, mentally, socially and spiritually in an environment of equality, mutual respect and acceptance.

www.irishdeafsports.net

National Chaplaincy for Deaf People (NCDP) - aims to serve and work with Deaf people and the Deaf Community and to provide liturgical services and pastoral support.

www.ncdp.ie

Deaf Culture (USA) - the aim is to bring as many perspectives on the Deaf and Hard of Hearing experience as possible, while the primary focus of the website is to promote awareness of Deaf culture.

www.deaf-culture-online.com

Sign Language

Simply Signing - aims to promote the use of Irish Sign Language with all children, support early development of infants throughout Ireland, taking into account the need for early intervention for children with a hearing loss.

www.simplysigning.ie

Babies and Sign Language (USA) - Baby Sign Language with your Infant or Toddler.

www.babies-and-sign-language.com

Deaf Children and Parents (USA) -

www.deafchildrenandsigning.com

Parent Organisations

Parentline - this website provides a completely confidential helpline for parents and guardians. Parents can phone with all sorts of problems. There is no typical call. Calls come from parents of children of all ages. They offer support, guidance and information.

www.parentline.ie

Sharing the Journey - an organisation established by parents of Deaf and Hard of Hearing children, it aims to provide information and support to other parents of Deaf and Hard of Hearing children, regardless of the communication, education and technological decisions they have made or will make for their children.

www.sharingthejourney.ie

Our New Ears - (ONE) is a parent led organisation providing support and information to parents of Deaf and Hard of Hearing children, especially those children with cochlear implants. It also advocates and campaigns for better services. To contact ONE, email: ournewears@gmail.com

Suggested Reading

'Baby Talk', Dr. Sally Ward, Arrow Books Ltd 2004.

'It Takes Two to Talk', Jan Pepper & Elaine Weitzman, A Hanen Publication 2004.

34 Glossary of Terms

A

Acoustics - The study of how sound reacts to the environment. This includes the concepts of loudness, pitch, resonance and reverberation.

Amplifier - a device in the hearing aid that makes sound louder.

Assessment of Need - an independent assessment of the health and educational needs of children aged under five arising from their disability. The Assessment of Need is coordinated by an Assessment Officer, who is independent of the Health Service Executive.

Audiologist - a person that tests for hearing loss, prescribes hearing aids, and supports people that have concerns about their hearing.

Audiogram - a graph that shows a representation of a person's hearing threshold at different frequencies and decibels.

B

Behind the Ear (BTE) Hearing Aids - have ear moulds which sit inside the ear. The hearing aid rests behind the ear and a plastic tube connects it to the ear mould.

Bilateral Hearing Loss - hearing loss in both ears.

Bone Anchored Hearing Aid (BAHA) - a type of hearing aid used for people with a conductive hearing loss who cannot wear or benefit from conventional hearing aids.

Bone Conduction Hearing Aids - are for people with a conductive hearing loss, or people who cannot wear a conventional hearing aid. They deliver sound through the skull by vibrations or built onto spectacles. Another type is the bone anchored hearing aid (BAHA) involves having a small operation.

British Sign Language (BSL) - used in the UK (including some parts of N. Ireland). It is different from Irish Sign Language (ISL). It has its own grammar and is different to written and spoken English.

C

Cochlea - winding tubular cavity within the inner ear shaped like a snail shell. It contains the end-organ of hearing which finally changes the pressure waves of sound into nerve pulses which go to the brain.

Cochlear Implant - an electronic device which converts sounds into electrical impulses which in turn stimulate the auditory nerve. This process enables the brain to interpret the impulses as sound.

Computerised Tomography (CT) Scan - used to make an image of the brain and inner ear.

Conductive Hearing Loss - caused by injury to or problems with the bones, eardrum and membranes which carry sound from the external ear through to the inner ear.

CROS/BiCROS Hearing Aids - are for people with hearing in one ear only. CROS hearing aids pick up the sound from the side without hearing and feed it to the better ear. BiCROS aids amplify sound from both sides and feed it (by wire or radio signals) into the ear that has some hearing.

D

Deafness - partial or complete loss of hearing.

Deaf Community - group of Deaf people who use and promote sign language and have their own culture. Deaf communities are close-knit and interconnected.

Deaf Culture - a concept signifying the cultural identity many Deaf people feel. Deaf people who use sign language and feel allied to the Deaf Community will use a capital 'D' when describing themselves. Those who see deafness simply as a description of hearing ability will use a lowercase 'd' to describe themselves. The culture of Deaf people is based on sign language and a common heritage.

Decibel - measurement of the intensity or loudness of sound, abbreviated as dB. Hearing Level is plotted from top to bottom (soft to loud) vertically on an audiogram.

Department of Education and Skills (DES) - the mission of the Department is to provide high-quality education which will (a) enable individuals to achieve their full potential and to participate fully as members of society; (b) contribute to Ireland's social, cultural and economic development.

Digital Hearing Aids - take the signal from the microphone and convert it into "bits" of data - numbers that can be manipulated by a tiny computer in the hearing aid. This makes it possible to tailor and process sounds very precisely. Most hearing aids in use nowadays are digital hearing aids.

Disability - the currently accepted term for a person with reduced function of some physical, sensory or mental process. It replaces the term handicap.

Domiciliary Care Allowance - a monthly means tested payment made to the carer of a child with a severe disability who lives at home.

E

Ear - the organ of hearing and balance. It incorporates the outer, middle and inner ear.

Eardrum - a thin membrane between the outer and middle ear which vibrates in response to sound waves in the air (tympanic membrane).

Earhook - the portion of a behind-the-ear hearing aid that connects the case to the ear mould tube and hooks over the outer ear.

Ear Mould - a custom fit device that attaches to a behind-the-ear hearing aid via the tubing to deliver sound from the aid to the ear.

ENT Consultant - a medical doctor that is trained in diagnosing and treating diseases of the ear. They can also identify types of hearing loss that respond to medical or surgical treatment.

Eustachian Tube - the tube connecting the middle ear to the back of the nose which controls air pressure behind the eardrum.

F

Feedback - a high pitch squealing or whistling sound that occurs when an ear mould does not fit properly or a hearing instrument is malfunctioning

Frequency - the number of cycles of sound per second expressed in Hertz. It is often known as pitch. Frequency is plotted from left to right (bass to treble) horizontally on an audiogram.

H

Hair Cells - tiny hair-like structures in the inner ear that help transmit sound to the brain.

Hard of Hearing - the currently accepted term to describe those with mild to severe hearing loss.

Hearing Aid - an electronic amplifying device to make sounds audible to a person with a hearing loss. See Digital Hearing Aid.

Hearing Loss - occurs when there is a problem with one or more parts of the ear. Someone who has a hearing loss may be able to hear some sounds or nothing at all.

Hertz - the unit for measuring frequency usually abbreviated as Hz.

High Frequency - an inexact term which, in audiology, generally refers to any frequency above 1000 Hz.

Hyperacusis - an abnormal sensitivity of loudness in a person with normal hearing sensitivity.

I

Individual Education Plan (IEP) - an IEP is developed in conjunction with all parties involved in the child's education. It outlines the educational goals for the child.

Impression - a cast made of the contours within the external ear from which an ear mould for BTE or custom shell for an ITE or ITC hearing aid is made. Impressions typically are made using a silicone or audalin material.

Inclusive Education - an educational philosophy promoting the integration of students with disabilities into the general student population. It is assumed that appropriate support services will be provided in these inclusive placements.

Inner Ear - contains the cochlea and the semi-circular canals.

In The Ear (ITE) and In The Canal (ITC) Hearing Aids - These hearing aids have their working parts in the ear mould, so the whole aid fits into the ear.

Irish Sign Language (ISL) - the sign language used in Ireland. It has its own grammar and lexicon and is different from written and spoken English.

M

Mainstreaming - the policy of placing children with disabilities in the regular school environment.

MRI scan - Magnetic Resonance Imaging - a technique to produce high quality images of the nerves of the inner ear.

Middle Ear - the air-filled space inside the eardrum containing the ossicles (ear bones) and the Eustachian Tube.

Mild Hearing Loss - hearing loss averaging not more than 40 dB.

N

Newborn Hearing Screening - the screening of newborn babies for hearing loss in the first few days of life.

O

Ossicles - the three bones of the middle ear: malleus (hammer), incus (anvil) and stapes (stirrup)

Otoacoustic Emissions (OAE) - tiny sounds created in the inner ear in response to a stimulus.

P

Personal Communication System - an assistive listening system often used in school settings and formerly known as FM Systems. The system provides a direct link between the voice of the teacher and a child's hearing aid or cochlear implant. It consists of a wireless microphone and a receiver attached to the child's aid or implant. These systems are designed to improve the clarity of the teacher's voice for the child.

Pinna - the outer ear that funnels sound into the ear canal.

Pitch - the frequency of sound (i.e. bass or treble).

Profound Hearing Loss - a hearing loss greater than 90 dB.

Psychological Assessment - a series of tests to determine a person's I.Q., personality and learning potential.

Physical and Sensory Disability Database - a set of information on the specialised health services currently used or needed by people with a physical or sensory disability. The information is used by the Department of Health and Children to plan for services.

R

Recruitment - the abnormal perception of an increase in loudness. It can only be experienced by people who have a sensorineural hearing loss.

Residual Hearing - this refers to the hearing that a child or adult with a hearing loss has.

36 Glossary of Terms

S

Sensorineural Hearing Loss - hearing loss involving damage or malformation of the inner ear or auditory nerve.

Soundfield System - often used in classrooms to improve sound clarity and overcome problems associated with background noise. It usually consists of four speakers strategically placed in the classroom, a transmitter and a wireless microphone for the teacher. The teacher speaks at a normal conversation level and their voice is amplified through the speakers for the whole class.

Special Educational Needs (SEN) - as defined in the EPSEN Act 2004 which provides for the provision of education plans for students with special educational needs (SEN). Under the Act, children with SEN will be educated "in an inclusive environment with children who do not have SEN", unless this should be inconsistent either with the best interest of the child, or with the effective provision for the other children.

Special Needs Assistant (SNA) - cares for the child in school if needed. The visiting teacher advises on the need for a SNA to the SENO, who makes the application to the Department of Education and Skills (DES).

Special Education Needs Organiser (SENO) - works for the National Council for Special Education (NCSE) and is an important link between the school and the Council. For example, the SENO deals with applications for additional support for pupils with SEN.

Speech and Language Therapist - works with children who have a degree of hearing loss, congenital or acquired, and work with parents (and others in the child's environment) to promote the development of communication.

Stethoclip - a tool used by parents and teachers to listen to a child's hearing instrument.

Severe Hearing Loss - a hearing loss between 70 dB and 90 dB.

T

Total Communication - an approach to communication which may use speech, sign, pictorial and written language.

Tympanogram - a graph showing the movement of the eardrum as a function of air pressure changes within the ear canal; this graph gives information regarding the integrity of the middle ear system. The ear canal is closed off with a probe tip and as air pressure is introduced into the canal, eardrum movement is recorded.

Tympanometry - a test of the condition and mobility of the eardrum. Where a hearing loss has been diagnosed, this test is useful in determining the type of hearing loss (conductive or sensorineural).

U

Universal Newborn Hearing Screening (UNHS) - a programme that screens all newborn babies for hearing loss, usually before they leave the maternity hospital. UNHS was fully rolled out in Ireland in 2013, and this means that babies born with hearing loss are usually diagnosed before 3 months of age. This facilitates much earlier intervention and support, and results in greatly improved outcomes for Deaf and Hard of Hearing children.

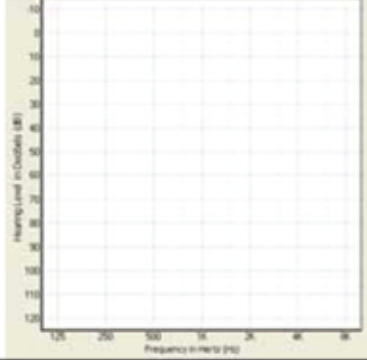
V

Visiting Teacher - a service for children and young people with a hearing loss that is provided by the Department of Education and Skills from the time of referral until transition to third level or further education. Each visiting teacher is responsible for a particular region. The visiting teacher supports the children, parents/guardians, teachers and other professionals involved with the child. The service is available at pre-school, primary, post primary and during transition to third level or further education.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. In the bottom right corner, there is a decorative element consisting of several overlapping, curved shapes in shades of light blue, creating a wave-like or cloud-like effect. The rest of the page is plain white.

38 Audiological Report Form



Audiology Report			
Name:		Date of Report:	
Address:			I.D.#
D.O.B:		Phone Number:	
Notes/History			
Testing			
Otoscopy			
Right ear:		Left Ear:	
Tympanometry (probe tone - 226 Hz)			
	Volume	Compliance	Pressure
Right ear:	ml	ml	daPa
Left ear:	ml	ml	daPa
Otoacoustic emissions (OAE's): Not tested			
Right: Not Tested		Left: Not Tested	
Behavioural Assessment: Visual Reinforcement Audiometry (VRA) (sound Field)			
Comment:		<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p style="text-align: center; margin-bottom: 10px;">Symbols</p> <ul style="list-style-type: none"> O – AC Right X – AC Left Δ – BC – Masked right BC – Masked left BC S – Soundfield B – Binaural soundfield </div> </div>	
Findings and Recommendations			
Today's results			
Plan:		Tester:	

Cc:	File	Referral Source -
	Parents/Guardians	ENT:
	VTHI:	

Enclosed: N/A



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