National Deaf Children's Society

Deaf-friendly teaching

For staff in special schools

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NatSIP National Sensory Impairment Partnership

Contents

A note about terms

We use the term 'deaf' to refer to all types of hearing loss, from mild to profound. This includes deafness in one ear or temporary hearing loss such as glue ear. We include pupils the school may identify as having a 'hearing impairment' in the school census.

We use the term 'parent' to refer to all parents and carers of children. We use ToD to refer to qualified Teachers of the Deaf throughout.

In different parts of the UK, the terms 'special educational needs coordinator' or 'additional learning needs coordinator' are used. For simplicity, this resource uses 'SENCO' throughout.

1 Introduction

This resource is for anyone who works with a deaf child in a special school. Special schools provide an education for children who have a special educational need or disability whose needs cannot be met within a mainstream setting, and whose parents or carers have agreed to, or requested, a special school placement.

How to use this resource

Use this resource alongside support and advice from local specialist educational support services for deaf children.

Deafness and additional or complex needs

Between 12 to 15% of all deaf children are educated in a special school due to the presence or combination of additional or complex needs[1]. You can download the Consortium for Research into Deaf Education's (CRIDE's) 2019 reports on educational provision for deaf children from our website **www.ndcs.org.uk/CRIDE**.

These needs may include:

- an additional sensory difficulty
- a physical disability
- a specific learning difficulty
- a speech and/or language difficulty
- a cognitive disability
- a developmental delay
- a neurological condition, such as epilepsy
- a neurodevelopmental disorder, such as autism.

The most common additional need alongside deafness is moderate learning difficulties.

Causes of hearing loss include genetic conditions or syndromes such as:

- Alport syndrome
- Branchio-Oto-Renal syndrome
- Cerebral palsy

[1] Consortium for Research into Deaf Education (CRIDE)

- CHARGE syndrome
- Cruzon syndrome
- Down's syndrome
- Foetal alcohol syndrome
- Goldenhar syndrome
- Jervell and Lange Nielsen syndrome
- Pendred syndrome
- Stickler syndrome
- Treacher Collins syndrome
- Usher syndrome Type 1 and Type 2
- Waardenburg syndrome
- Medical intervention such as ototoxic medications used to treat serious infections, cancer and heart disease
- Congenital infection such as cytomegalovirus (CMV), toxoplasmosis, rubella syndrome or syphilis
- Childhood infection such as meningitis
- Traumatic brain injury
- Structural difference in facial or skull anatomy.

Additionally, there is a high rate of deafness in very premature babies. Increased survival rates mean that the number of deaf pupils in special schools is likely to rise.

For more information on causes of hearing loss or to find links to charities and support groups visit: **www.ndcs.org.uk/causesofdeafness**.

2 Deafness and its impact on learning

Deafness, alongside additional and/or complex needs, presents a very significant barrier to pupils acquiring communication and language, and affects their cognitive, emotional and social development. When deafness is combined with other additional needs it creates a complex interaction of several difficulties. Even mild deafness can have a significant, and detrimental, impact on a child's ability to learn.

Identifying deafness

Children may start school without being diagnosed with a hearing loss or they may acquire a permanent hearing loss while at school. It is therefore important for school staff to look out for any of the possible signs of hearing loss.

These may include:

- not responding when called
- watching faces/lips intently
- constantly asking for repetition
- difficulties identifying or producing individual speech sounds
- talking too loudly or too softly
- not always following instructions straight away
- misunderstanding or ignoring instructions
- watching what others are doing before doing it themselves
- asking for help from peers
- appearing inattentive or as though daydreaming
- making little or no contribution to class discussions
- complaining about not being able to hear
- tiring easily
- becoming easily frustrated
- appearing isolated and less involved in social group activities.

Children with temporary hearing loss may demonstrate these behaviours intermittently.

If any member of staff is concerned that a child may have an undiagnosed hearing loss, the school should discuss the matter with the family and suggest that their child is taken to the GP.

Impact of deafness on access to learning

Deaf children have a diverse range of needs. These include different types of hearing technologies and different ways of communicating and learning. It's therefore important to find out from families and the Teacher of the Deaf (ToD) what their hearing, learning and communication preferences are and how best to support them.

This table describes how deafness can impact a pupil's learning, and outlines strategies and adaptations teachers could make. It's important to note that the child's hearing technology should be used effectively and appropriately at all times.

Teachers should be aware of:	Teaching, learning and support strategies
Slower communication and language development, with reduced vocabulary and understanding of signs, words and concepts	Be aware of the child's communication needs and communicate clearly and appropriately at all times. Use a wide variety of communication, including gesture, touch, spoken language and sign, where appropriate. Support pragmatic language and the child's Theory of Mind through frequent opportunities to engage in social groups, with peers and adults, developing vocabulary associated with emotions and feelings, discussions around events and points of view, and book sharing. Know the child's language level from regular assessment, and implement recommendations. Monitor and develop language and communication skills through focused interventions. Use visual aids and prompts to support understanding. Identify and teach key vocabulary and share with parents and other professionals.

Challenges with maintaining attention and concentration due to the demands of lip-reading and effortful listening	Ensure pace and length of learning sessions is appropriate. Use a variety of teaching approaches to deliver information. Repeat key information and regularly check levels of understanding as necessary. Use visual cues and familiar objects of reference to support teaching points. Create a good listening environment.
Less well developed listening skills	Create a good listening environment and be aware of the limitations of hearing technologies. Deliver activities which demand careful listening, such as music or phonics, in a quiet environment. Look for responses to sound. This may include becoming still, blinking, vocalising and requesting more sound. Plan activities which build upon and develop the child's listening skills, such as: • a simple story which repeats • making music together • going on a listening walk. Be aware that group work is particularly challenging for deaf pupils. Try the following techniques: • encourage pupils to talk one at a time • signal when they're about to talk • reduce background noise. Be aware that listening can be tiring and make sure you offer children a listening break.
Challenges with working memory and auditory memory	Do activities which support memory, including: • 'Kim's game' • repetition of key information such as times tables, days of the week, memory games, and learning songs and rhymes • listening to stories with repetitive elements. Break tasks into simple steps and make sure the child has mastered the first step before going onto the next.

	Use clear, specific language when making requests and if appropriate, show the child what you want them to do. Repeat instructions and encourage the child to repeat them back to you. Use visuals and gestures to help the child remember the steps involved in a task (eg morning routine). Slow down the pace in challenging activities to allow the child time to process and complete the activity. Connect information to things that you know the child already knows. Create a prompt sheet to lessen the working memory load. Record verbal information or draw pictures/take photos of important things they may need to remember.
Challenges with multitasking, for example, carrying out an activity while listening/ lip-reading	Talk, then demonstrate/show, then talk again. Give pupils more time to process information. Use communication support workers and/or learning assistants to record information, allowing the child to focus on listening.
Challenges around incidental learning: deaf pupils may not pick up what others are saying	Provide opportunities to talk about wider issues before they happen, such as non-routine events and days out. Use books as a springboard for discussing wider issues. Encourage children to ask questions and find answers. Encourage peers to fully include deaf children in conversations and discussions.
Challenges with social communication due to delayed language skills and hearing difficulties	Ensure peers are deaf aware and are communicating appropriately with the deaf child. Create opportunities for small group activities in which to practice: • turn-taking • appropriately expressing emotions • asking for clarification from teachers and peers • initiating social interactions

	• joining in an ongoing activity • maintaining self-control • recognising and responding to social cues.
Self-esteem and pupil voice	Ensure that disabilities, including deafness, are included in your programmes of study. Make sure pupils have access to extracurricular activities. Promote the child's deaf identity through: • the provision of information to the deaf child and their family to support their decision-making and enable them to be fully involved in their child's education, both formally and informally • opportunities for deaf children and their families to meet deaf adults • use of the correct terminology to allow deaf children and their families to talk about their hearing loss and have their needs met • opportunities to meet deaf peers • support to develop resilience and problem-solving strategies when encountering every day challenges • support to enable the deaf child to be as independent as possible and lead a 'normal life'. Fully include the pupil as much as possible in discussions, reviews, target-setting and decision-making, using a range of strategies and resources.

Search 'special schools' on our YouTube channel for top tips on supporting children with additional and complex needs **www.youtube.com/NationalDeafChildrensSociety**.

You can find more information about creating good listening conditions in education settings on our website **www.ndcs.org.uk/goodlisteningconditions**.

Complex Needs, Complex Challenges

If a child has a hearing loss it might make it more difficult to diagnose other disabilities. Hearing loss may interact with the other disabilities in a way that makes it very difficult to tease out exactly what's happening. On the other hand, other disabilities may also mask the hearing loss, particularly if these other disabilities are also associated with delays in communication and language development.

The University of Manchester's *Complex Needs, Complex Challenges* research report found that when deaf children have additional and complex needs, their deafness is often overshadowed by their other difficulties. [2]

This may result in:

- late diagnosis
- difficulties in correctly identifying the nature and type of hearing loss resulting in incorrect or insufficient amplification from hearing technology
- problems accessing medical treatment
- difficulties in getting appropriate specialist support.

All of the above may result in a further delay to the child's language development.

The results of a literature review on the prevalence of additional disabilities and deafness can be downloaded from **www.ndcs.org.uk/research**.

An effective school will understand the indicators and impact of deafness on learning, and be proactive in reducing this impact as much as possible by using support strategies which enable effective teaching and learning to take place.

[2] University of Manchester (2010). *Complex Needs, Complex Challenges: A report on research into the experiences of families with deaf children with additional complex needs*. Available to download from **www.ndcs.org.uk/research.**

3 Working together to support deaf pupils

Families with deaf children who also have other conditions face unique challenges. As well as challenges with hearing technology, these families often also have to deal with other technology and equipment issues. For example, walkers, assistive communication devices, and medical interventions such as feeding tubes. The child's timetable may become very busy with a number of different appointments, therapies and interventions. Parents may not know any other parents in the same situation and they can feel very alone. The school will already be working closely with families to ensure that children get the support that's right for them.

When working with a deaf child who also has complex and additional needs, families can provide essential information about their child's:

- level of deafness and how it affects them
- challenges with hearing technology and what strategies they've used to overcome them
- communication preferences and what works best
- changes in behaviour in response to sound.

Many parents have told us that they value information from schools that can help them to support their child's learning.

Teachers can help by:

- reporting observations of changes in behaviour which may be as a result of changes in hearing loss
- reporting changes in communication, engagement and motivation which may be a result of changes in hearing loss
- supporting with communication and language development, especially if the school is using a system parents are not familiar with, such as Makaton or Picture Exchange System (PECS)
- giving clear guidance on what hearing support the child will receive, both in school and from external providers, and when this will be, so parents are able to liaise with professionals on a regular basis
- giving access to timetables, routines and activities such as days out or swimming, so parents are able to support their child to manage their equipment.

Parents must be kept well-informed about the provision for their child and involved in regular review meetings where progress can be discussed.

This will include:

- focusing on the outcomes deaf children and their families want to achieve, so that all decisions are informed by these aspirations
- seeking the parents' advice and feedback about provision for their child
- sharing information with parents on their child's participation in school life, including developing social skills and friendships
- actively involving parents and children in contributing to needs assessments and developing and reviewing support plans
- planning with parents when and how they can expect to receive this information and how often they'll receive it.

Professionals who support deaf pupils may include the following:

Qualified Teacher of the Deaf (ToD)

Deaf pupils should receive support from a ToD who has a mandatory qualification in deaf education. ToDs are often employed by a local authority peripatetic service. Access varies depending on the local authority and the severity of the child's deafness. The ToD can provide ongoing support and advice, organise training and can be contacted should any concerns or difficulties arise.

The ToD:

- supports and advises school staff on strategies to make sure the pupil can learn
- provides deaf awareness training to staff and peers, as well as more specific training on meeting the pupil's needs
- supports the effective use and maintenance of hearing technologies
- administers specialist assessments to identify the pupil's needs, and produces recommendations in order to inform teaching and learning strategies, interventions and help set targets
- recommends improvements to the hearing environment and access to learning activities for all pupils
- advises on the outcomes that may reasonably be expected for deaf pupils when support is sustained and developed effectively over time
- provides advice and support for all areas of the pupil's development

- supports parents with audiological and educational issues, communication choices and on accessing the right support for their deaf child
- helps coordinate liaison with other agencies involved with the pupil
- supports transfer from the early years setting and to secondary school
- advises on adjustments needed for any assessments or tests.

Speech and language therapist

A speech and language therapist may regularly visit the school or be employed by the school. They will provide advice on communication strategies, language development, challenges with eating, drinking and swallowing, and augmentative and alternative communication (AAC) systems. Some health services or local authorities may employ a therapist specialising in deafness.

Audiologists

Audiologists carry out hearing tests to determine the level and type of a child's deafness. They fit and maintain hearing aids and implantable hearing devices, such as bone anchored hearing aids and cochlear implants, and evaluate the child's hearing and listening development as a result of using their hearing aids. They also work with the ToD or educational audiologist to make sure that the pupil's hearing technologies, for example, radio aids and hearing aids, are working together effectively and that troubleshooting information is available and up to date.

Educational audiologist

Educational audiologists are ToDs or speech and language therapists with a qualification in educational audiology. The role involves offering specialist advice on acoustics, improving the listening environment and suggesting how hearing technologies can be used to help ensure access to teaching and learning.

Social workers for deaf children or family support officers

If a child's hearing loss and communication and language needs are not fully met, it can have a significant impact on their social and educational development, and emotional wellbeing. If the school is concerned that the parents need further support or are experiencing difficulties in meeting their child's hearing and communication needs, they should refer the matter to social care using local referral procedures. For example, a school should consider referral if they have worries about hearing equipment not being used or maintained, audiology appointments being missed or a lack of interaction between carer and child.

You can find out more about this by searching 'local offer' on the Council for Disabled Children website **www.councilfordisabledchildren.org.uk**.

Involving the deaf pupil

It is really important to involve the deaf pupil when determining the type of support they receive. For children with limited language and communication, alternative methods must be found. You can find more information on this in Chapter 9.

An effective school will:

- adopt a person-centred approach to planning to meet the deaf child's needs, and will fully involve the family and the deaf child in decision-making
- ensure there are no barriers to parental participation
- ensure all staff are clear on roles and responsibilities in relation to the deaf pupil and in the delivery of quality teaching
- ensure that all staff have received appropriate training to meet the deaf pupil's needs
- encourage staff to discuss individual needs and support with the deaf pupil
- ensure that it makes the necessary reasonable adjustments to meet the deaf pupil's needs and ensure they are not placed at a substantial disadvantage
- work closely with external agencies, including the pupil's ToD, to support the deaf pupil effectively
- ensure that families know where to go for further advice and support through either contacting our helpline or the Information, Advice and Support Services network (IAS).

IAS Services offer information, advice and support for disabled children and young people, those with SEN, and their parents. You can find more information on their website **www.councilfordisabledchildren.org.uk/information-advice-and-support-services-network**.

4 Starting a special school

Starting school is an exciting and challenging time for any child. Periods of change can be made less daunting if parents' and children's views are respected and they feel that they've made a meaningful contribution to what will happen when their child moves to a new setting.

For deaf children with additional and complex needs you should consider the following points.

- The child's hearing loss.
- The combined impact of the child's deafness and additional and/or complex needs.
- The most appropriate communication and language approach.
- The management, maintenance and monitoring of hearing technologies.
- The acoustic environment.

The transfer plan

A good transfer plan will:

- be prepared well in advance of the pupil starting school to give time for the support arrangements to be put in place
- clearly identify the staff member responsible for preparing the plan and coordinating its implementation
- involve the child and their family and use information they have from specialist assessments to inform the content.

It may include:

- an acoustic audit
- the most appropriate teaching spaces
- introduction of new or different hearing technology
- management of personal hearing technology
- the most appropriate method of communication and employing a communication support worker, if required
- training for staff on deafness
- planning visits for the whole family to the new setting

- photos of key staff and school areas
- arrangements for promoting and supporting social development
- the member of staff who will prepare the plan and coordinate its implementation
- the aspirations of the pupils and their family
- thorough analysis of the pupil's needs and strengths including audiological and educational assessment.

Transfer to special school	
Name: **DOB:** **Previous school (if applicable):** **Previous setting contact:** **Parents:** **Teacher of the Deaf:** **Teacher in charge of coordinating transfer plan:**	
Hearing and personal hearing technology:	
Information required	**Actions**
In this section record: Information on hearing loss Degree and level of deafness Personal hearing technology used When it is used How well it is used	**In this section record:** Does the child need a more up to date audiological assessment? How accurate are the results? Is there sufficient information about the pupil's hearing loss? What behaviours does the child demonstrate when they're able/unable to access sound? How well does the pupil tolerate hearing technology? What support needs to be put into place to help the child make the most use of their hearing technology? What needs to be done to improve access to sound, for example, providing radio aids, improving acoustics, using soundfield systems? What needs to be done to ensure optimum use of hearing technologies, for example, daily checks by staff of battery, tubing etc, developing the pupil's skills in managing their own technology?

	What are the health and safety implications, for example, fire drills?
Communication and Language	
Information required	**Actions**
In this section record: Levels of understanding of language Level of expressive language Social interaction and use of language	**In this section record:** What are the implications for communication and learning? For example, what other augmentative communication systems could be used? How can this be supported?
Cognition	
Information required	**Actions**
In this section record: Non-verbal cognitive skills : a) The pupil's non-verbal cognitive ability b) Other additional issues that will impact on learning	**In this section record:** How can this information be used to support the pupil's learning and long term outcomes? What needs to be done to address any other difficulties the pupil may be experiencing?
The curriculum	
Information required	**Actions**
In this section record: Progress in the different curriculum areas	**In this section record:** What support is required in specific subjects? What access arrangements need to be made? What targets need to be set?

Extracurricular activities	
Information required	**Actions**
In this section record: Extracurricular activities	**In this section record:** What support is required? What access arrangements need to be made?
Social and emotional wellbeing	
Information required	**Actions**
In this section record: Level of social interaction in class/school friendship groups Support groups both internal and external Resilience and ability to problem solve at school Knowledge and understanding of the pupil's own hearing loss and other children's understanding Ability to manage their deafness in school and self-advocate	**In this section record:** Interventions and social support to prevent isolation. Identify who provides emotional and social support to the pupil both in and out of school. Interventions and support to help the pupil cope with difficult situations, resolve conflict, solve problems or seek support. Does the pupil have sufficient knowledge of their own hearing loss and do other pupils need deaf awareness training and information on how to communicate? Would they benefit from meeting other deaf people?

Pupil's views	
Information required	**Actions**
In this section record: Transfer arrangements The pupil's views on their transfer, support and aspirations	**In this section record:** What information and opportunities are required to help the pupil with the transfer? Does the pupil need extra support or resources to express views and communicate needs?
Parent's Views	
Information required	**Actions**
In this section record: Parents' hopes, aspirations and concerns about their child and the new school The support and information they need to enable them to be fully involved in decision-making	**In this section record:** What information and opportunities are available to help the pupil with the transfer? What does the family need? For example, an interpreter in meetings.
Other considerations	
Information required	**Actions**
In this section record: Any other arrangements that need to be put into place	**In this section record:** Transport arrangements: are escorts able to communicate appropriately with the child? Can the child access outreach audiological services at school? What access is there to deaf peers/deaf role models?

Sharing information

Once all the relevant information has been collected by the SENCO, they should share a summary with school staff, with the agreement of the family. An example information sheet can be found below and there's a blank template for you to use in Chapter 11.

<table>
<tr><td>Photo</td><td>Pupil: Lauren Smith
Year: 7
Form tutor: Mrs Hall
Head of year: Mrs Stevens
SENCO: Mr Pool
Subject: English</td></tr>
<tr><td colspan="2">Hearing loss and hearing technology
Lauren uses hearing aids and a radio aid.</td></tr>
<tr><td colspan="2">Communication
Lauren has some spoken English but relies on lip patterns and needs key words signed.</td></tr>
<tr><td colspan="2">Learning and access
Lauren will need:
to be sitting in the front of the class
to use a radio aid
to see your face.
Remember:
Lauren may not say if she does not understand.
Group work will be difficult. Remind pupils to speak one at a time and place the radio aid in the middle of the table.
Use visual aids to help Lauren understand the topic.
Lauren can follow up to two instructions.</td></tr>
</table>

Personal passports

Some pupils may already have a 'personal passport' or 'profile' as well as the previous information sheet. Personal passports can be a practical and person-centred way of supporting pupils. They contain key information and range from small laminated cards that can be attached to a lanyard or a locker key, to A4 sheets of paper with more detailed information. They can also be useful in situations where the pupil is being supported by school supply staff.

You can find more examples of personal passports on our website if you search 'passport' in Documents and Resources **www.ndcs.org.uk/resources**.

Example:

Name: Cassie Smith

School and class: Henry Thomas 9H

Hearing technology: Hearing aids

It helps if you:

- face me when you're talking
- repeat what you've said if I don't understand, or say it in a different way
- show me what you want.

When using the radio aid I need you to:

- help me put the attachments on my hearing aid.
- check that it's working before starting the lesson
- switch it on and wear the microphone around your neck, roughly 15cm from your mouth. When you talk to other students you can switch it off.

Thank you

An effective school will:

- place deaf children and their parents at the centre of the pupil's move into special school
- recognise and plan for the additional challenges that deaf pupils may face in special school.

5 Listening and communication

This chapter explains how you can make sure deaf children with additional and complex needs are able to hear and communicate optimally and at all times at school through:

- understanding the hearing loss
- using hearing technology
- creating a good listening environment
- supporting the pupil's communication choices
- promoting effective communication throughout the school.

You can find more information on creating listening conditions for education settings on our website **www.ndcs.org.uk/goodlisteningconditions/**.

Identifying Hearing Loss

When a child has complex needs their hearing problems may go unrecognised or undiagnosed. This may be because behaviours associated with deafness are thought of as being part of the child's personality, physical or learning difficulties, or complex needs. Undiagnosed and unmanaged deafness can cause or contribute to speech and/or language delays, difficulties with learning, and difficulties communicating with others.

When this happens a child may not be referred to audiology services or be assessed by an audiologist for a long time and hearing tests may be inconclusive. This is because responses to hearing tests depend on how the ear and its nerve connections are working, the stage of general development the child has reached and the child's motivation or ability to respond.

Children with additional and complex needs:

- may respond to sound inconsistently, or give responses that are different to those of a typically developing child
- may respond to sound inconsistently, or give responses that are different to those of a typically developing child.

Hearing assessments should be undertaken by audiologists who have experience of working with children with complex needs, and additional information should be sought from a variety of sources including the family and other professionals.

If a pupil is showing signs of a hearing loss, or hasn't had a hearing assessment for a long time, the school nurse may be able to make a referral to the audiology clinic, or the child's parents can ask their GP, health visitor or paediatrician to refer them.

Whilst hearing technology is invaluable in supporting deaf children to overcome these challenges, it's important to remember that no hearing technology will enable a deaf pupil to hear as well as a hearing pupil.

Signs of deafness

Some children are born deaf but for many pupils, hearing loss develops later in childhood or as a young adult. It's possible that some pupils may have a hearing loss that hasn't been identified or diagnosed. It's important to remember that just because a child responds to sound it doesn't mean they have 'normal' hearing.

The following list contains behaviours that can indicate a problem with the ears or a hearing loss. The child:

- doesn't respond when called by name
- doesn't respond to verbal instructions or needs visual clues
- watches faces intently
- appears to hear some voices better than others (for example, low or high pitched)
- has difficulty following a conversation in a group (for example, when there's a change in topic of conversation)
- struggles to hear conversation when there's background noise
- sits very close to the television or turns the volume up loud
- is upset by loud noises
- is startled by people approaching from behind who they haven't seen/heard
- speaks very quietly or loudly, or vocalises very loudly
- breathes through their mouth and has a 'blocked nose' most of the time
- has discharging ears and/or ears have an unpleasant smell
- frequently rubs or pokes their ears
- has problems with balance.

It's also possible that the behaviours above could be explained by a child's personality, learning difficulties or complex needs, but it's worth asking for a hearing assessment to be sure of the cause.

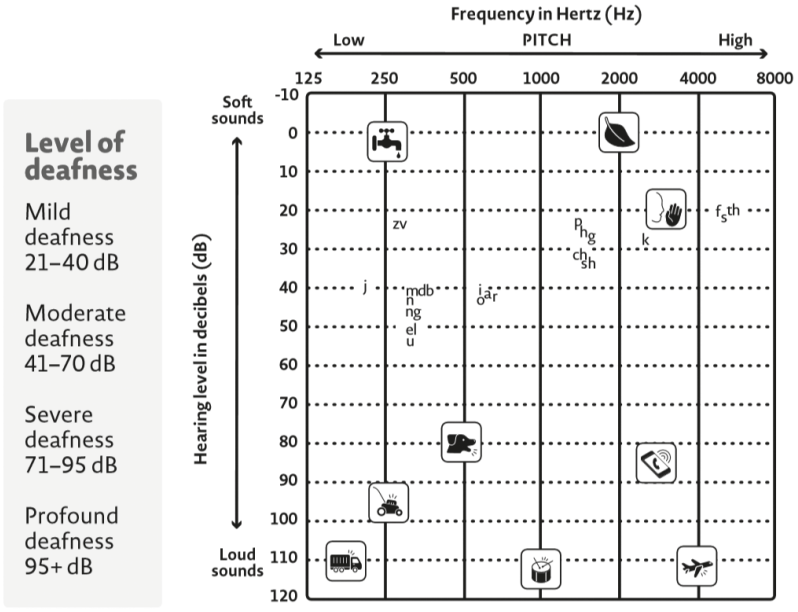
Auditory Neuropathy Spectrum Disorder (ANSD)

ANSD occurs when sounds are received normally by the cochlea, but become disrupted as they travel to the brain. Children with ANSD are likely to have greater difficulty understanding speech and distinguishing one sound from another, than a child with a similar level of hearing, especially when there's background noise. For some children this will result in a failure to develop spoken language. Babies who are born well and haven't spent any time in Special Care or NICU won't be tested for ANSD. They are therefore at risk of not being diagnosed until there's a delay or failure to develop spoken language. For children with additional or complex needs, there's a risk that ANSD won't be diagnosed and associated hearing and language difficulties will be attributed to the child's other needs.

You can find more information on ANSD on our website **www.ndcs.org.uk/ansd** or you can download our resource: Auditory Neuropathy Spectrum Disorder available at **www.ndcs.org.uk/resources**.

Types and levels of childhood deafness

There is a considerable variation in the levels and types of childhood deafness. Children who are deaf may have a permanent mild, moderate, severe or profound deafness in one or both ears or a temporary deafness such as glue ear.



This diagram is based on British Society of Audiology definitions of hearing loss.

It should be noted that even a mild, unilateral (one-sided) or temporary deafness can have an impact on a child's development if their hearing needs are not supported. Below you can find more information about the different types of deafness.

Conductive deafness is when sound cannot pass efficiently through the outer and middle ear to the cochlea and auditory (hearing) nerve. Conductive hearing loss is most common in childhood and is usually caused by glue ear (otitis media).

Glue ear is a build-up of sticky fluid in the middle ear that makes it harder for sound to pass through to the inner ear. The eustachian tube, which runs from the middle ear to the back of the throat, usually keeps the middle ear full of air, which enables the ears to work properly. If the eustachian tube doesn't work efficiently or becomes inflamed or blocked, air cannot enter the middle ear, causing fluid to build up. Glue ear is often a temporary condition that can cause hearing to fluctuate but usually clears up on its own without needing any treatment. However glue ear may persist in some children due to structural differences in their anatomy.

This may affect children with:

- Down's syndrome
- a cleft palate
- congenital malformations of their facial or skull bones.

Children with conditions that produce excess amounts of mucus are also more likely to have long-standing glue ear. These conditions include:

- cystic fibrosis
- primary ciliary dyskinesia.

You can find out more about glue ear on our website **www.ndcs.org.uk/glueear** and you can download our information guide **www.ndcs.org.uk/glueearguide**.

Sensorineural (or nerve) deafness is when there's a problem in the inner ear (most often because the hair cells in the cochlea are not working properly) or with the auditory nerve. Sensorineural deafness is permanent.

Children can be born with sensorineural deafness or it can develop during childhood. It is most often genetic (inherited), caused by congenital (from birth) infection or caused by neonatal or childhood illness.

Sensorineural deafness can also be caused by:

- medication that can cause damage to the inner ear (known as ototoxic medications). Some children with complex needs may have been exposed to these drugs to treat serious infection or childhood cancer.
- premature ageing of the ear, known as presbyacusis. Children with Down's syndrome may develop early-onset presbyacusis for the first time as teenagers.

It is also possible to have sensorineural and conductive deafness together. This is known as mixed deafness.

Hyperacusis is an over-sensitivity to everyday sounds that people with normal levels of hearing don't usually find unpleasant or painful. Hyperacusis can be experienced by any child, however it appears to be more prevalent in children with complex needs such as:

- autism spectrum disorder
- Down's syndrome.

You can find more information on Down's syndrome and deafness on our website **www.ndcs.org.uk/downssyndrome**. You can also find information about hyperacusis online at **www.tinnitus.org**.

Mild and unilateral deafness

Although many children with mild or unilateral (one-sided) deafness do not receive regular support from a Teacher of the Deaf, they can experience many difficulties. Mild or unilateral deafness in conjunction with additional or complex needs can have an adverse impact on learning and development.

Children with unilateral deafness also have difficulties with:

- hearing sounds or speech on the side with the deafness
- identifying the source of a sound, the direction of a sound or the distance the sound is coming from
- understanding speech when there is background noise.

Children with mild deafness may:

- experience delayed speech
- mishear and mispronounce words
- not hear what's going on if there's a lot of background noise

- experience problems with concentrating, tiredness and frustration that affect their behaviour
- prefer to play alone
- experience more difficulties than hearing children in reading and learning.

Adults can sometimes find it difficult to understand the impact of mild or unilateral deafness on children. This is because adults are more experienced listeners and their brain is much better at filtering out background noise and at filling in the gaps of missed information, speech sounds or parts of words that weren't heard. Children with mild deafness or unilateral deafness aren't always able to do this and this means they miss out on a lot of the new vocabulary and concepts being taught every day at school.

Balance

Balance problems can occur when the organ of balance in the inner ear doesn't work properly (vestibular hypofunction).

The vestibular (balance) sense has a role in:

- detecting motion
- detecting and responding to gravity
- providing stability during body movement
- locating body parts and organising our body movements
- influencing muscle tone and posture
- facilitating crossing the midline (bilateral coordination)
- motor control, coordination and sequencing
- assisting with auditory and visual perception
- modulating arousal and alertness for attention and calming.

Balance difficulties will affect all of these areas and will impact the development of gross motor skills, walking and how children use their hearing.

Balance and hearing

Not all balance disorders are associated with deafness, but balance disorders can be caused by glue ear, sensorineural deafness, viral infections, meningitis, cytomegalovirus (CMV) and enlarged vestibular aqueducts (EVA).
Some children may need to move more to enable them to listen, while other children may not be able to listen when concentrating on moving and maintaining their balance.

You can find more information on balance and balance disorders on our website **www.ndcs.org.uk/balance**.

Bone conduction hearing aids and implantable hearing devices

Children who have conductive hearing loss and have problems wearing behind-the-ear hearing aids may benefit from a different type of hearing device that allows them to hear sounds using bone conduction.

Bone conduction hearing aids can be worn on metal or soft fabric headbands. They use a vibrating pad that allows sound to be conducted through the bone rather than through the middle ear. The vibrator is worn behind the ear and it rests on the mastoid bone, which is part of the skull behind the ear.

In young children the sound processor of a bone anchored hearing system may be worn on a soft headband. The soft headband is taken on and off like other bone conduction hearing aids and can be used permanently or temporarily during the assessment stage.

For further information on bone conduction and other implantable devices visit our webpage **www.ndcs.org.uk/implants**.

Using hearing technology

Many deaf children with additional or complex needs will be using hearing technologies including hearing aids, cochlear implants and bone conduction devices. To get the best from their hearing technologies children need to wear them consistently and for all their waking hours both in school and at home. Many children use their hearing technologies very successfully and with little disruption to their daily routines. For other children, establishing consistent use can be harder and take much longer.

Observing the impact of hearing technology

There may not be any immediate changes in the child's responses to sounds when they first start wearing their hearing technology and this can discourage parents and teaching staff from persevering with them. Children with complex needs may take much longer to process information and respond to sound. It's important to watch for very small changes over a long period of time. The people who spend most time with the child will be most likely to recognise subtle changes in their behaviour that aren't obvious in the audiology clinic setting.

You may want to consider the following.

- Is the response to sound reflexive? For example, a blink or startle in response to a loud sound.
- Is the child calmer or more agitated when wearing their hearing aids?
- Does the child turn to the source of a sound or appear more responsive to sounds?
- Does the child vocalise more with the hearing aids in?
- Does the child show more enjoyment of music with the hearing aids in?
- Is the child more responsive to particular voices or noises?
- Do the hearing aids appear to bother the child? Do they pull at them or try to knock them out?

The Royal National Institute of Blind People (RNIB) has produced a guide on what to look for in children who are deaf and have additional and complex needs, to gain a greater understanding of what they do or don't hear and how they use the hearing they have. Responses will be different for each child, so there is a variety of approaches to try to get an accurate picture. The guide is in two parts covering how to assess vision in children with complex needs and how to assess hearing in children with complex needs. You can access the resource '*Guide to Functional Vision and Hearing Assessments*' on the RNIB website **www.rnib.org.uk/complexneeds**.

Daily checks of hearing aids

It's essential that:

- a child's hearing technology is working at all times
- consideration is given to when hearing technology is used as learning also takes place out of the classroom
- all staff understand the uses and limitations of hearing technologies and are able to support the child to use them both appropriately and sensitively.

Monitoring hearing technology

A member of staff should be trained to maintain and monitor the hearing technology on a daily basis, check for faults and troubleshoot.

They will need to:

- carry out a daily visual check and listening check. It's only by listening through the hearing technology that they can be sure it's functioning correctly
- have access to an equipment care kit which may include spare batteries, a puffer, a listening device and spare tubing
- talk to the child about how well their hearing technology is working
- support other members of staff to use equipment appropriately and sensitively, for example, during assembly
- have processes in place with which to contact parents, the Teacher of the Deaf or the audiology department if equipment is faulty
- support the deaf child to take more responsibility for their own technology as they grow older
- provide guidance and advice to supply staff and visitors to the school.

You can find a series of video clips that will help you perform these checks by searching 'how to' on our YouTube channel **www.youtube.com/NationalDeafChildrensSociety**.

You can find out more about hearing aids and how to look after them in our resource *Hearing Aids: Information for families*, available to download on our website **www.ndcs.org.uk/hearingaidsguide**.

Whistling hearing aids

Most hearing aids will whistle at some time or another. This is known as feedback and occurs when the microphone picks up the sound coming out of the hearing aid and amplifies it. If you can hear the feedback then the hearing aid itself can also pick up this sound and this will interfere with the pupil's ability to listen.

These are the most likely reasons for feedback.

- The earmould is not a good fit. This can happen when the child has grown out of their current earmould, because the earmould has not been fitted into the ear exactly as it should be or because jaw movement has pushed the mould out of the ear.
- The hearing aid microphone is covered or very near to another object, for example when:

- holding a child close to you
- there is headgear present
- using headrests on wheelchairs
- a child is lying on the floor.

If this is happening, consider changing positions or using pillows to support the pupil in a different position. If the problem is continuous (for example, because of the use of headrests on the wheelchair) it may be necessary to adjust hearing aids or use other equipment (such as a radio aid) to prevent feedback.

Cochlear implants

Cochlear implants provide access to sound for children who have severe to profound sensorineural deafness and cannot hear the full range of speech sounds with hearing aids. A cochlear implant is different from a hearing aid. It provides a sensation of hearing by stimulating the auditory nerve using electrical signals. The implant has two parts – a receiver which is surgically implanted under the skin behind the ear and an outside part (processor) which is worn like a hearing aid.

A growing number of studies have focused on the benefits of cochlear implantation on children with additional and complex needs. These include improved benefits in communication language and learning.

You can find more information on cochlear implants in our resource *Cochlear implants: A guide for families*. This is available to download on our website **www.ndcs.org.uk/ciguide**.

Case study: Finding a way of managing a child's cochlear implant use

Deena

Deena (12) attends a special school supporting children with a wide range of complex needs. She has cerebral palsy, is a wheelchair user and has a profound bilateral sensorineural hearing loss. She communicates her needs through facial expressions, crying, smiling and laughing.

Deena had a cochlear implant fitted at an early age. Initially she was fitted with a body-worn processor and later a behind-the-ear processor. There were problems with keeping the implant in place. Deena has limited head control which made wearing the implant almost impossible. She also reacted slowly and showed distress in the classroom when the implant was turned on.

Deena's Teacher of the Deaf (ToD) liaised closely with Deena's parents and the implant team. The ToD worked with the class teacher to create opportunities for Deena to spend 'one-to-one time' in a quiet room so the implant could be introduced gradually in a quiet area. Close observations showed Deena loved looking at books, so this activity was chosen.

A number of techniques were attempted to secure the implant, including using clips and strands of hair to pin the implant in place, and earmoulds. The staff liaised with the occupational therapists and reviewed and adjusted the position of the wheelchair headrest to try to accommodate the position of the implant.
It took time and patience before Deena tolerated the implant for a few minutes.

Staff members commented on feeling more confident and they made time to use the implant daily. Gradually the implant was introduced in the classroom and more staff took responsibility for it. Over time Deena was observed vocalising when the implant was switched on, and regular use for short periods was established.

What helped Deena

- Support for staff who worked closely with Deena on a daily basis.
- Staff got to know Deena's daily routine and organised one-to-one sessions at times when Deena was most relaxed.
- Sessions took place in a quiet room free from distractions. Books and puppets were used to engage Deena. Gradually Deena used the implant for longer periods of time and in new listening environments.
- Gradually more staff were trained and encouraged to make time to use the implant with Deena.
- Staff kept in close contact with the implant centre to feedback observations and inform them of Deena's responses.
- Staff kept in close contact with the family and celebrated and shared successes.

Wearing hearing technology – problem solving

Tips for getting children to wear hearing aids or cochlear implants

Many children with complex needs wear hearing aids and implants very successfully and with little disruption to their daily routines. For other children establishing consistent use can be much harder and take much longer than usual. It is important that children are encouraged to wear their aids or implants regularly from the very start. The first task is to encourage the child to like their hearing aids or implant processors. If you're positive, the child will be more positive about wearing them.

Tips for getting children to wear hearing aids or cochlear implants

- Hold the earmould in your hand for a couple of minutes before trying to put them in. This will warm them up and give the child less of a shock. It also makes them softer, easier to put in and more comfortable.
- If the child has never worn hearing technology before it may help to gradually build up the length of time that they wear them.
- Discuss with parents the importance of allowing the child some choices about their hearing technology, such as choosing the colour. Hearing aids can also be decorated with stickers to personalise them, while earmoulds come in different colours and can have pictures, logos or glitter inside the plastic.
- At particular times, children may try to take off their hearing technology. See if you can spot a pattern or a cause and then try and address the issue.
- Fill the child's hands at the time you are putting the hearing technology on and then do something that they usually enjoy and get absorbed in – this leads them to associate sound with positive things.
- If you're having trouble getting the hearing technology in, or if the child continually removes them, stop trying and have a rest. Try again later or the next day when you're both feeling a bit more relaxed.

Children may remove or try to remove their hearing aids or implants if they're uncomfortable or painful. If a child can't tell you their hearing aids or implants are too loud you may notice that they blink or flinch when there are loud noises. If this happens, you should consult the child's audiologist or Teacher of the Deaf.

Case study: Establishing effective hearing aid use

John

John (6) attends a special school which supports children with moderate or severe learning disabilities. He has autism and high frequency sensorineural deafness.

John has very basic communication skills and uses Makaton signs. Trying to support him to use hearing aids was unsuccessful.

John's ToD discussed this with the educational audiologist, who suggested a programme of activities including games which encouraged the wearing of hats and stroking of his hair and ears, so that John was less tactile defensive. The programme was explained to the class teacher and teaching assistants who worked with John, as well as to John's mother.

The programme also set out the amount of time John was to wear his hearing aids for. This started with small amounts of time, 10 seconds a day for a week, in a quiet environment with stimulating rewards.

John's hearing aid use was established much more quickly than everyone predicted and he started to wear the hearing aids for longer periods of time. He began to vocalise and started to enjoy music and being in the sensory room. When a radio aid was trialled John responded immediately and was happy to wear it.

What helped John:

- Working with the educational audiologist to introduce hearing aid use.
- Involving staff and parents in the process and giving them very clear guidelines to follow.
- Initially using the hearing aid for small periods of time and encouraging staff to be patient, persevere and be consistent.
- Informing the audiology clinic of the process.

Keeping hearing aids and implants on

Some children have very small and very soft pinna (the external part of the ear) that can make it difficult to keep a behind-the-ear hearing aid or implant in place.

To resolve this issue

- Audiologists can supply hearing aid retainers (huggies). These are rubber bands that attach to the hearing aid and go around the ear. They help hold the hearing aid on the ear and in the right place.
- Surgical tape or wig tape can also be used to help hold the hearing aid in place. The child's audiologist can usually supply this tape.
- Sports headbands or Alice bands can be used to hold hearing aids in place. The band can cover the ear and hearing aid, but make sure it doesn't cover the microphone of the hearing aid as this will stop it picking up sound.

Case study: Auditory Neuropathy Spectrum Disorder (ANSD): Evaluating the benefit of hearing aids

Fatima

Fatima (11) has been diagnosed with auditory neuropathy spectrum disorder (ANSD), multisensory impairment and severe learning difficulties following a very traumatic neonatal period. Past behavioural testing has suggested that she has severe to profound hearing loss. She's been fitted with high-powered hearing aids for a number of years, but began to vigorously reject them.

A programme was introduced to try to re-establish hearing aid use. The hearing aid volume was lowered (to ensure that Fatima wasn't being discomforted by the hearing aid being too 'loud' or over-amplified) and she was offered the hearing aids twice daily in relaxed and calm sessions. Fatima continued to pull the hearing aids out the instant that they were fitted and staff were finding it increasingly challenging to support her to use them.

Next steps

Using an in-house classroom monitoring protocol, Fatima was observed in different listening situations by the audiologists, and her responses were recorded in detail. Some sessions were videoed and reviewed by different members of staff – sometimes with the sound turned off to compare judgements and eliminate bias.

Staff were also asked to record and note any reactions or responses that Fatima may have shown or made to sound or music.

Findings

A very erratic pattern of listening responses were noted over a six-month period. Fatima normally makes unintentional, low-frequency vocalisations and these tend to be mood related.

However, in music sessions her vocalisations noticeably changed in tempo and frequency and at times she clearly imitated some sounds (such as a toy fire engine siren) and could copy a range of sounds at different frequencies from a live clarinet. These responses were not consistent but when she was engaged and processing well the responses were very surprising. On each occasion the sounds were measured at ear level using a sound level meter.

Decisions:

Fatima's mother had always said that she did not notice a significant difference with Fatima's hearing at home, whether she was wearing her hearing aids or not. Given the inconsistency and variation in Fatima's listening skills, it was decided that using hearing aids was not in her best interests and they have been withdrawn. The audiologists observed significant fluctuation in Fatima's hearing levels and could not be confident about setting up a hearing aid to match a very inconsistent audiogram.

They felt that there were, without doubt, 'good' and 'bad' listening days and this was consistent with her fluctuating cortical vision difficulties. There doesn't appear to be a pattern to the auditory listening but it does seem that she's less able to process sound using two senses at the same time (dual modes) and is more engaged when there is minimal visual stimulation.

What helped Fatima:

- Closely monitoring Fatima's listening repertoire and responses, using an in-house recording sheet.
- A multidisciplinary team approach with input from teacher, support workers and therapists, to inform on decisions.
- Liaison with NHS audiology department and family.
- Video reviews with both familiar staff and observers.

You can find out more about ANSD by downloading our booklet *Auditory Neuropathy Spectrum Disorder: Information for families* on our website **www.ndcs.org.uk/ansd-guide**.

Using hearing technology and glasses together

Pupils need time to get used to glasses and hearing aids – both to the feel of both the glasses and the aids on their face and head, and the difference they make to levels of sight and hearing. Here are some ideas to help them with this.

- Allow the pupil to wear the hearing aids while wearing their glasses for very short periods to start with, initially perhaps a few seconds.
- Talk to your ToD, visual impairment (VI) or multi-sensory impairment (MSI) teacher about how to build up tolerance.
- Place the arm of the glasses nearest the head and the hearing aid on the outside.
- If the child has adjustable bendy metal arms on their glasses, or the arm of the glasses can be adjusted, you can occasionally use them to hold the hearing aid in place. The child's optician can help with this.
- Sometimes a different model of hearing aid or implant processor might be tried.
- If the ear is naturally cupped forward, surgical tape or wig tape can help to hold the hearing aid in place. The child's audiologist can usually supply this tape if needed.

You can find more information on children with multi-sensory impairment on the National Sensory Implant Partnership (NatSIP) website **www.natsip.org.uk/msi**.

Other hearing technology or assistive listening devices

Radio aids

Radio aids can benefit many deaf children by helping them hear more clearly. A radio aid works with a child's hearing aid or implant to make it easier for them to concentrate on the sounds or voices they want to hear.

Children find it particularly difficult to listen when:

- there is background noise
- sounds are echoing around the room
- there's a distance between them and the person who is speaking.

In special schools there may be increased background noise and reverberant surfaces. A radio aid can help overcome these issues. You can download our booklet *How Radio Aids Can Help* on our website **www.ndcs.org.uk/radioaids**.

You can also learn more about radio aids and how they work by searching 'radio aids' on our YouTube channel **www.youtube.com/NationalDeafChildrensSociety**.

Who can a radio aid help?

- Any child who uses a hearing aid, bone conduction hearing aid, bone conduction hearing implant or cochlear implant may find a radio aid useful. Children with all levels of deafness benefit from using radio aids. Radio aids do not amplify sounds in the same way as hearing aids, but they help the child concentrate on the particular sounds or voices they need to hear.
- Children who use a wheelchair with a supportive headrest may also find a radio aid useful. Sometimes the headrest can cause a hearing aid to feed back (whistle) because of how close it is to the hearing aid's microphone. The microphone on the hearing aid can be switched off and the transmitter can be clipped to an alternative place on the chair, or with a teacher in a group-listening situation.
- Children with normal levels of hearing who have difficulties processing and understanding sounds. A radio aid system (without hearing aids) can deliver better quality sound and support concentration.

Case study: Introducing a radio aid

Edith

Edith (14) was born prematurely. She has been diagnosed with cerebral palsy, vision impairment and bilateral severe to profound sensorineural hearing loss.

Edith has consistently worn hearing aids in both ears, has had ongoing support from Teachers of the Deaf (ToDs) and an educational audiologist, and has been monitored at the audiology clinic.

Edith uses an electric wheelchair with a headrest. Over time her head has started to flop sideways on to the headrest causing the hearing aids to feed back (whistle). She's finding the hearing aid feedback hard to tolerate. In consultation with the ToD a decision is made to trial a radio aid.

What helped Edith:

- The radio aid enables Edith to access sound without feedback.
- The radio aid enables Edith to enjoy the reassurance of a human voice nearby at an optimal signal-to-noise ratio, especially beneficial in complex listening environments like assembly and minibus rides.
- The radio aid allows Edith's teacher or parents to roam more freely around the school/house without worrying about the distance between them and her, when compared with hearing aid use alone.

Soundfield systems

Soundfield systems are increasingly popular in schools. They're designed to improve listening conditions for all children in the classroom and in a school hall. They can be used with or without hearing aids or implants. They may help some children who find it difficult to tolerate hearing technology, either because they have a fluctuating hearing loss, for example children with Down's Syndrome, or because they are sensitive to the equipment being placed on their heads, for example, children with autism. They will also benefit children with a mild or unilateral loss. Portable systems are available.

Other technology

Audio direct input leads

These connect a device such as a computer or laptop directly to the deaf pupil's hearing aids, using a simple cable.

Streaming devices

Streamers can be used with certain models of hearing aid. They send signals digitally to the pupil's hearing aids and link with other products using Bluetooth.

You can find more information about the different types of products and technologies available to deaf children and young people on our website **www.ndcs.org.uk/technology**. You can also learn more about our how deaf children and young people can access technology through our Technology Test Drive **www.ndcs.org.uk/technology-loans**.

Creating a good listening environment

It's important to consider all of the child's needs and how they can impact on each other. Listening takes energy, and in a noisy classroom environment a child may get tired and be unable to concentrate on other tasks for as long as would be expected. Children with physical disabilities who require a lot of energy to sit upright may be unable to concentrate on listening tasks for long. In these situations specialist seating devices and positioning can support the development of listening skills too.

Children with any level of deafness will experience particular difficulties in accessing sound if there's a lot of reverberation and/or background noise in the room.

Reverberation and echo in a room occur where there are a lot of hard surfaces that enable the sound to 'bounce' around. This distorts what's heard through the hearing technology worn by the deaf child. Background noise can drown out the speaker's voice. Controlling background noise is critical for deaf children.

How can I reduce reverberation?

- Fit curtains or blinds.
- Use soft furnishings such as cushions and rugs.
- Use display drapes on wall.
- Cover hard surfaces with fabric.
- Pad the bottom of toy storage boxes or pencil/pen pots with felt or foam.
- Install specialist acoustic treatments, such as acoustic tiles, panels and door seals.

How can I reduce background noise?

- Close windows, curtains and blinds, and doors to noisy areas or corridors.
- Position full bookshelves and cupboards against partition walls.
- Ensure heating and air conditioning systems operate within acceptable noise levels through regular maintenance.
- Turn off equipment such as computers when not in use.
- Avoid playing background music.
- Ensure the deaf child is learning in a quieter area.
- If teaching in a shared open-plan area, make sure you liaise with colleagues. For example, don't start a quiet story session at the same time that the other group begins their music lesson.

To find out more about improving the listening environment in your school visit our webpage Creating good listening conditions: For education settings **www.ndcs.org.uk/goodlisteningconditions**.

Case study: Creating a good listening environment

Peter

Peter (9) attends a special school for children with multiple disabilities and vision impairment. Peter is pre-intentional in his communications. He has a conductive hearing loss and has a bone conduction hearing aid, which he's expected to wear on a daily basis.

Peter's classrooms are not soundproofed or acoustically treated – therefore it was crucial that hearing aids were introduced to him in a very calm, motivating way, to avoid any negative association with using the hearing aids because of loud unpleasant noises.

One key person, his intervener, was assigned to use the aids daily with Peter so he could build up a trusting relationship within his environment until he was confident in listening. Weekly feedback between the intervener, class teacher and his Teacher of the Deaf (ToD) took place in order to begin to establish patterns of listening in a variety of situations. A reward system was set up for Peter to celebrate his daily listening achievements.

Peter's ToD gave the class team some advice on environmental modifications to further reduce background noise and disturbance. For example, a screen was introduced to the work station to act as a buffer and help block out levels of sound when Peter needed to do some focused listening work.

Over time, staff noted that his ability to tolerate his aids had increased, that there was a higher level of confidence evident in all those involved with Peter and that he could enjoy an effective listening environment.

What helped Peter:

- Discussions between his school and his ToD on how and when to use his hearing aids.
- Discussing which listening activities would help.
- Sharing observations of Peter while he was wearing his hearing aid and when he wasn't. These observations were used to build a clear listening picture of Peter in a variety of contexts.
- The training received by the class teacher and intervener.
- The inclusion of Peter's parents at every step, specifically the family supported the school to understand what behaviours could show that Peter was hearing.
- Making changes to the environment so that it was conducive to listening for Peter.

Communicating with deaf children

All children communicate and it's the responsibility of parents and professionals to work out how and what a child is communicating and build on that skill. Supporting what the child is doing and acknowledging the communication that's present is key. If formal language is not yet present, or is only emerging, it's important to look at the early communicative stages and determine what and how a child is communicating.

Below is some general information to be aware of when communicating with deaf children.

Clear and effective communication

- The child's hearing equipment should be working effectively.
- There needs to be a good listening environment.
- There should be a good knowledge and understanding of the child's preferred communication method.

You can download our flyer *Communicating with Deaf Children* from our website **www.ndcs.org.uk/communicationflyer**.

Some deaf awareness tips you may find useful

- When speaking to the child, don't block their view of your face with hair, hands or objects or by turning away while you speak. This this will make it difficult for them to pick up what you're saying.
- Avoid visual distractions such as brightly coloured clothing or large jewellery.
- Make sure the deaf child is close enough to you to allow their hearing technology to work at its optimal level. Most hearing technologies have an optimal range of one to three metres.
- Speak clearly and at your normal pace. Speaking too slowly or exaggerating your mouth patterns will make it harder for a deaf child to understand you.
- Avoid shouting and whispering. These distort mouth patterns and sound, making it more difficult to understand what's being said.
- Make sure you have the deaf child's attention before you start talking or signing, if they're not concentrating they may not follow the first part of the conversation or instructions.

- When speaking or signing directly to the deaf child it can help to get down to their eye level so they can focus on your speech and signs and tune in to what you're saying.
- Don't stand with your back to a light source such as a window, as a shadow cast across the face can make it harder to recognise lip patterns and facial expressions.
- Where a child uses a range of communication methods, you may need the help of a skilled adult who has developed their interaction style to meet the child's communication needs. These are often called 'interveners' and will work with children and their families to develop communication, support personal and special development, help access education, social and leisure opportunities and encourage the child to be as independent as possible.

Blending methodologies and technologies is often needed because communication may need to be tailored for each child. Receptive language may rely on one communication system while expressive language may be strongest in another. For example, a child may be a good hearing aid user and rely on listening for receptive language, but may need sign for expressive language. This is often known as the 'Total Communication' approach.

You can find more information and tips on how to be deaf-friendly on our website **www.ndcs.org.uk/deaf-awareness**.

Different signed systems include:

British Sign Language (BSL)

BSL is a visual language that uses hand shapes, facial expression, gestures, body language and fingerspelling. It has a structure and grammar different from that of written and spoken English. Many children using BSL will also develop spoken English.

You can download the BSL fingerspelling alphabet from our website **www.ndcs.org.uk/fingerspellingpostcard**.

Sign Supported English

For many children, their spoken English may be supported with signs taken from BSL. When signs are used to support spoken English in this way it is known as Sign Supported English. This is used to add clarity to what is being said, for example in situations where they may struggle with background noise or if they are too far away from the speaker.

Makaton

Makaton is a programme using signs and symbols to help pupils to communicate. It's designed to support spoken language. The signs and symbols are used with speech, in spoken word order.

More information on communication approaches or methods available to deaf children and their families is available on our website **www.ndcs.org.uk/communicationtips**.

Augmentative and Alternative Communication systems (AAC)

Additional tools provided for pupils to help them understand language and to communicate are known as Augmentative and Alternative Communication (AAC). This can include signing, pictorial systems, and technology which can provide children with a 'voice'.

Visual approaches to supplement spoken language include:

Picture Exchange Communication System (PECS)

PECS was developed to help nonverbal children or children with language difficulties to access communication. It consists of picture boards, cue cards, photos, drawings and is appropriate for all ages. More information on PECS is available at **pecs-unitedkingdom.com/pecs/**.

Talking Mats

Talking Mats is an interactive resource that uses picture communication symbols and a space on which to display them. It can help pupils to understand and consider issues discussed with them, express their opinions and be included in decision making. More information is available at **www.communicationmatters.org.uk/page/talking-mats**.

More information on alternative communication approaches is available at **www.ndcs.org.uk/additionalneeds**.

An effective school will:

- be aware of the indicators of a hearing loss
- understand the different types and levels of the pupil's deafness
- work with the child's parents and Teacher of the Deaf to ensure they have as much information as possible about the child's deafness
- be familiar with the different types of hearing technology that a child may be using and be confident that they are using any hearing technology properly
- promote a good listening environment and consider adaptations to improve it, for example, by reducing background noise
- promote effective communication strategies for all children.

6 High quality teaching

No child is exactly the same, and deaf children with additional and complex needs may require very different types of support. As a result of this it's not possible to provide guidance that applies to all types of need.

This chapter offers general information, focusing on strategies that are likely to be relevant to the majority of deaf children who have complex or additional needs.

Deafness and its implications for learning

Most teaching and learning takes place using sight and hearing, so deaf children may face particular challenges which need to be addressed. For example, hearing loss can affect the development of some auditory processing skills because the brain is receiving poor quality sound input, even when hearing aids are being used.

Deafness has a major impact on learning spoken language and can delay language development. This can then impact more broadly on a deaf child's life as language is essential for successful cognitive, emotional and social development. The combination of deafness with other additional needs often amounts to more than just the sum of the individual parts, creating a complex interaction of several difficulties.

Inclusive practice and removing barriers to learning

Listening skills, attention and concentration

A lot of learning is based on listening. Some deaf children will take more time to learn and develop auditory attention and memory skills and will need more support than their peers, especially when the group size increases and the environment is busier, noisier and more distracting. In particular, deaf children may struggle with their 'auditory memory' and making links between words they've learnt and heard, along with their meanings.

For deaf children with severe to profound multiple learning difficulties, listening has been described as a 'booming, buzzing confusion'. Auditory processing can be very inconsistent and sound may carry very little meaning which results in little motivation for the deaf child to engage. The pupil may also suffer from true hyperacusis (loudness intolerance).

Some deaf children will always need to rely on some degree of visual support, which may include lip-reading, signed support or sign language. Listening skills take time to develop, particularly for children with multiple needs, and need to be worked on regularly with specific activities to achieve agreed outcomes.

Ideas for developing early listening skills

There are some general principles you may want to bear in mind when working with deaf children to develop their listening skills. Most importantly you need to think about how you are going to motivate the pupil to want to listen or engage in a listening activity.

Here are some tips.

- Use a variety of motivational resources such as a resonance board, objects which make noises, technology, live instruments and choice boards.
- Always make sure you have the deaf child's attention before you expect them to listen, and think about how to maintain their attention.
- Check with carers about any issues which may impact the child, for example, a sleepless night, seizure activity prior to sessions/tests, or a cold.
- Conduct listening activities in a very low distraction environment with minimal competing stimuli.
- Give the child a specific focus to listen out for. For example, use rhythms, music, rhymes or stories with a repeating phrase that will hold a child's attention. Give the child a prop so that they can participate at a particular point.
- Model good listening, and indicate clearly how to anticipate, attend and listen, through reward.
- Gradually extend your expectations and increase listening demands. Be selective about the amount of listening you can expect and the circumstances in which it will work best. Some listening activities will work best in a one-to-one situation. It is helpful to indicate the amount of time you want the deaf child to listen for.
- Allow time for processing and accept 'good' and 'bad' days.

Here are some ideas for listening activities. Before trying any of the activities below, it is important to check that the child can hear the noise being made.

- Match natural sounds to pictures/symbols.
- Copy the sounds the child makes while interacting with you and take turns.
- Make expressive sounds when playing or sharing books.
- Play together with noisy or musical toys: turn them on and off, say 'listen' or 'gone'.
- Hide a toy that makes a noise and go with the child to look for it.
- Make 'music' with instruments, either bought or homemade.
- Listen for sounds in the environment, and show and tell the child what the sounds are. For example, the door closing, a car, a phone ringing.

- Sing and share lots of songs, rhymes and stories that repeat words or phrases.
- Do a 'listening walk'. Walk around inside or outside your setting to focus attention. Focus on sounds that will be familiar to other children but which a deaf child will need practice to pick out. You could make sound maps of the setting and record familiar sounds associated with parts of the school site. For example, a toilet flushing, the doorbell ringing or children playing.
- Make sounds (claps/bangs etc) for the child to copy, or you copy their sounds.
- Involve the child in music interventions and therapy.

Learning to wait for a signal is a very important skill. Here are some ways that you can encourage deaf children to develop this.

- Play 'ready, steady, go' games and encourage the child to wait for the signal.
- Change the 'go' for a sound like a bell or a musical instrument as the signal.
- Reverse roles and let the child tell you when to go.
- Use action toys and wait then activate.

Remember:

- Deaf children can find it particularly tiring to listen. Look out for signs of fatigue and consider whether listening tasks may need to be shorter than those for their peers.
- Deaf children may experience anxiety about an unfamiliar environment/ routine or have a fear of unpredictable sounds.
- Sounds may distort due to over stimulation and multi-sensory processing problems (overload).
- Deaf pupils may not be able to filter out extraneous stimulation.
- Pupils with multi-sensory impairments may have challenges with vestibular systems and be unbalanced and dizzy when they're upright.

To find out more about resonance boards and activities which will support and develop listening and attention, SENSE has produced a series of videos, available on their website **www.sense.org.uk/get-support/information-and-advice/support-for-children/play-toolkits.**

Case study: Developing sound awareness

Raheem

Raheem (4) attends nursery at a school for children with severe learning difficulties. He has a moderate sensorineural hearing loss and glue ear.

Raheem had no communication other than reaching for desired objects, crying and rocking. Although he wears hearing aids he showed no observable response to sound. However, he has been observed tapping his brow with his fingers which possibly indicated that he was trying to listen to the sound of tapping against his head.

On the basis of this observation, targets for Raheem were set with the class teacher, a speech and language therapist, his parents and his Teacher of the Deaf for him to show a response to a meaningful sound. A recording form was used to note any observable responses to sound from Raheem either at home or at school. During a review meeting with Raheem's parents, we discussed the findings and how Raheem responded to different sounds in different circumstances. Meaningful sounds for Raheem were more likely to be related to snacks and outdoor play.

It was decided that objects of reference would be used along with specific sounds. In the nursery playground there were sound-making toys attached to the fence that the children could play with. One of the playground rattles was shaken in the classroom to indicate the children were about to go outside. When the rattle was shaken, Raheem was given his hat to see and feel. This further supported the fact that he was about to go out to play. The staff combined this with gestures, facial expressions, speech and sign which further reinforced the message. His parents agreed to use a similar object of reference and sound when Raheem was going out at home.

By the time of his next review it had been noted that Raheem had started to show some interest in the shakers in the playground and would sometimes hold them and look closely, which indicated that he was developing an association and understanding to support the development of his listening skills.

Progress for Raheem was slow but through the use of other objects of reference, such as the rustle of a biscuit packet at drink and snack time, he did over a period of time show some awareness of meaningful sounds which could be observed by his glances and eye pointing.

Raheem's parents were pleased and understood the value of encouraging him to listen. It gave them confidence in his ability to develop listening and communication skills.

What helped Raheem:

- Everyone being involved in target setting and supporting the aims.
- Having clear expectations.
- Recording and sharing observations.

Developing listening and vocalisation

Below is an example session plan used to help Martin (12), who has severe additional learning needs and hearing loss, to develop his listening and vocalisation skills through listening to music.

Session: Music, listening and communication

Preparation for learning:

- Give Martin his object of reference (a miniature drum) for the next session at the end of his previous session.
- Make sure that Martin is wearing his hearing aids.
- Settle Martin into the room and encourage him to sit on the bean bag.
- Sing the 'Hello song', tapping Martin's hand as required.
- Musicians to play for a few minutes to settle Martin into the session. Encourage him to explore the instruments and interact with others. The music will change from previous sessions depending on the musicians present. Record any preferences for music on his music profile.

Session method:

- Musicians to play simple nursery rhyme melodies and repetitive phrases, pausing regularly. Wait to see if Martin joins in with these. This may be through vocalisations, body movements, smiling etc.
- If Martin does make vocalisations, musicians should initially join in with these, mirroring his vocal attempts. If appropriate, musicians can engage in 'music conversation' with Martin. It's important to observe, wait and listen to his responses. This can be transferred to 'conversation' with the drum, responding to his beats.
- Musicians to play a short piece of motivating music. Martin to be encouraged, initially through physical prompting, to exchange an object of reference for 'more' music. Accompany his exchange with a clear 'more' to further encourage listening to speech. Continue as appropriate.

Review of learning:

- Support Martin by recapping on a part of the session that he did particularly well in, for example, playing a tune that he joined in vocally with. Give him plenty of praise for his achievements, for example, a high five.
- Musicians to play the 'Goodbye song' and get room prepared for leaving, for example, lights on, door open.
- Give Martin the object of reference for his next session.

Resources:

- Object of reference for requesting. For example, live music, bean bag, small drum.

Short-term targets:

- To choose between a drum and tambourine and engage in active interaction for up to one minute.
- To engage in musical interaction for up to one minute.
- To ask for 'more' of an instrument on three occasions during the session with minimal physical prompting.
- To vocalise along with the music on two separate occasions.

Medium-term targets:

- To place object of reference in finished bag with minimal prompt when session has finished, at least 10 times.
- To turn-take using his voice on 10 occasions in one session with no prompt.
- To discriminate between a variety of instruments and begin to show a preference.
- To engage in interaction with others through music.
- To ask for 'more' of a specific instrument through object exchange.
- To increase the vocalisations made during the session.

Supporting learning

A range of adaptations and strategies can be put into place to ensure that pupils can access the curriculum, develop their learning skills and minimise the impact of their deafness on learning.

Visual aids

Visual information should be used to:

- support visual memory, which may be more developed than auditory memory
- support communication, everyone in the school should use the same system for symbols
- identify daily routines or changes to routine through a visual timetable
- support behaviour and pupil expectations through a visual behaviour management system
- identify areas and/or key adults around the school.

Using photo diaries and experience books

The communication of everyday information between the setting and home can be particularly difficult for deaf children who may totally miss or misunderstand verbal information or instructions.

Photo diaries, experience books, tablets and other portable devices can often be a good way to:

- capture information (through photos, video clips, etc) to share with parents and for parents to share with school
- help the child recall activities and provide a prompt to practise the language used
- provide a means of informing parents and enabling conversation at home
- provide a way for parents to record activities at home to share with the school.

"Imran is a very complex little boy and he isn't able to tell me what's been going on at nursery, that's why the communication via the home-school book is so important. It's not just the positive things I need to know, Imran can get really grumpy when he's about to get ill, so if he's been miserable or badly behaved at school, I really want to know! I also like to get really specific information about what Imran's been doing. Telling me that 'he had a lovely time playing in the sand' doesn't tell me very much – I want to know what his teachers are observing and how that fits in with his targets for communication. I know everyone is really busy, but that really does help."
– Parent of child with additional complex needs

Using routine and repetition

Routines allow the repetition of language and actions, and enable a deaf child to:

- predict and be ready for what's coming next when they find it difficult to pick up on incidental cues
- practise the same words or phrases in the same context over and over
- understand the context of what's being said so they can begin to link new words and ideas to what they already know
- follow a familiar pattern of events and be independent.

Deaf children benefit from opportunities to repeat language patterns, such as:

- learning action rhymes that use the same words with gradual additions
- sharing storybooks that have their own routine
- playing games that require each child to follow the same pattern, where it's clear when it's your turn and what you're expected to do.

Music

Deaf children can enjoy music lessons and listening to music with their friends as much as hearing children do. Participating in music activities can have many benefits for deaf children.

As well as the vibrations, the visual aspect and performance value to playing music can help pupils to increase their confidence, encourage learning about emotions and help develop fine motor skills. Opportunities to sing can provide deaf children with a fun way to practise controlling their voices, both in terms of pitch and frequency and in recognising the melody of intonation in spoken language.

Musical instruments can also provide deaf children with valuable auditory experience of rhythmic patterns, tempo and pitch. Today's technology means recorded music can be amplified comfortably. Access to the skills of a music therapist is invaluable.

When carrying out music activities:

- Avoid playing music in a poor acoustic environment.
- Use rooms with soft furnishings and curtains.
- Keep background noise to a minimum.
- Keep doors and windows closed where possible.

Remember, a deaf child will need to make an extra effort when learning and listening.

- Face the child when you're talking to them.
- Give them time to process information before demonstrating.
- Never talk at the same time as music is being played.
- Use gestures and demonstrations to make your explanations clearer.
- Be aware that they may get tired earlier than their hearing peers as they have to concentrate more.

Pupils may have difficulty following conversation between other band or group members.

- Be clear from the start that one person should talk at a time, and that no one should play music while discussions are taking place.
- Seat everyone in a U-shape for ease of communication.
- Check the deaf child is seated where they can see and hear you and other pupils too.

Noises may be too loud and uncomfortable with a hearing aid or cochlear implant.

- Identify the most comfortable position for the pupil in the group.
- Share observations. Could the audiologist make simple tweaks to help the pupil hear music comfortably?

Deaf pupils may struggle to grasp the rhythm or melody.

- Provide opportunities for the pupil to learn the rhythm and melody in advance of it being introduced to a bigger group.
- Provide opportunities to feel as well as hear the rhythm. This might include using a resonance board, wooden floors or musical instruments that vibrate, such as drums or guitars.

You can find more information on how to support the teaching of music on our website **www.ndcs.org.uk/music**.

Example: Foyma and listening to music Below is an example of some formal targets for a music programme delivered in a special school for children with complex and severe learning difficulties. **Foyma's targets:** • I will be in charge of the rhythm by conducting the music using a drum. • I will use my hearing aid. • I will take turns in a group activity using a musical instrument.	
Order of programme	
1.	**'Hello' song.**
2.	**Play lively music with a beat as a warm up.**
3.	**Foyma to be involved in a group activity using a musical instrument and to be involved in deciding whose turn it is next. Keep music constant in the background at a low level. As she is learning to use her hearing aid, offer the hearing aid to her twice – if shemakes a clear refusal each time then move on to activity four.**
4.	**Cue Foyma into the drumming activity with the 'drum, drum, drum, drum' jingle. Give Foyma the box-resonance drum for the pupil-led activity. Where possible follow Foyma's actions with regard to volume, beat, etc.**
5.	**'Goodbye' song.**

Information and communications technology (ICT)

There are many apps available which can help deaf children with additional needs. These apps may help to:

- improve the child's communication
- support children to express their emotions or moods
- keep the child entertained
- complete daily activities.

There are also apps that can help parents to:

- keep track of a child's behaviour
- provide information to others (such as the emergency services).

You can find more information about different types of apps by searching 'apps' on our website **www.ndcs.org.uk**.

Adapting the curriculum

There are groups of deaf children with additional and complex needs who will need an adapted curriculum.

These include:

- deaf pupils with multi-sensory impairment (MSI)
- deaf pupils with Down's syndrome
- deaf pupils with autism.

Pupils with MSI

Children with MSI have both hearing and visual impairments. As hearing and sight are our primary means of gaining information from the environment, MSI creates enormous disadvantages for children in terms of knowing where they are and what's happening to and around them. Any type or degree of combined sight and hearing impairment, mild to profound, fluctuating or permanent, may affect the reception and/or processing of sensory information.

This can negatively affect:

- the overall pace of learning
- communication and the development of relationships
- mobility and interaction with the physical environment
- the processing and integration of information from residual hearing, vision and other senses
- the perception of time and space
- the transfer and generalisation of skills and concepts
- the development of abstract reasoning.

Children with MSI may also experience additional disabilities and frequently show different patterns of development. While their underlying conceptual and communicative development will almost certainly follow similar paths, their behaviours may be entirely different. For example, the skills and concepts needed by children with full sight and hearing when building a tower of blocks include hand-eye coordination and a knowledge of other structures, such as a stack of plates or pile of clothes. A child with MSI may need to rely on touch and spatial memory and have no access to incidental information about other towers.

The interests and preferences of children with MSI are also likely to differ from those of their typically developing peers. By the time most children begin school, they have developed a huge range of skills and concepts including the learning skills needed to understand and integrate new experiences. Pupils with MSI, in contrast, very often lack familiarity with everyday concepts and also lack the learning skills and structures needed to benefit from experiences. Pupils with MSI need to learn how to interact with and understand the world around them. Many need to develop compensatory strategies for learning, for example, using information gained through touch to supplement poor quality audio and visual information.

In order to meet their specific learning needs, a curriculum designed for pupils with MSI must:

- begin from a very limited knowledge base
- include the teaching of strategies for interacting with the social and physical environment
- provide frequent repetition of information
- be accessible to pupils with any combination of sensory impairments
- support a sense of self, agency and negotiation.

The Victoria School, Birmingham has developed a specialist curriculum for children with MSI who are working at the pre-key stage standards. You can download it on the NatSIP website **www.natsip.org.uk/index.php/curriculum/897-sense-msi-curriculum**.

For more information on curriculum matters or training for professionals, visit the National Association for Sensory Impairment page on MSI **www.natsip.org.uk/msi**.

Deaf pupils with autism

Figures suggest that around 2 to 4% of deaf children are also autistic. Both deafness and autism can have a significant impact on communication and language development.

Communication

Communication with children who are deaf and have autism can be complicated. Deaf children with autism may have difficulties with processing spoken language as well as hearing it. They may also struggle to tolerate hearing technologies. Lip-reading and sign language can be an option, however, children with autism

may struggle with eye contact and joint attention. They may also have difficulties with the acquisition of spatial processing and the acquisition of British Sign Language (BSL).

It's therefore important to consider:

- Is the child using hearing technology consistently? If not, can triggers and patterns be identified to encourage better use?
- Is the same communication method being used at home and at school?

Intervention strategies to promote communication and learning

Using interventions to teach children with autism is very common, however there's less research into successful interventions for children who are deaf and have autism.

Picture Exchange Communication System (PECS)

PECS was developed to help nonverbal children or children with language difficulties to access communication. It consists of picture boards, cue cards, photos and drawings, and is appropriate for all ages. More information on PECS is available at **pecs-unitedkingdom.com/pecs**.

Intensive Interaction

Intensive Interaction has been developed to teach pre-verbal communication skills. The approach can be used if a child is reluctant to, or disinterested in, interacting with other people. Techniques such as turn-taking, mirroring, rhythm and repetition, and sharing personal space can be used to support communication exchange that's initiated and led by the child and in turn promotes a positive interaction.

More information on Intensive Interaction is available at **www.intensiveinteraction.org**.

Social Stories

Social Stories are short stories that explain common occurrences with matching social cues, what the situation is and why it happens. These stories are designed to prepare the pupil with information, strategies and a well thought-out process of how to deal effectively with an event.

You can find more information on Social Stories by searching 'social stories comic strips' on the National Autistic Society website **www.autism.org.uk**.

Sensory Integration Therapy

Sensory Integration Therapy focuses on improving the ability to take in sensory information and process the information productively. The child will then develop more appropriate sensory input processing and responses and lessen self-stimulating behaviours or other sensory related behaviours.

Teaching strategies to support deaf children with autism include:

- giving five and one minute warnings toward the end of activities, especially if the activity is something the child enjoys
- keeping routines consistent for the child, minimising changes and making sure all teachers and staff members are aware of the routine
- considering having a Change Board in the classroom for older students. This is a designated place in the classroom to post upcoming changes to the schedule. This board should be updated by the teacher, and the child should be prompted to look at changes for the day
- being clear about schedules and expectations to reduce power struggles
- providing a space in the classroom that's completely free of all stimuli – children with autism are easily overwhelmed and may need time without any external distraction to calm themselves
- communicating daily with parents and encouraging them to let teachers know of any events that may impact their child's school performance, for example, lack of sleep, change in diet, or new medication
- using a three-step prompting sequence when making demands: tell the child, show the child, then help the child to complete the task
- providing rewards when the child independently completes a task and incorporating rewards throughout the day for positive behaviours
- having options available and allowing the child to choose – monitor access to items that are overly reinforcing and could lead to challenges when removed

- seeking feedback from parents about new interests, and making those interests work in the classroom
- keeping track of data related to any challenging behaviours whenever possible. Being explicit when documenting what occurred before the behaviour (antecedent), during the behaviour (exactly what the child did), and after the behaviour (consequence).

For more information on deaf children with autism visit our website **www.ndcs.org.uk/autism**.

Children with Down's syndrome

Many children with Down's syndrome are also deaf. Up to 20% have a permanent hearing loss caused by developmental defects in the ear and auditory nerves. Over 50% will suffer from a fluctuating non-permanent conductive hearing loss due to glue ear. It's particularly important to observe and monitor this group of children's hearing carefully and regularly as clarity in hearing can fluctuate daily. It's important to check that inconsistencies in response are due to hearing loss rather than lack of understanding.

In addition, some children with Down's syndrome have poorer auditory discrimination, meaning that they have greater difficulties recognising and discriminating between different speech sounds. This will be relevant when teaching speech sound work and phonics for reading and spelling.

Communication

Children with Down's syndrome experience specific difficulties in developing spoken language over and above any language delay associated with their learning disability and hearing loss. However they're often very keen to communicate, and in spite of their difficulties are able to use and learn from sign and gesture, the written word, pictures and symbols extremely effectively.

Generally speaking, children with Down's syndrome:

- develop receptive skills that are greater than their expressive skills so their cognitive skills are often underestimated
- have delayed language which impacts upon their knowledge and understanding and leads to a cognitive delay
- find it difficult to understand more abstract language and concepts, and struggle to make generalisations, to transfer skills from one situation to another or to make decisions and choices

- have difficulties accessing the curriculum, which may then also affect their behaviour and confidence
- have articulation difficulties, so their speech is hard for an unfamiliar listener to understand. The longer the sentence, the greater the articulation problems become.

Short-term memory and working memory

Deaf children with Down's syndrome generally have poor short-term memory but good visual memory and long-term memory.

Working memory impacts the speed with which words are articulated and influences the speed at which children learn new words and learn to read.

Concentration

Many children with Down's syndrome have shorter attention and concentration spans than their typically developing peers. They tend to be more easily distracted and have difficulty focusing in high levels of noise.

Interventions and strategies

For deaf pupils with Down's syndrome, the most important factor to take into account is that they are strong visual learners and poor auditory ones, not learning well through listening. They need a visual, practical and kinesthetic approach, using visual resources and demonstration, and real-life concrete and practical materials whenever possible.

Children with Down's syndrome respond to signing extremely well with many learning to sign words before they're able to speak. Signing acts as a bridge towards developing spoken language and reduces frustration.

Reading to children with Down's syndrome and teaching them to read may be the most effective way to develop speech and language skills. Many children begin to read at an early age and can remember printed words with ease. Print can be used from as early as two years of age to support language learning.

Research studies show that teaching reading has a significant effect on the development of language and working memory for children with Down's syndrome.

More information on developing a curriculum for deaf children with Down's syndrome is available on the Down's Syndrome Association website **www.downs-syndrome.org.uk/education/education-support-packs/**.

7 Assessment

Assessing deaf children with additional needs can be challenging, with subtle responses or signs of progress easier to miss. Specialist assessments in the areas of language and communication will be important, as well as non-verbal cognitive ability tests to get a true understanding of the pupil's ability. A Teacher of the Deaf (ToD), speech and language therapist or educational psychologist can give advice and help identify all the factors that should be considered.

Communication and social interaction skills are the foundation for all other learning. However, assessing communicative abilities in children who are deaf with additional or complex needs is a challenge, even for experienced professionals. Vision and hearing losses limit methods of communication which rely on these modalities. For some children, motor impairments may reduce the range of communicative behaviours or restrict communication to subtle actions that are easily overlooked. Accurate assessment of communication will lead to realistic educational goals and appropriate learning experiences, not only for communication, but across developmental domains.

A high quality assessment will require:

- time, planning and coordination with a range of professionals
- planning for the family's role in the process
- identifying what method and tools will be used to evaluate the child's competencies.

You will need to:

- draw on your knowledge, skills, and experiences in assessing other young children with disabilities
- identify what you need to know about the particular child and develop key questions to guide your information gathering
- obtain information about the child in their everyday environments and routine activities
- use the child's interests to motivate and elicit response
- seek and share information with relevant professionals such as ToDs or speech and language therapists
- adopt an attitude of enquiry to gather information, analyse observations, and reflect on what you've learned about the child.

Things to consider when selecting an assessment tool

- Do the items describe behaviours a child with hearing loss and other needs could be expected to show?
- Are there sufficient items at the early developmental levels to clearly identify a child's current skills and measure progress in small steps?
- Are the items appropriate to the child's chronological age?
- Does the assessment require information derived from observations in natural settings?
- Does the instrument provide ideas about the 'next step' for the child?
- Are the results in a format that can be easily communicated to and understood by families?
- Does the assessment require the user to possess specific skills?
- Is there a parent version that a family member could complete, or a way for parents to provide their input and perspectives?

Videos can be very helpful in confirming and interpreting subtle or inconsistent communication behaviours.

Case study: Assessing listening and communication skills

Mohammed

Mohammed (6) has cerebral palsy, which affects all four limbs, and uses a wheelchair. He has been profoundly deaf since birth and received a cochlear implant when he was around four-and-a-half.

Mohammed's parents requested an assessment to find out how much he was hearing through his cochlear implant, how he could communicate at home and at school, and whether spoken language was an option.

Mohammed is still at the earliest stages of learning to communicate. He is also physically very restricted – he cannot handle an object or point to a picture – so standardised tests were not appropriate.

Mohammed's parents completed the Pragmatics Profile of Everyday Communication Skills. This gave useful information about how many messages he manages to convey despite his lack of language. Mohammed's parents were surprised to see how much he relied on his hearing.

Mohammed's family, alongside his Teacher of the Deaf and speech and language therapist, also completed the Categories of Auditory Performance and the Meaningful Auditory Integration Scales to measure listening skills. The assessments revealed a significant discrepancy between home and school with parents feeling that he listened far better in the home environment.

School staff were surprised how well Mohammed listened at home. They decided that the school environment was perhaps too noisy and distracting for him, so they considered how to make the classroom more listening-friendly. They also put together a listening programme to build on the progress he had already made.

School staff were impressed by Mohammed's ability to convey messages non-verbally and to understand spoken language in context. His targets for communication were adapted to include a greater emphasis on listening for understanding. He was also included in a school-wide music therapy programme.

What helped Mohammed:

- The collaboration between parents and school staff to ensure the school looked at his communication and listening skills in the home and at school.
- A multidisciplinary meeting to discuss the assessment results.
- The assessment helped staff to think about creating a good listening environment.
- The assessment results helped school staff to revise targets with more emphasis on listening for understanding and to plan support including the use of music.

Our online resources *Assessments for deaf children and young people support* Teachers of the Deaf (ToD) and other education professionals to carry out specialist assessments of deaf children. They are also useful for those involved in any needs assessments and the resulting plans, as well as specialist education support. You can access these assessments on our website **www.ndcs.org.uk/assessments**.

An effective setting will:

- understand the impact of deafness on learning and be proactive in reducing this impact as much as possible. This can be done by using support strategies which enable effective teaching and learning to take place
- ensure there's a good understanding of an individual child's deafness and their needs. This should involve working with parents and a ToD to collect relevant information
- use specialist assessment findings to ensure there's a full understanding of the deaf pupil's learning needs and to support target setting, with support from a ToD
- know how to promote a deaf child's listening skills, attention and concentration
- encourage staff to make adaptations and develop strategies to support the deaf child. This might include visual aids, photo diaries and experience booklets, and music
- ensure all staff working with the child are familiar with the child's needs.

8 Supporting emotional health and wellbeing

"The school as a whole is very deaf aware, with the other children learning to sign, so interaction is good. One good thing the school does is the Christmas play. The children conduct the play and/or songs in sign, which is fantastic. The children do not feel excluded from the school as a whole. We are really pleased with things so far."
– Parent

"I think people should be more aware of deafness but accept that it can be hard to understand if you have not had experience of it."
– Pupil

A deaf child with good emotional health and wellbeing:

- feels good about themselves
- has an appropriate level of independence and feels able to influence the world around them
- has positive and warm relationships with others
- is resilient and able to bounce back from setbacks and move on from negative experiences
- has the language and communication skills to be able to express and understand their emotions
- acknowledges their deafness and is confident when dealing with any challenges they may face
- never apologises for being deaf.

Emotional health and wellbeing in deaf pupils is influenced by several factors:

Attitudes towards the pupil's deafness and how well they're included and feel like a valued member of the community

- Make sure they're represented and fully included in all activities, both in and out of school, and that policies and procedures reflect their needs.

Approaches to language and communication

- Think about providing a quiet zone during lunch times for pupils to socialise one-to-one or in small groups.

- Be aware that pupils may not understand current social language, slang and street talk, or may worry about mishearing and misunderstanding.

Conversations about feelings

- Deaf pupils may need specific teaching to understand situations from other people's perspective. This is known as 'Theory of Mind', and research suggests it can be delayed in deaf children.

Family attitudes to deafness

- Sometimes families struggle to accept their child's deafness and/or their equipment.
- Be aware that the pupil's family may also need support.

Peer attitudes towards deafness

- Deaf pupils say that it's helpful if their classmates understand problems related to deafness and the support that they might need as a result. A Teacher of the Deaf (ToD) can deliver deaf awareness training. Some deaf pupils may not want to draw attention to their needs so training should be carried out in consultation with them.

How the deaf pupil perceives themselves

- Provide opportunities for deaf pupils to meet one another and adult deaf role models.
- Encourage the pupil to talk about their hearing loss.

You can find more information on how to support the mental health and emotional wellbeing of deaf children and young people on our website **www.ndcs.org.uk/wellbeing**.

Building Resilience

It is important for deaf children to have a positive self-image and develop resilience with regard to their deafness. This will help them deal with social situations and getting their needs met in the wider world.

School staff can help pupils be resilient and have a positive self-image by:

- letting deaf pupils know that other children can also make mistakes, mishear or misunderstand and require time out. They might find it reassuring to know they have similar experiences to their peers and that they're not the only one in class needing support
- supporting deaf pupils to use the correct language to talk about their hearing needs and providing opportunities to tell other members of the school community what will help them
- allowing deaf children to practise their social skills safely in small groups
- teaching pupils strategies that will help them cope with the unpredictable world outside school, particularly in relation to their deafness
- ensuring that visual aids, stories and other resources reflect the diversity of people in the community which includes deaf children
- providing opportunities to meet other deaf children and deaf adults. Parents or local deaf groups may be able to help provide these opportunities
- supporting deaf children to correctly 'label' their feelings.

Our resource *What are you feeling?* is a guide to help deaf children understand and identify their emotions. You can download the guide from our website **www.ndcs.org.uk/feeling**.

Our website has a range of resources developed to help professionals keep deaf children safe from harm or abuse, including resources on online safety and preventing bullying. These are available on our website **www.ndcs.org.uk/safe**.

Theory of Mind

Many deaf pupils who have delayed language and communication will also have delayed understanding of the thoughts, beliefs, intentions and emotions of other people, and perhaps themselves. This is known as Theory of Mind (ToM). If a pupil has limited understanding of the thoughts or intentions of another person, much of their social interaction and communication will be challenging. We use context and behaviour to work out the intentions behind what people say.

Strategies to support ToM include:

- helping the pupil think about what someone is thinking or feeling about someone else
- think-alouds – where the adult models their own thinking about a situation and the people in it.

Pupil voice

It is important to engage with, listen to and place deaf pupils with additional needs and their families at the centre of decision-making on a wide range of topics, including learning, teaching, equipment, keeping healthy, feeling positive, keeping safe, being part of the community and being independent. This helps deaf pupils understand how their deafness impacts their lives and to learn strategies to advocate their needs and improve difficult situations.

Things to consider

- If there are changes to routines or support, let the child know using discussion, visual timetables and photos.
- Teach the skills and language needed for the child to take part in decision-making.
- Record conversations and interactions – these are as valuable as formal feedback.
- Be specific – what do you want to find out about, what language are you going to use, has the child understood the question, what are you going to do with the information, how are you going to feed back?
- Consider using another deaf peer or friend to facilitate conversations around deaf specific issues.
- Consider the best conditions for participation, for example, a quiet area with a minimum of background noise.
- Use a wide variety of strategies to collect feedback including online tools and visual resources such as pictures.
- Be aware of safeguarding procedures.
- Encourage deaf pupils to take responsibility for their own deafness and to develop the confidence to ask for support.

A personal passport can be a practical and person-centred way of supporting children and young people who may find it hard to articulate their needs. It can also be useful in situations where the pupil is being supported by school supply staff. Examples of personal passports can be found on our website **www.ndcs.org.uk/passport**.

If a deaf pupil experiences emotional or social difficulties that cannot be supported within school, they can be referred to other organisations for support, such as the Deaf Child and Adolescent Mental Health Service (Deaf CAMHS). You can find more information about Deaf CAMHS online at **www.ndcs.org.uk/deaf-camhs**.

Anti-bullying policy

Deaf pupils are more vulnerable to bullying than hearing pupils. The University of Cambridge comprehensive literature review in *Responding to Bullying Among Children with Special Educational Needs and/or Disabilities* found that:

"Children with SEN [special educational needs] and/or disabilities have many characteristics that may make them more vulnerable to bullying. However, social skills, language and communication emerge as key issues in much of the bullying that affects pupils with SEN and/or disabilities. Social behaviours are crucially important with regard to peer victimisation since the ability to understand social behaviour and to communicate effectively in social situations is central to social engagement. Language and communication are key elements in the development of social competence, so even subtle shifts in children's responses within the peer group can make them vulnerable to ostracism and teasing."

Schools face a number of challenges in identifying, responding to and preventing pupils with SEN and/or disabilities from being bullied and victimised.

Schools can help prevent and deal with bullying by:

- giving the pupil opportunities, where possible, to give an account of what happened
- ensuring the pupil and their parents know the school's anti-bullying policy and understand related procedures
- ensuring the pupil understands the concept of bullying and has the right to challenge behaviours they don't like from both peers and adults
- identifying a staff member for the deaf pupil to discuss worries and concerns with
- regularly observing and monitoring the interaction between pupils and adults and being alert to signs of bullying, such as a pupil:
  - showing a change in behaviour, for example, becoming more withdrawn or 'acting out'
  - asking to stay inside at break time or no longer participating in favourite activities

  - becoming anxious near lunch and home time
  - not taking part in class activities
- providing opportunities for the pupil to decide and practise (for example, through role play) how to respond to bullying
- providing deaf awareness training for pupils and, when appropriate, involving the deaf pupil in choosing the content.

Our resource *Protecting Deaf Children from Bullying: A guide for primary and secondary schools* has information on how schools can adapt existing policies to prevent bullying and on handling bullying incidents in order to meet the needs of deaf pupils. Many of the suggested actions in this resource will benefit all pupils in your school. You can download this resource from our website **www.ndcs.org.uk/protecting**. More resources for parents and young people are also available at **www.ndcs.org.uk/bullyingguides**.

An effective school will:

- promote and support the emotional health and wellbeing of the deaf pupil
- promote and support pupil voice through employment of strategies and adaptations which allow the pupil to be heard
- support all staff and peers to communicate appropriately and effectively with the deaf child.

9 Quality improvement

Classroom observation

Schools will have systems for monitoring the quality of provision, including using data to track pupil progress and assess how well interventions and support strategies for pupils with additional needs are working. An important aspect of this is assessing the effectiveness of support provided through observation.

This checklist will help managers assess the extent to which deaf children are supported effectively within the school.

Quality improvement checklist for school managers[3]

The teacher

- Has the teacher been on deaf awareness training?
- Is the teacher aware of the pupil's level of deafness and implications for accessing learning?
- Has the teacher checked with the pupil that their hearing technology is being worn, is switched on and is functioning?
- Does the teacher know how to use a radio aid if a pupil requires one?
- Has the teacher taken steps to improve the listening conditions by, for example, re-ducing background noise and reverberation?
- Is there a visual timetable and visual behaviour management system?
- Is the teacher's communication matched to the pupil's needs? To what extent is the teacher repeating/reinforcing key points, checking understanding?
- Are peer responses repeated or signed?
- Is the pupil seated in a position where they can hear and see the teacher for lip-reading and are also able to identify other speakers in the classroom/ see the communication support worker to follow British Sign Language (BSL) translation?
- Has the teacher used multisensory approaches (for example, visual clues) to help the pupil access learning?
- Is the teacher using clear speech patterns and standing or sitting in a position where the pupil can see them for lip-reading?
- Can the pupil access information at all times during the lesson including partner work and small group work?

[3] This checklist is based on a proforma designed by Helen Bate from Derbyshire local authority.

The support staff

- Have they been on deaf awareness training?
- Are they working under the guidance of the teacher and are they fully familiar with the lesson plan and learning objectives?
- Do they have sufficient knowledge of the subject being taught to be able to support the pupil with any pre-lesson preparation (for example, introducing new concepts and vocabulary) or post-tutoring to check full understanding?
- Are they aware of their role in:
  - implementing strategies and approaches to ensure access to teaching and learning
  - helping the pupil achieve the learning objectives and targets including any pre- or post-tutoring or communication support?
- Do they provide the appropriate level of support that promotes independent learning, with a particular focus on helping the pupil develop understanding rather than just focusing on completing tasks?
- Can they help ensure hearing technology is functioning properly and do they know what to do if there is a problem?
- Do they have the relevant qualification in BSL if the pupil needs sign support to access what is being said during the lesson?
- Are they fully aware of the specific needs of deaf pupils (type, level of deafness, level of language)?
- Have they discussed support needs with the teacher?

The pupil

- Is the pupil able to communicate with all members of the school community?
- Are they able to follow what the teacher is saying?
- Do they have access to all areas of learning?
- Are they engaged and active in learning?
- Are they confident after the lesson that they have achieved the learning objectives?

10 Preparing for adulthood

Managing the move from school to school, and then to further education or work, needs careful planning. Deaf children with additional and complex needs may take longer to learn about new people, places and activities.

The following approaches may help.

- Information about the move is shared well before it's planned.
- Access arrangements and technology needs are discussed and put in place before the child starts.
- Visits are made to the new school/college for slowly increasing periods of time.
- Information on the pupil's hearing loss and its impact is shared with everyone involved with the family.
- The pupil's communication system is embedded so that the same cues for activities, communication modes, ways of explaining what's happening and some of the same routines are adopted.
- Pupils, staff and employees have deaf awareness training.
- A familiar adult spends the first few weeks with the young person in the new setting, gradually handing over to new staff.

This case study provides an example of how a deaf child successfully transitioned from a special school.

Case study: Supporting integration into a mainstream school class

Clare

Clare (10) has a multisensory impairment (MSI) and has worn hearing aids successfully for many years. Her early education was in a specialist provision for children with MSI within a large special school. She acquired good verbal communication skills when in this quiet setting with very familiar adults. She also learnt to rely on a simple set of on-body signs and an object of reference system in order to conceptualise her world.

Both school staff and Clare's family decided that she was ready to start integrating into a mainstream school class on the basis of her growing awareness and level of interest in other pupils.

The process was not rushed and the following steps were taken.

- A familiar adult from the MSI unit staff was identified, who could support Clare in the new school.
- To provide cover for staff absence, a second adult was involved in the integration process.
- A mixed-age class consisting of lively, chatty pupils with clear voices was found. It was considered that the way in which Clare related to other pupils was more important than an exact match of age.
- Staff in the receiving class were given training on Clare's needs, abilities and, above all, how to communicate with her. Pupils were also introduced to her directly through touch and indirectly through photos and videos of her in her usual setting.
- Objects of reference were created which represented the activities she would encounter in her integration class. Staff from the integration class visited Clare in her familiar setting and chatted informally with her so she could distinguish their voices easily.
- An educational audiologist helped to introduce a radio aid to be used in her new class. Clare's support worker used the transmitter and the teacher and other staff talked to her when they were close by. Progressively she learnt to map the room as well as to filter out distant voices which were not directly speaking to her.

After several months it was clear that Clare could become a functional member of the class, who was gaining from the 'buzz' of a lively group rather than being an outside observer.

What helped Clare:

- Willingness and determination by everyone involved to make the integration work, not only for Clare but for other pupils too.
- Flexibility which allowed her to work at her own pace and overcome her worries, including those leading to tactile defensiveness, in a new, noisy and challenging situation.

Moving on from Special School

For all young people, adolescence is the preparation for adulthood. During this period, each young person changes physically and emotionally. They move from school to further or higher education or work and they learn to manage their money and social lives. In time, they'll leave home, make their own decisions and choices and begin to enjoy their independence. For deaf young people with additional and complex needs, the transition to adulthood is just as complicated. In addition to experiencing all the strong feelings that characterise adolescence these young people face particular challenges including finding a suitable educational pathway and developing an independent social life.

Gaining the views of deaf pupils with limited communication can be challenging because they:

- may find it hard to think and communicate about events beyond their experience
- may need to try things out to learn about them: repeated visits or a trial period to 'taste' a college course, new home, club or other setting will be required before an opinion can be sought
- lack the full information needed to make meaningful choices in a meeting environment
- may communicate much better with people they know and trust. Familiar staff or family members can use the right combination of speech, sign, symbols, gestures and read body language more effectively
- may have changing needs because their health, vision or hearing continues to change.

The National Sensory Impairment Partnership (NatSIP) has produced guidance for parents on the Mental Capacity Act 2005 as it relates to young people making their own decisions about their education. The resources can be downloaded from the NATSIP website **www.natsip.org.uk/doc-library-login/mental-capcity-act-2005-1**.

It is crucial that deaf young people have access to careers information and advice tailored to meet their needs.

As well as general careers advice, deaf young people preparing for adulthood will benefit from understanding:

- their rights under the Equality Act 2010 (Disability Discrimination Act 2005 in Northern Ireland) in post-16 education and employment
- the support and technology that can be made available to them in the workplace through the Access to Work scheme
- the support and technology that can be made available to them in further education, higher education and training
- the type of reasonable adjustments employers can make to remove barriers in the workplace.

Our resource *Next steps: Supporting successful transitions into post-16 education and employment for deaf young people in England* provides you with templates that you can work through when supporting young people to prepare for adulthood. You can download the resource from our website **www.ndcs.org.uk/nextsteps**.

The Council for Disabled Children also has a selection of transition guides for a range of disabilities and needs, available online at **www.councilfordisabledchildren.org.uk/transition-information-network/information-and-support/transition-guides**.

Apprenticeships

Apprenticeships can be an opportunity for young people to gain experience of work and develop their skills and knowledge through training. This typically means four days a week in the workplace and one day a week with a training provider. However, there may be differences in how they are structured.

Supported internships

These are structured study programmes based mainly at the workplace available in England only. They are especially for young people with Education, Health and Care plans to let them learn the skills they need for employment.

The Preparing for Adulthood website has lots of information and advice on supported internships. You can find it online here: **www.preparingforadulthood.org.uk**.

Natspec is the membership association for organisations which offer specialist further education and training for students with learning difficulties and/or disabilities. To find out more visit **www.natspec.org.uk**.

An effective school will:

- help the deaf pupil to make an informed choice on their post-school options
- give information to schools, colleges and employers, to support an effective move for the pupil
- support the pupil with applications and preparation for interviews.

11 Appendices

Appendix 1: 'Assess, plan, do, review' overview

Effective provision for any deaf child will involve:

- a thorough assessment of the child's needs and strengths
- a plan setting out how the setting will meet those needs and overcome any barriers to the pupil making good progress
- carrying out the plan effectively
- regular reviews of the pupil's progress and the success of the plan to establish whether changes need to be made and what these are.

In England, this 'assess, plan, do, review' cycle has been incorporated into statutory guidance set out in the *Special Educational Needs and Disability Code of Practice* (2015).

Deafness isn't a learning disability, and with the right support, there's no reason why a deaf child can't achieve as much as a hearing child. Having high expectations of deaf children and young people is vital.

How to follow this approach is set out below.

Assessing what support is needed

A good assessment will enable the school to identify potential barriers to progress and the support that is needed to overcome these. An accurate and thorough understanding of a pupil's needs and strengths underpins good planning and progress. A good assessment will include:

- the child, young person or their families' self-evaluation of any support requirements
- information on the child or young person's levels of progress and attainment
- parents' views about appropriate provision
- the involvement of specialists such as a Teacher of the Deaf (ToD)
- the use of specialist assessments

- the need for access to technology and communication support
- consideration of support needed to meet any specific subject requirements.

Deafness will impact on a range of factors that contribute to a pupil's ability to learn including:

- listening skills
- attention and concentration
- language development
- literacy skills
- working memory
- auditory memory
- processing time
- incidental learning
- social skills
- self-esteem
- learning style.

It's likely that assessments will focus on these areas. Further advice on specialist assessments can be found in Chapter 7 and online at **www.ndcs.org.uk/assessments**.

Planning the right support

You should develop plans with the child or young person, parents and Teacher of the Deaf, and should consider:

- long-term outcomes for the child or young person agreed by them and their family
- short-term targets needed to achieve those outcomes
- the provision and adjustments required to achieve those outcomes and targets, meet the student's needs and overcome any barriers to accessing teaching and learning
- arrangements for monitoring and reviewing.

The challenges presented by a hearing loss mean that for many deaf children and young people their plan is likely to include:

- targets related to the development of language, communication, literacy, confidence and social skills and the support and interventions needed to achieve the targets
- the use and maintenance of hearing technology
- communication support
- how teaching and learning will take place in a good listening environment
- access arrangements for assessments and exams
- access to support from specialist staff such as Teachers of the Deaf, teaching assistants and communication support workers
- pre- and post-lecture tutoring
- high or first quality teaching to make sure deaf pupils are able to learn
- strategies to ensure the deaf pupil is fully included in the school community
- details of who is responsible for the overall coordination of the plan, delivering key aspects of the provision and organising regular reviews.

Implement or do: Putting the provision in place

A child or young person's plan should set out who is responsible for the overall coordination and implementation of any plan. This would usually be the SENCO with support from the Teacher of the Deaf. They will have responsibility for the following.

- Making sure all staff involved in teaching and supporting the deaf child have information, advice, guidance and training on how to support a deaf pupil and make sure they can access teaching and learning.
- Ensuring the child or young person's progress is monitored.
- Getting feedback from the child or young person on what is going well and what isn't.
- Making sure support and provision is in place (for example, employing qualified communication support staff, using hearing technology and making adjustments to teaching spaces to improve the listening conditions).
- Ensuring teachers and teaching assistants implement interventions and strategies agreed as part of the support.
- Your school should also make sure that all necessary modifications and adaptations are in place so that the deaf pupil has equal access to assessments and exams.

Keeping the support and its impact under review

A school should regularly review and evaluate how effective support is, and the impact it has on a pupil's progress. The school will have systems and processes for this. Key areas related to the pupil's deafness include the following.

- Levels of progress in areas of language and communication.
- Levels of overall progress and whether any gaps with other pupils are widening or narrowing.
- Whether subject content is accessible. For example, checking if the pupil is able to understand the language and concepts used in lessons or establishing where and when the pupil may experience most difficulty in hearing what is said.
- The effectiveness of communication support. For example, is the communication support worker able to interpret accurately and fluently what the teacher is saying?
- The effectiveness of technology.
- Any changes to the pupil's level of hearing.
- The pupil's success in communicating with others, socialising and forming friendships.

Where the pupil isn't making expected progress, specialist assessments, particularly in language and communication may be helpful in identifying the source of difficulties and revising the plan and support strategies. Don't assume that the problem lies with the pupil. A Teacher of the Deaf can give advice on this.

Schools should also review the general effectiveness of provision for deaf pupils. This may include looking at, for example, the listening environments in the school and whether staff need additional training and support.

An effective school will:

- make sure the assessment of a deaf pupil's needs is based on accurate information about their prior attainment, reflects the type and level of their hearing loss and its effect on their learning, and identifies key barriers to making progress
- seek pupils' and parents' views on the successes as well as barriers they are experiencing and the strategies and support that will benefit them
- consider the implications of a pupil's deafness when planning how to meet their needs. This will include recognition that good speech may mask underlying linguistic difficulties and problems of accessing what is being said during teaching
- make sure that the necessary support is given, whether this is through modification of teaching strategies, meeting language and communication needs, using technology, staff training, improving the listening environment and meeting the pupil's social and emotional needs
- review the effectiveness of their provision for the deaf pupil, monitoring the extent to which the pupil is achieving the expected outcomes.

Your school should carry out these steps with support from a Teacher of the Deaf.

Appendix 2: Types and levels of deafness

Types of deafness

Conductive deafness is when sound can't pass efficiently through the outer and middle ear to the cochlea and auditory nerve. There are several possible causes, including impacted wax (when wax hardens deep in the ear canal), an ear infection and underdevelopment of the outer ear, ear canal or middle ear. The most common type of conductive deafness in children is caused by glue ear – a build-up of fluid in the middle ear. This hearing loss can be temporary or permanent.

Sensorineural (or nerve) deafness is when there's a problem in the inner ear (most often because the hair cells in the cochlea are not working properly) or auditory nerve. Sensorineural deafness is permanent.

Mixed deafness is when there's a combination of sensorineural and conductive deafness, such as when a child has glue ear and a permanent sensorineural deafness.

Congenital and acquired deafness

Congenital deafness refers to children who are born deaf. Other children acquire deafness due to illness, accident or a late onset genetic condition

Levels of deafness

Deafness is measured in two ways:

- how **loud** the sound has to be so that the child can hear it. This is measured in **decibels (dB)**
- which **frequencies** (pitch) the child can or can't hear, measured in **hertz (Hz)**.

Each child's deafness is different depending on which frequencies are affected and how loud a sound has to be before they can hear.

Few children are totally deaf. Most children can hear some sounds at certain pitches and volumes, known as their 'residual hearing'. There are different levels of deafness classified as follows.

Mild hearing loss

Many young people with a mild hearing loss do not use hearing technologies such as hearing aids, but a mild loss can still have a significant impact on education.

- Pupils may not hear if there is background noise or if they are far away from the speaker.
- Pupils would not be able to follow a whispered conversation.

To find out more about the impact of a mild hearing loss on children's ability to learn download our resource *Mild Hearing Loss: Information for Professionals* at **www.ndcs.org.uk/mildhearingloss**.

Moderate hearing loss

Most pupils with a moderate hearing loss will use hearing aids.

- Without hearing aids a pupil will not be able to follow a whole conversation unless they are in a quiet room with a good view of the speaker's face.
- Even with their hearing aids, pupils will find it extremely difficult to follow a conversation in a large group, if there is background noise or if they are far away from the speaker.

Severe hearing loss

Most pupils with a severe hearing loss will use hearing aids or cochlear implants.

- A pupil will be unable to hear speech without hearing aids or a cochlear implant but may be able to hear loud sounds such as a dog barking or a drum.
- With hearing aids or a cochlear implant most pupils will be able to follow a conversation in a quiet room provided that the speaker is within 2–3m of them.
- A pupil is likely to require additional communication support, for example, sign support or lip-reading, to understand speech in the presence of any background noise or in a group conversation.

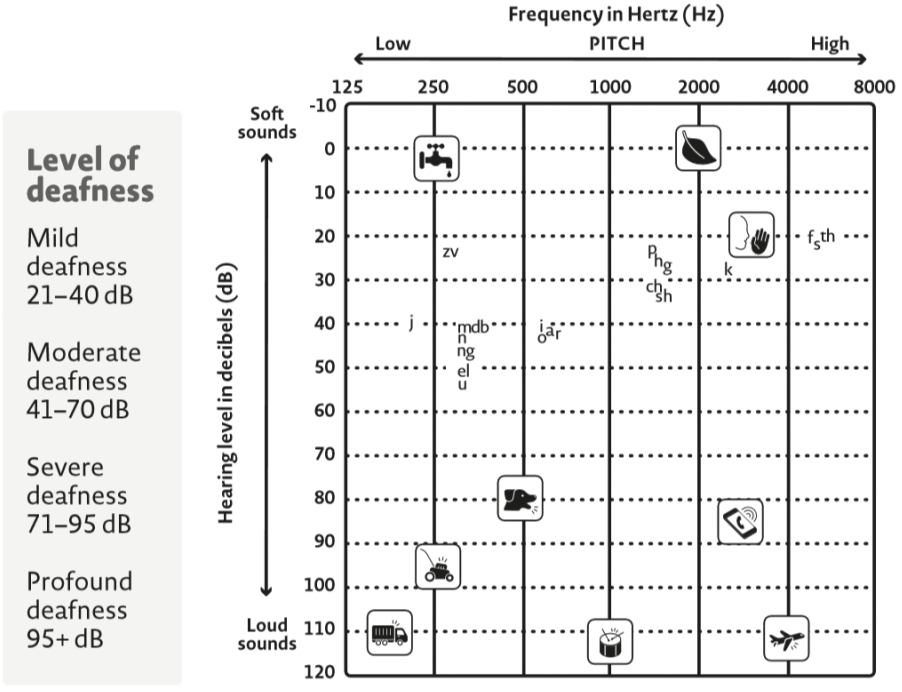
Profound hearing loss

Most profoundly deaf pupils will use a cochlear implant or hearing aids.

- Without a cochlear implant or hearing aids a pupil will not be able to hear speech or other sounds. They may be able to feel very loud sounds such as a lorry passing them in the street.
- Without a cochlear implant or hearing aids the pupil is likely to use a sign-based language to communicate directly with another person.
- With cochlear implants or hearing aids the pupil may require additional communication support (for example through sign language or cued speech) to access speech, especially where there is background noise or in a group conversation.

Some pupils may have problems with the inner ear – an absence or malformation of the cochlear or auditory nerve. This will mean they will have no access to sound at all and hearing aids or cochlear implants would offer no benefit. They will use sign language as their main means of communication.

Visual representation of the loudness and pitch of a range of everyday sounds



This diagram is based on British Society of Audiology definitions of hearing loss.

The Teacher of the Deaf will be able to explain the deaf child's level of hearing by using an audiogram, similar to the one above. An audiogram is a chart used by an audiologist to record the results of the hearing assessment and is a visual representation of the child's hearing.

Unilateral deafness

There may be little or no hearing in one ear, but normal levels of hearing in the other.

The pupil will be unable to localise sound and follow group conversations and will find it difficult to understand speech in the presence of background noise.

Auditory neuropathy spectrum disorder (ANSD)

ANSD occurs when sounds are received normally by the cochlea, but become disrupted as they travel to the brain. Pupils with ANSD are likely to have greater difficulty understanding speech and distinguishing one sound from another than a pupil with a similar level of hearing, especially when there is background noise. They may have a similar experience to someone using a mobile phone when the reception is poor and the sounds they hear are distorted. ANSD is usually bilateral (affecting both ears) but can also be unilateral (affecting one ear only).

Some pupils with auditory neuropathy spectrum disorder will use hearing aids or cochlear implants; others will not find them beneficial.

Deaf culture

Less than 10% of deaf young people have deaf parents. These families often use British Sign Language (BSL)[4] as their first language. Other families may also choose to use BSL as a first language with their family members.

These families, and indeed many other deaf young people and adults, consider deafness as a culture. In their community they use sign language to communicate and function effectively with each other. They describe themselves as 'Deaf' with a capital D. British Sign Language is the language of the Deaf community.

[4] Where the deaf pupil lives in Northern Ireland, Irish Sign Language may be used.

Appendix 3: Personal hearing technology

Below is an overview of the types of hearing technology you may come across, how they work and their limitations. It's important to note that hearing technologies don't replace normal hearing.

Hearing aids

A hearing aid amplifies sound and is worn in or behind the ear. It has three basic parts: a microphone, amplifier and speaker. Modern digital hearing aids can be programmed very closely to match the wearer's hearing loss and often have multiple programmes for wearing in different listening environments.

Hearing aids are designed to maximise the hearing the wearer has (known as their residual hearing). If the student has no measurable hearing at certain frequencies, especially the higher frequencies such as 'ss' and 'th', then a hearing aid will not improve this.

Deaf pupils use different types of hearing technologies supplied by the NHS, such as hearing aids, bone-conduction hearing implants or cochlear implants. More information about the technology that deaf children may use can be found in Appendix 4.

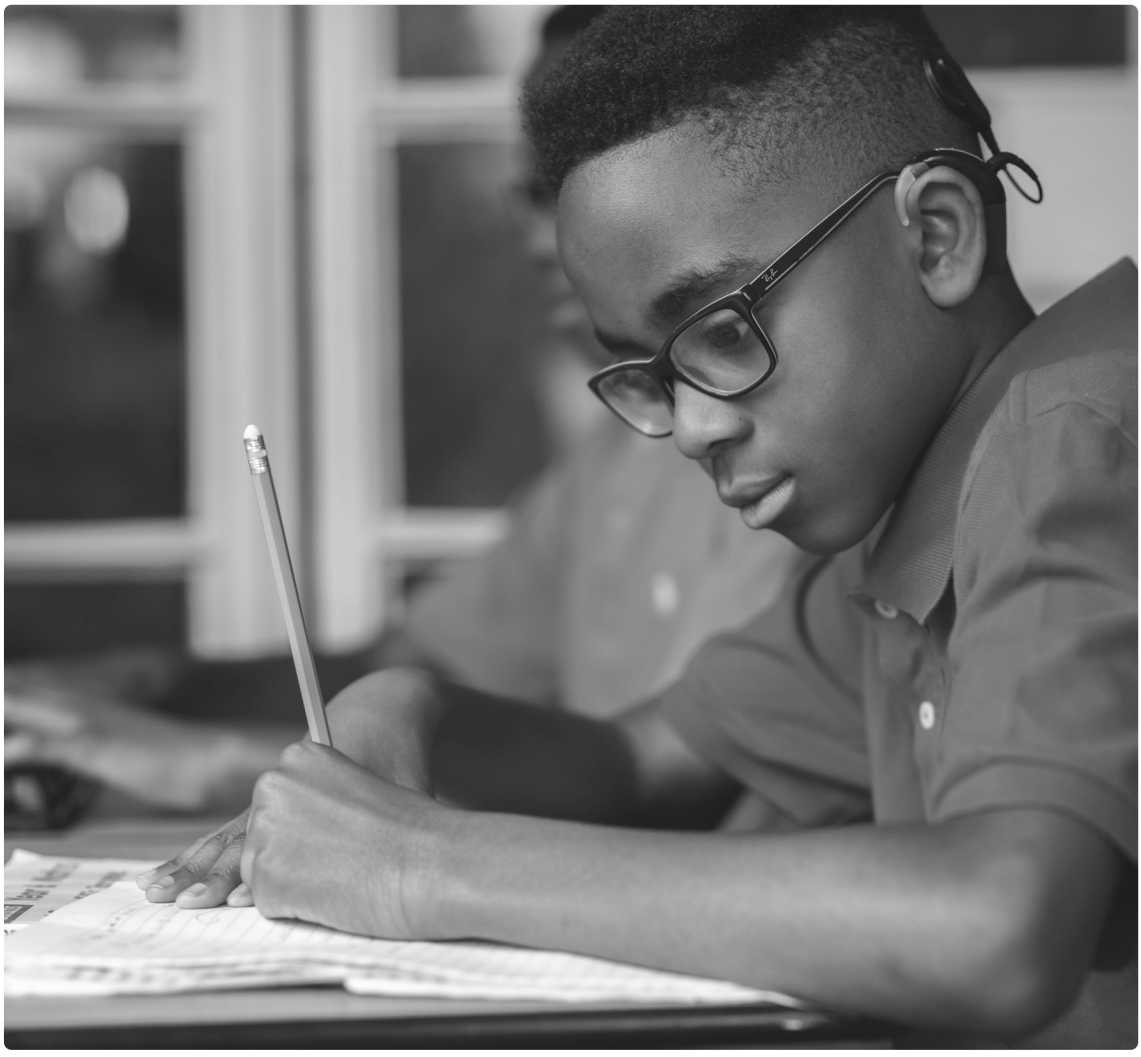
Hearing aids are programmed to help the wearer hear speech, but they amplify all sounds, including background noise, so a deaf pupil wearing aids may still find it hard to hear speech. This may be especially challenging for them in group situations, in a noisy playground or open-plan break out space. A deaf pupil may have problems hearing in a classroom, gym or dining hall with wooden floors as sounds 'bounce' off hard surfaces making it harder to identify different voices.

For more information on hearing aids see our resource *Hearing Aids: Information for families* at **www.ndcs.org.uk/hearingaidsguide**.

Cochlear implants

This is a surgically implanted hearing device for severely and profoundly deaf children when hearing aids are not powerful enough for them to hear the entire speech range. A cochlear implant works by stimulating the auditory nerves and bypassing the damaged nerve cells within the cochlea.

More information on cochlear implants can be found in our resource, *Cochlear Implants: A guide for families*, or at **www.ndcs.org.uk/cochlearimplants**.



Bone conduction hearing implants

A bone conduction hearing implant is designed for people who have a functioning cochlea but the middle or outer part of the ear prevents the information reaching the cochlea in the usual way. Occasionally older children may wear the sound processor on a soft headband (for example when they are trialing a device prior to surgery, or if they aren't able to have surgery for some reason). This allows sound waves to be transmitted directly to the cochlea in the inner ear.

More information on bone conduction hearing devices can be found at **www.ndcs.org.uk/boneconduction**.

Radio aids

A radio aid carries the teacher's voice directly to the pupil's receiver attached to their hearing aid, bone conduction hearing implant or processor, or cochlear implant. It reduces some of the problems presented by distance from the teacher and background noise. The microphone/transmitter is worn by the teacher and the receiver is worn by the pupil and attached to their hearing technology. Some radio aids can be used by pupils without personal hearing technology by wearing an earpiece receiver. This may be particularly useful for pupils with unilateral deafness who wear the earpiece in their good ear.

Most pupils will have their hearing technology programmed to allow them to hear from both the radio aid and their surroundings. This means they can hear other pupils as well as the teacher. However, it's possible to programme their hearing technology to only hear the radio aid. Some radio aids have a microphone function which switches from an individual talker to a small group interaction mode, based on the orientation of the device. This is particularly useful for group work. Otherwise the microphone can be passed to pupils speaking in group work or class discussion to aid clarity. The radio aid transmitter/microphone can also be connected to equipment such as televisions or computers, via an audio lead to assist clarity.

For further information see our resource *How Radio Aids Can Help* at **www.ndcs.org.uk/radioaids** or visit our web page: **www.ndcs.org.uk/how-tech-works**.

Soundfield systems

Soundfield systems rely on a radio or wireless microphone worn by the teacher and loudspeakers, which are placed around the room. They project the teacher's voice at a consistent level around the classroom. These systems can improve the listening conditions for all pupils.

Portable systems are available that can be moved between learning spaces as required. Some systems can link with other hearing technology such as a radio aid, or classroom equipment such as smartboards.

A pupil may need to use radio aids alongside the soundfield system and both can be set up to work side by side.

Appendix 4: Communication options

The information below is a summary of the different communication options for deaf children. It's important to respect the deaf pupil's preferred means of communication.

Spoken language

Nearly all (more than 90%) of deaf children are from hearing families with no first-hand experience of deafness which means that most deaf children are brought up with a spoken language as their first language.

Not all deaf children who use spoken language will have English as their home language. The Consortium for Research in Deaf Education (CRIDE) reported that in 2019 14% of deaf children across the UK were EAL learners. In some areas this figure was much higher.[5]

It's important to remember that whichever language is used in the home, the child could still experience a significant delay. In many cases, spoken language will be supported by signing and lip-reading.

British Sign Language

British Sign Language (BSL) is a visual language that uses hand shapes, facial expressions, gestures, body language and fingerspelling. It has a structure and grammar different from that of written and spoken English. Some deaf children will have BSL as their first language or preferred language but may also speak English as a second language. Deaf children brought up by deaf parents, who have BSL as a first language, will often start school with age-appropriate or near age-appropriate language in BSL.

Some deaf pupils in Northern Ireland may use Irish Sign Language instead.

Sign Supported English

Some deaf children's spoken English may be supported with signs taken from BSL. When signs are used to support spoken English in this way it's known as Sign Supported English (SSE). It can be a way of making spoken English more visual and is used to add clarity to what is being said, for example, in situations where they may struggle with background noise or if they are too distant from the speaker.

[5] Consortium for Research into Deaf Education (CRIDE). *Educational Provision for Deaf Children in England* (2017). **www.ndcs.org.uk/CRIDE** (accessed 28 March 2019).

Lip-reading

Lip-reading has an important role in helping children access spoken language. Not every speech sound or word can be seen on the lips but lip patterns of spoken words can help the deaf child identify what is being said, supporting the interpretation of the speech sounds that they hear. Lip-reading is a learned skill and evidence suggests that this skill is influenced by cognitive ability, good language and vocabulary knowledge, good reading skills, normal eyesight and good verbal short-term memory. On its own lip-reading has a number of limitations but it's a natural support to understanding spoken communication and can be especially helpful to the deaf child.

Cued speech

Cued speech is a lip-reading tool that enables access to language visually. It uses eight hand shapes in four different positions and accompanies natural speech. Whereas some sounds can't be fully lip-read (for example, 'p', 'm' and 'b' all look the same on the lips and sounds like 'k' and 'g' can't be seen at all), the cues make it clear exactly what sound is used so that the deaf child may see the sound in each word as it's spoken in real time. This enables the child to develop a mental model of the spoken language regardless of whether they have any hearing or not.

12 About the National Sensory Impairment Partnership (NatSIP)

This resource has been developed by the National Deaf Children's Society, with support from the National Sensory Impairment Partnership (NatSIP).

NatSIP is a partnership of organisations working together to improve outcomes for children and young people with sensory impairment (SI). NatSIP receives funding from the DfE in England for provision of specialist information, advice, support and training. For more information about NatSIP and to access resources, visit **www.natsip.org.uk/** – a major gateway for SI professional practice.

13 Our information and support

Joining the National Deaf Children's Society gives you access to a wide range of services that can support you at different stages of your journey and your child's development. We want to do all we can to give you the confidence to support your child and make decisions.

The right information, at the right time

We offer free, balanced information about all aspects of childhood deafness, both on our website **www.ndcs.org.uk** and in our publications. Our online content and information booklets can help you make some of the difficult decisions you'll be faced with.

Helping you make informed choices

Every deaf child is different and families should be able to make decisions that are right for them. That's why we give independent support, setting out all the options, so families can make informed choices about how they want to communicate, or which type of hearing technology is best for them. We never promote a particular approach, and we're always clear about the impact it will have on a child's life.

Support when you need it

Any questions? We're here to help.

Freephone Helpline: **0808 800 8880**

helpline@ndcs.org.uk

www.ndcs.org.uk/livechat

14 About the National Deaf Children's Society

We're here for every deaf child who needs us – no matter what their level or type of deafness or how they communicate. We want to work with professionals like you to overcome the barriers that hold deaf children back.

Visit our website **www.ndcs.org.uk** to join us for free. You'll have access to:

- our expert information resources for professionals
- our quarterly digital magazine and email updates
- our workshops and events
- our Freephone Helpline.

We are the National Deaf Children's Society, the leading charity for deaf children.

Freephone Helpline:
0808 800 8880 (voice and text)
helpline@ndcs.org.uk

www.ndcs.org.uk

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To give us your feedback email **informationteam@ndcs.org.uk**.

National Deaf Children's Society