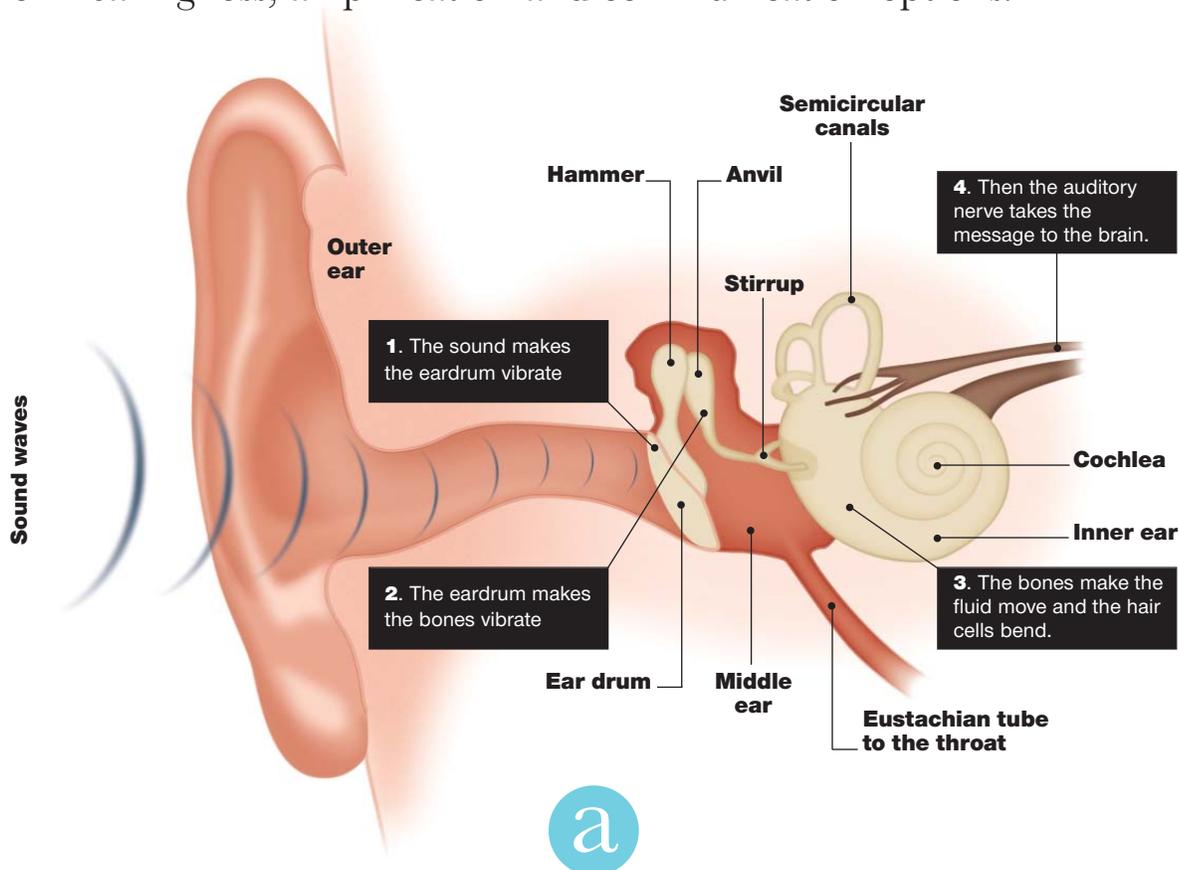


glossary

The following list of terms may be useful to you as you are learning about hearing loss. For a comprehensive explanation please refer to the *Choices* booklet. This will give you detailed information on hearing loss, amplification and communication options.



a

Acoustic nerve / auditory nerve

The acoustic nerve is a combination of the nerves of hearing (the **cochlear nerve**) and balance (the vestibular nerve). The **cochlear nerve** carries information about hearing to the brain, and the vestibular nerve carries messages about balance to the brain (see diagram above).

Acquired hearing loss / deafness

See 'hearing loss, acquired'.

Amplification

Amplification is any process that makes a sound louder. **Hearing aids** are an example of a device used for amplification.

Assistive listening devices / assistive communication devices

Assistive listening devices can be used with or instead of **hearing devices** such as **hearing aids** or **cochlear implants**, to help the listening and communication of people who are deaf or hard of hearing. Examples include: amplified telephones, vibrating alarm clocks, or hearing loop system.

Atresia / aural atresia

Aural atresia involves some degree of failure of development of the **ear canal**. It can also affect the **ear drum (tympanic membrane)**, the tiny bones in the **middle ear (ossicles)**, and the **middle ear space**. The **pinna (outer ear)** is often also affected, but the **inner ear (cochlea)** is not usually affected. Aural atresia most commonly occurs in one ear only, but can also occur in both ears.

Audiogram

An audiogram is a chart used to show the results of a hearing test. It shows what level of loudness a child can hear sounds of different **itches** at.

Audiological assessment

Audiological assessment involves carrying out a range of different hearing tests to find out if a hearing loss is present; the type of hearing loss (e.g. **conductive, sensorineural, mixed**); the **degree of hearing loss** (e.g. **mild, moderate, severe, profound**); and the configuration of the hearing loss (**bilateral** versus **unilateral, symmetrical** versus **asymmetrical**, high **frequency** versus low frequency)

Audiologist

An audiologist is a health professional with specialist training in hearing and balance problems. Audiologists work with people of all ages. They measure hearing ability; identify hearing and balance disorders; provide rehabilitative services; help in diagnosing of sensory and neurological problems; assess the need for **hearing devices**, such as **hearing aids** and **cochlear implants**; and assist clients in the use and care of hearing devices.

Audiology

Audiology is the science and study of hearing and balance processes and disorders.

Auditory brainstem response test (ABR)

An ABR is a hearing test that can be used to assess the hearing of infants and young children. While the baby is asleep or resting very quietly, sounds of different **pitch**s and loudness levels are played to the baby. This records the activity and responses of the hearing nerve. The test can provide specific information about how loud a sound needs to be at different **frequencies** for a baby to be able to hear it.

Auslan / Australian Sign Language

Auslan, or Australian Sign Language, is the **sign language** of the Australian Deaf community. See 'sign language'.

Automated Auditory Brainstem Response (AABR)

An AABR is similar to an **Auditory Brainstem Response (ABR)** but instead of providing specific information about a baby's hearing at different **frequencies** it simply indicates whether a baby needs more detailed testing to gain this information. AABR is used as part of the **newborn hearing screening** process to identify which children need more detailed assessment using tests such as the ABR.

Auditory neuropathy / dysynchrony (AN/AD)

Auditory neuropathy and auditory dysynchrony are terms used to describe a particular type of hearing problem when sounds may be transmitted normally through the **middle ear** and the **cochlea** but then do not transmit normally beyond the **cochlea**, or along the **auditory nerve** to the brain. This means that the child may be hearing something, but what they hear might be very distorted and difficult for the brain to make sense of. It is estimated that up to one in every 10 children with a **profound hearing loss** have this condition.

A child with auditory neuropathy could have normal hearing thresholds or they could have a **mild, moderate, severe** or **profound hearing loss** and for some children their hearing problem will seem to change from time to time or their hearing will be better on some days than others. Sometimes the hearing loss can get worse with time, and in some children their hearing can improve with time. A diagnosis of auditory neuropathy warns professionals that a child may not act or respond as a typical deaf child.

Auditory neuropathy affects a child's ability to understand speech and is often worse than would be predicted by the level of hearing loss measured.

b

Bilateral hearing loss

A bilateral **hearing loss** is a hearing loss in both ears. It can range from a **mild hearing loss** to a **total hearing loss**.

Binaural

The term binaural is used when both ears are being referred to. For example, 'binaural hearing aids' refers to a hearing aids in both ears, 'binaural listening' refers to listening with both ears.



C

Cerumen

Cerumen is a yellow or brown wax-like substance produced in the outer one-third of the **ear canal**. Cerumen is the medical term for **ear wax**.

Cochlea

The cochlea is a snail-like bony cavity that contains the delicate **hair cells** of the **inner ear**. The cochlea converts sound waves into nerve impulses which are then sent to the brain via the **auditory nerve**, resulting in the sensation of **hearing**. The cochlea is about the size of a dried pea (see diagram on page 47).

Cochlear implant

A cochlear implant is a surgically implanted device used with people with **severe** or **profound hearing losses** when conventional hearing aids cannot provide sufficient benefit. Cochlear implants work by bypassing the damaged parts of the auditory system and stimulating the hearing nerve directly. A cochlear implant is made up of both internal and external components. The external components are the visible part of the system and are responsible for collecting sound, converting

it to a digital signal, and for housing the batteries that power the system. The internal components are responsible for decoding the digital signal and converting it to the electrical signal which stimulates the hearing nerve. Cochlear implants do not restore natural hearing, however, they can provide significantly greater benefit than hearing aids for children with severe or profound hearing losses by providing access to conversational speech and environmental sounds. This improved access to speech assists with overall communication and language development and provides greater opportunity for the deaf child to develop speech.

Cochlear nerve

The cochlear nerve, combined with the vestibular nerve, creates the acoustic nerve. The cochlear nerve begins near the cochlea and carries information about hearing to the brain (see diagram on page 47).

Conductive hearing loss

See 'hearing loss, conductive.'

Congenital hearing loss / deafness

See 'hearing loss, congenital.'

d

Deaf

The word deaf is used in a range of different ways by different people. Some people use the word deaf to describe any level of hearing loss from mild to profound and complete deafness, and others only use the word deaf to describe profound and complete deafness. The word Deaf is also used to identify connection with the Deaf community through use of a Deaf sign language and participation in Deaf culture. In this context, in its written form, a capital D is used for the word Deaf.

Decibel (dB)

A decibel is a unit of measurement of sound. When testing hearing, dB is used to indicate the loudness

or intensity of a sound. A whisper is about 20 dB, conversational speech is about 60dB, a ringing telephone is around 80dB, and a jet engine taking off is about 150dB.

Diagnostic audiology assessment

Diagnostic audiology assessments involve carrying out a range of different hearing tests to find out if a hearing loss is present; the type of **hearing loss** (e.g. **conductive, sensorineural, mixed**); the **degree of hearing loss** (e.g. **mild, moderate, severe, profound**); and the configuration of the hearing loss (**bilateral** versus **unilateral, symmetrical** versus **asymmetrical, high frequency** versus low frequency).

e

Ear canal

The ear canal is the passage from the **pinna** to the **eardrum** that sound waves travel along (see diagram on page 47).

Earache

Any ache or pain in the ear. The medical term is **otalgia**.

Eardrum

The eardrum is a thin membrane that separates the **ear canal** and the **middle ear**. The medical term is **tympenic membrane** (see diagram on page 47).

Ear specialist

An Ear Specialist is usually called an Ear Nose and Throat Specialist, or ENT Specialist.

Ear wax

Ear wax is a yellow or brown substance produced in the outer one-third of the external ear canal. The medical term is **cerumen**.

Eustachian tube

The Eustachian tube is the passage between the **middle ear** and the back of the throat. It allows air to move in and out of the **middle ear**. This helps to keep the air pressure inside the **middle ear** the same as the air pressure on the outside of the eardrum (see diagram on page 47).

External ear

The external ear includes the **pinna** (the part we can see), the **ear canal**, and the outer surface of the **eardrum** (see diagram on page 47).

f

Feedback

Feedback is the whistling sound sometimes produced by a **hearing aid**. Feedback occurs when sound that has been amplified by a **hearing aid** leaks back from the **ear canal** to the hearing aid microphone. This can occur when the **ear mould** or **hearing aid** is old or not positioned properly, when there is too much **ear wax** in the ear, or simply when the **hearing aid** is turned up too much.

Frequency

The frequency of a sound relates to the number of sound vibrations that it makes per second. The more sound vibrations per second, the higher the frequency of the sound, and the higher the **pitch** will be. The frequency of a sound is expressed in **Hertz**, or Hz for short.

g

Glue ear

Glue ear occurs when fluid is present in the **middle ear** but there is no fever or swelling of the ear drum. It generally occurs in situations where a **middle ear infection** has been present, and the infection has passed but the fluid has remained behind. The fluid is often quite thick and may stay in the **middle ear** temporarily or could persist for many months. The thick fluid makes it harder for sound to pass from the **outer ear**, through the **middle ear**, to the **inner ear** and can result in a **conductive hearing loss**. The medical term for glue ear is **otitis media with effusions (OME)**.

Grommets

When a child has recurrent or long-standing **middle ear infections** or **glue ear**, a simple surgical procedure may be performed under general anaesthetic in which a small cut is made in the **eardrum** to allow the fluid in the **middle ear** to be removed and let the **middle ear** 'breathe.' Usually a tiny **ventilation tube**, commonly called a grommet, is placed in the **ear drum** to allow air to enter the **middle ear** on an ongoing basis. The grommet does the work that a poorly functioning **Eustachian tube** should do, giving the **middle ear** a chance to recover. Grommets cause no discomfort while they are in place. The healing ability of the **eardrum** usually pushes the grommet out within 6 to 12 months, leaving the **ear drum** completely intact.

h

Hair cells

The hair-like structures in the **inner ear** that convert sound waves into electrical impulses that are then relayed to the brain via the **auditory nerve**.

Hearing

When sound travels from the **outer ear** along the **ear canal**, it causes the **eardrum** to vibrate. These vibrations then cause the three tiny bones (**ossicles**) in the **middle ear** to move. The last of the three **ossicles**, called the stapes, then pushes on a membrane that leads into the **cochlea** in the **inner ear**. This causes the **hair cells** in the **cochlea** to react and send nerve impulses along the **auditory nerve** to the brain where the sensation of hearing is registered.

Hearing aid

A hearing aid is a small electronic device that is worn in or behind the ear. It makes some sounds louder so that a person who has a **hearing loss** can hear more successfully, communicate more readily, and participate more fully in daily activities. A hearing aid can help people hear more in both quiet and noisy situations.

A hearing aid has three basic parts: a microphone, an amplifier, and a speaker. The hearing aid receives sound through the microphone, which converts the sound waves to electrical signals and sends them to an amplifier. The amplifier increases the power of the signals and then sends them to the ear through a speaker.

Hearing aid, behind-the-ear (BTE)

A behind the ear hearing aid is a type of hearing aid designed to fit behind the ear. It carries sound to the **ear canal** through tubing and a custom made ear mold.

Hearing aid, bone conduction

A bone conduction hearing aid works by carrying sound through the bone in the skull to the **cochlea**, and bypassing the **outer ear** and the **middle ear**. Children who have abnormalities of their **outer ear** (**pinna** or **ear canal**), abnormalities of their **middle ear** (**ear drum** or **ossicles**), or persistent problems with fluid in their **middle ears** may use a bone conduction hearing aid.

Hearing aid, completely-in-the-canal (CIC)

A completely-in-the-canal hearing aid is a type of hearing aid that is small enough to fit entirely within the **ear canal** to most closely imitate the natural **hearing** process. It is custom designed to fit the contours of the individual's **ear canal**.

Hearing aid, in-the-ear (ITE)

An in-the-ear hearing aid is a type of hearing aid that fits within the **ear canal**. It is custom-designed to fit the shape of the individual's **ear canal**.



Hearing loop system

A hearing loop system is an **assistive listening device** that consists of a microphone, an amplifier, and a loop of wire that may be worn around the neck or is installed in part

of a room. Sound is transmitted directly into headphones or **hearing aids** worn by people within the area enclosed by the loop. The system reduces the effects of background noise and distance. The International Deafness Symbol is usually displayed where a hearing loop is installed in public places.

Hearing loss, acquired

An acquired hearing loss is a **hearing loss** that is not present at birth but occurs or develops later in life. An acquired hearing loss can be caused by a number of things, including illness, injury, and genetic causes.

Hearing loss, asymmetrical

An asymmetrical hearing loss is one in which the hearing loss in each ear shows a different pattern.

Hearing loss, conductive

A conductive hearing loss occurs when sounds cannot pass efficiently through the **outer** and **middle ear** to the **cochlea** and **auditory nerve**. A conductive hearing loss can be temporary or permanent. A temporary conductive hearing loss can occur when there is a blockage to the **outer ear** (e.g. with **wax**) or the **middle ear** (e.g. with fluid). A permanent conductive hearing loss can occur when there is something wrong with the structure of the **outer ear** or the **middle ear**. A permanent conductive hearing loss can often be helped with medical or surgical treatments. Some children who have a conductive hearing loss also benefit from using special types of **hearing aids**.

Hearing loss, congenital

A congenital hearing loss is a hearing loss that is present at the time of birth, or very soon after birth. Many things can cause a congenital hearing loss, some of these include genetic causes, infections that a mother has during pregnancy, medications a mother takes during pregnancy or that the baby takes soon after birth, severe jaundice of the baby etc.

Hearing loss, degree

The following classifications describe the effects of different degrees of hearing loss on what a child can hear:

Mild hearing loss (21-45dB)

If a child has a mild hearing loss they are likely to have trouble hearing in noisy situations such as at playgroups or family gatherings, even though they may often manage well in quiet situations.

Moderate hearing loss (46-65dB)

If a child has a moderate hearing loss, without **hearing aids** it is likely for it to be very hard for them to understand what you are saying, especially when there is background

noise. Using **hearing aids** and receiving appropriate therapy from a very young age will help to optimise their listening, speech and spoken language development. If a child with a moderate hearing loss does not use **hearing aids** their listening, speech and spoken language development will be affected.

Severe hearing loss (66-90dB)

If a child has a severe **hearing loss**, without hearing aids they will not be able to hear speech at normal conversational levels and will need to use the best available **hearing aids** and receive appropriate therapy to assist their development of listening, speech and spoken language.

Profound hearing loss (91dB+)

If a child has a profound hearing loss, without **hearing aids** they will not be able to hear people talking and will not be able to hear most sounds in the environment. Hearing aids do not usually provide adequate assistance for children with a profound hearing loss to develop effective listening, speech and spoken language, and assessment for a **cochlear implant** is likely to be offered. Appropriate therapy is also important to support the communication development of a child with a profound hearing loss.

Total deafness

If a child has total deafness this means that no measure of hearing has been possible using any hearing tests. **Hearing aids** are unlikely to provide any significant benefit and assessment for a **cochlear implant** is likely to be offered.

Hearing loss, mixed

The term mixed hearing loss is used when someone has a combination of a **conductive hearing loss** and a **sensorineural hearing loss** at the same time.

Hearing loss, sensorineural

A sensorineural hearing loss involves damage to or malfunction of the **inner ear** (**cochlea** or **cochlea nerve**). This kind of hearing loss is usually permanent. A sensorineural hearing loss can be present at birth as a result of things such as genetic causes, infections that the mother contracted during pregnancy, and complications associated with prematurity. It can also be acquired later in life as a result of serious infections such as meningitis, head injury, excessive exposure to loud noise etc.

Hearing loss, symmetrical

A symmetrical hearing loss is one in which the hearing loss in each ear follows the same or, a very similar, pattern.

Hertz (Hz)

The frequency of a sound is measured in hertz (Hz). The higher the number of hertz, the higher the **pitch** of the sound. A 250 Hz sound is a very low **pitch** sound, and an 8000 Hz sound is a very high **pitch** sound.

Hearing screening, newborn

Newborn hearing screening is a process of assessing a baby's hearing to find out whether they need a more detailed hearing assessment with an **audiologist**. **Audiology** would then determine whether the baby has normal hearing or a **hearing loss**. A hearing screen cannot tell you whether a **hearing loss** is present or the specific **frequencies** or loudness levels that a child can hear at. It can only tell you whether more detailed assessment is needed.



Impression, ear

An ear impression is an exact copy of the size and shape of the **ear canal** made by placing a soft substance such as silicone inside the ear. The impression is used to make the **ear moulds** that are used for **behind-the-ear hearing aids**.

Inner ear

The inner ear includes the vestibule, the semi-circular canals, the inner surface of the oval and round windows, and the **cochlea** (see diagram on page 47).



Lip reading / speech reading

Lip reading involves watching the mouth of a person who is speaking as a means of gaining understanding

of what is being said. The term **speech reading** is now more commonly used.



Microtia

Microtia means 'small ear.' It can affect one ear or both ears. Microtia can range from a slightly small **pinna** and a small but present **ear canal**, through to complete absence of the ear. The **middle ear** structures of a child with microtia can also be significantly affected. Children with microtia may have a **conductive hearing loss**, but their **inner ear** usually functions normally. Surgical intervention is often used to reconstruct the **external ear**, **ear canal** and **middle ear** structures.

Middle ear

The middle ear includes the **tympanic membrane (eardrum)**, three tiny bones called the **ossicles**, and the **Eustachian tube** (see diagram on page 47).

Middle ear infection

See 'otitis media'.

Monaural

The term monaural is used when one ear is being referred to. For example, 'monaural hearing aids' refers to **hearing aids** used in one ear, 'monaural listening' refers to listening with one ear only.



Ossicles

The ossicles are the three small bones of the **middle ear** that convey sound impulses from the **ear drum** to the oval window. They are known as the hammer (malleus), anvil (incus), and stirrup (stapes). When the movement of these is affected a **conductive hearing loss** can occur (see diagram on page 47).

Otalgia

Otalgia is the medical term for any ache or pain in the ear.

Otitis

Otitis is a broad term for inflammation or swelling of the ear.

Otitis media (OM)

Otitis media is an infection or swelling of the **middle ear**. The inflammation generally begins when infections that cause sore throats, colds, or other respiratory or breathing problems spread to the **middle ear** and cause a build up of infected fluid behind the eardrum. The build up of fluid in the **middle ear** can cause an **earache**, swelling and redness. This is called acute **otitis media**. The build up of fluid can prevent the ear

drum from vibrating properly, which may cause a temporary hearing loss. The hearing levels of children who experience frequent ear infections may fluctuate over a period of time and can place them at risk of speech and language delays.

Otitis media with effusions (OME)

See 'glue ear'.

Otoacoustic emissions (OAE)

An otoacoustic emissions test is a hearing test that uses a microphone placed in the ear canal to measure sound waves generated in the **cochlea** in response to clicks or tone bursts. This test helps to assess whether the **cochlea** is working properly. This information assists in understanding what type of hearing loss is present.

Ototoxic medications

Ototoxic medications are medications that can cause permanent damage to hearing.

Outer ear

The outer ear includes the **pinna** (the part of the ear you can see) and the **ear canal** (see diagram on page 47).

p

Perforated eardrum

A perforated eardrum is an **ear drum** that has a hole or tear in it. It usually results from an injury or infection. A perforated ear drum can cause decreased hearing and sometimes discharge can be present. Although a perforation can be painful at the time it occurs, the pain does not usually continue. Most ear drum perforations heal spontaneously within a few weeks, although some may take several months. During the healing process the ear must be protected from water and trauma. Ear drum perforations that do not heal on their own may need surgery.

Pinna

The **pinna** is the part of the ear that can be seen on the outside (see diagram on page 47).

Pitch

See '**frequency**'.

Profound hearing loss

See '**hearing loss, degree**'.

Pure tone

A pure tone is a sound played at a single frequency (or pitch).

Pure tone audiometry

Pure tone audiometry is a type of hearing test that uses pure tones to find out what level of loudness a single **frequency** needs to be present at for an individual to just detect that the sound is present. This type of assessment helps to diagnose the type and degree of hearing loss.

r

Risk factor

A risk factor is a factor associated with an increased risk of a person experiencing a particular disease or infection. There are a number of risk factors for a child

having an increased chance of having a hearing loss, some of these include a family history of permanent childhood hearing loss, meningitis, taking certain medications that can affect hearing etc.

s

Severe hearing loss

See '**hearing loss, degree**'.

Sign language

A sign language is a visual language in which 'listeners' use their eyes instead of their ears to receive the information being shared, and 'speakers' use hand shapes, facial expressions, gestures, and body language to create language. Sign languages are independent and unique languages with a structure and grammar different from spoken languages. There are many different sign languages across the world.

Auslan, or **Australian Sign Language**, is the language of the Australian Deaf community. The ability to use **Auslan** provides the opportunity to participate in the Deaf community.

Speech reading

Speech reading involves interpreting spoken messages by recognising the movements of the lips, jaws and tongue as well as using additional cues such as body language, gestures and facial expressions. A speech reader uses what they know about the elements of sound, the structure of language, the topic being spoken about, and the context of the situation to figure out what a person is saying. Speech reading used to be called '**lip reading**'.

Stethoclip

A stethoclip allows a hearing person to listen to a **hearing aid** to make sure that it is working properly. It is like a stethoscope used by doctors but it has a piece of tubing which connects to the **hearing aid**.

Tympanic membrane

See 'eardrum'.

t

We hope Possibilities makes a valuable contribution to your family's journey and encourages you to discover many other sources of information and support to help you build a happy future with your child.

u

Unilateral hearing loss

A unilateral hearing loss is a hearing loss in one ear only. It can range from **mild** to a **total hearing loss** on the side that is affected. Some children who have a unilateral hearing loss develop a **bilateral hearing loss** as they get older, it is therefore very important to monitor hearing regularly.

A unilateral hearing loss can cause difficulties with hearing in noisy situations, knowing which direction a sound is coming from, hearing sounds that are on the

same side as the ear with the hearing loss, and speech and language development. Some children who have a unilateral hearing loss have no difficulties with speech, language or academic development, other children do have difficulties with these skills. As is the case for all children who have any type of hearing loss, it is important to monitor the speech, language and learning development of all children who have a unilateral hearing loss.

v

Ventilation tube

See 'grommet'.

