

Your Child's Hearing Test

Information for Parents and Carers

Play Audiometry

How Does Your Ear Work?

Your ear picks up sound

Sound travels in invisible waves through the air. Sound occurs when a moving or vibrating object causes the air around it to move.

Sound waves travel down the ear canal and hit the eardrum in the middle ear. This causes the eardrum to vibrate. Three tiny bones in your middle ear link the vibrating ear drum to the cochlea in the inner ear.

The cochlea is filled with liquid that carries the vibrations to thousands of tiny hair cells. The hair cells fire off tiny electrical signals. These electrical signals travel up the cochlear nerve of the auditory pathway to the brain that processes them. All this happens in a fraction of a second.

In today's test we will be assessing all the different parts of the ear when they work together.

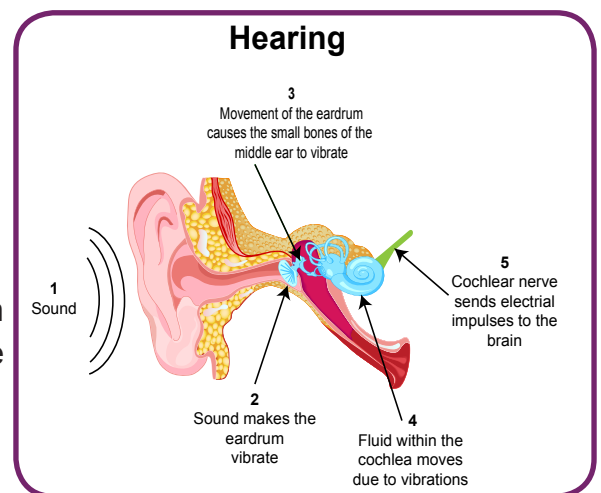
Play Audiometry

Background

Children need to be able to hear speech sounds so that they can understand what is being said to them. If a child has a hearing loss and cannot hear speech sounds in at least one ear, their learning and speech development may be affected.

If a child has normal hearing in one ear and a hearing problem with the other ear, they may have difficulty understanding what is being said to them when there is background noise and it will be more difficult for them to work out where a sound is coming from.

The aim of Play Audiometry is to find out if there is a hearing loss in one or both ears by testing each ear separately through headphones.



Conditioning Phase

Before headphones are placed on a child's ears, the tester may say "when you hear the noise, put the brick in the basket" or "when you hear the noise, put the man in the boat", to explain what they are to do. The tester may also play the sounds that the child will be listening for and put the brick in the basket or man in the boat to show what has to be done.

When the sounds are played they are played at an intensity/loudness level (about 60dBHL) that can be heard comfortably by someone with normal hearing. Often the tester will check that the child understands what they have to do before the headphones are placed on their ears. Successful conditioning will have occurred if a child waits for the sound, then puts the brick in the basket or man in the boat when the sound is playing, at an intensity/loudness level that they can hear.

The Assessment

Once a child has been conditioned, headphones are placed over their ears and the hearing assessment can begin.

Testing is usually carried out for four different frequencies/pitches: 500Hz (similar to the "oo" sound in "boo"), 1000Hz (similar to the "ah" sound in "bath"), 2000Hz (similar to the "sh" sound in "shoe") and 4000Hz (similar to the "ss" sound in "hiss")

Sounds are play at different intensity/loudness levels and at irregular intervals, so that it is difficult for a child to anticipate when the sound is going to come on.

During the test some children may try to put the brick in the basket or man in the boat before they hear the sound ("guessing behaviour"). The tester will ask the child to wait for the sound should this happens. If guessing behaviour continues, the conditioning phase may need to be repeated. Longer gaps may also be needed in between sounds being presented to make sure that true responses are being obtained.



The test will take longer when a child is guessing, more sounds are played for a reliable result. A review appointment will be required if the Audiologist/s feel that a reliable result has not been achieved.

Other children can lose interest in the play activity during the test and stop responding when sounds are presented, even though they are hearing them. When this happens, the tester may change the play activity to try and make the test interesting again, so that testing can be completed.

The Results

When the assessment has been completed the following results are possible:

1) Normal Result

If your child responded at a quiet level of 20dBHL or less for 500Hz, 1kHz, 2kHz and 4kHz for each ear with good reliability, this is considered to be a normal result. When a normal result has been achieved, it is likely your child has sufficient hearing for the sounds of speech to be heard in both ears.

Although we always try to test down to 20dBHL, the World Health Organisation and the HSE National Audiology Review Group (2011) also consider the slightly louder level of 25dBHL to mean that there is no hearing impairment. Given this, if 25dBHL is the lowest level that your child responds at (for one or some of the sounds that were tested), we may recommend monitoring the hearing levels rather than referral to an ENT Consultant.

2) Repeatable responses at a quiet level of 20dBHL or less but response reliability issues

If the tester/s felt that there was some uncertainty about response reliability, review will be required even when there were repeatable responses at 20dBHL or less for 500Hz, 1kHz, 2kHz and 4kHz. A significant hearing loss in both ears is unlikely under these circumstances, but review is needed to make sure that your child meets the criteria for a satisfactory result.

3) Responses at elevated levels with response reliability issues

When responses are very variable it can be difficult to establish an accurate hearing test result. As previously described, some children exhibit frequent guessing behaviour and others lose interest in the play activity part of the way through the assessment. A review appointment will be required.

4) Responses at elevated levels with good reliability

A hearing loss is likely that may be temporary or permanent in nature. The Audiologist should be able to give you an estimate of the degree of hearing loss that your child has in the better ear. Audiology will refer your child to an Ear, Nose and Throat (ENT) Consultant if they are not under the care of ENT already.

If you have any further questions about your appointment, please do not hesitate to contact us on telephone: 01 878 4577.

To arrange any further appointments, please contact the Audiology secretary on Telephone: 01 8784533.

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Version: 1
Approval Date January 2019
Review Date January 2021

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