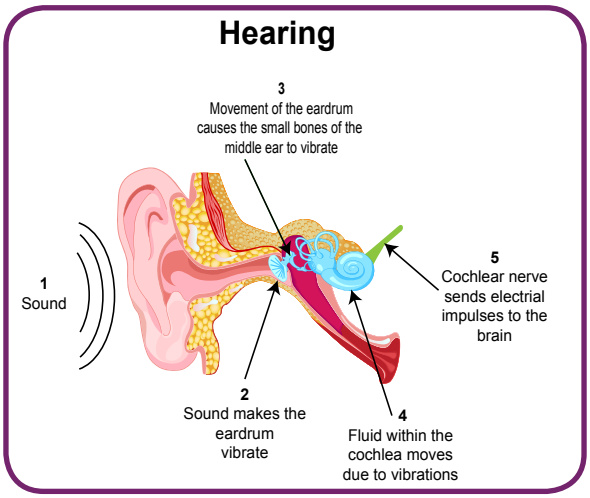
Children's Health Ireland
at Temple Street

Your Child's Hearing Test

Information for Parents and Carers

Soundfield Distraction Test

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.

The Soundfield Distraction Test

Background
Young children need to be able to hear speech sounds so that they can copy them and learn to talk. If a young child has a permanent hearing loss and cannot hear speech sounds in at least one ear, their speech development will not be normal.

The aim of Soundfield Distraction testing is to find out if it is likely that a child can hear speech sounds, in at least one ear**.** Soundfield hearing tests do not test each ear separately because sounds are created /played at a distance from the child's ears (50cm to 1m), rather than a headphone being placed over each ear**.**

Two testers are required for Distraction testing. The first tester creates the sounds while standing behind the child and the second tester tries to involve the child in play activity. The testers look for changes in the child's behaviour each time that a sound is played. When a child turns towards the sound, the testers will often praise the child as this can help encourage further responses.

The Assessment

There are a range of sounds that may be used for the assessment:

1) Hand-held machine sounds that test individual frequencies/pitches (warbletones) When a child shows an interest in warbletone sounds, up to four different individual frequencies/pitches will be tested :500Hz (similar to “oo” in “boo”) 1kHz (similar to the “ah” sound in “bath”), 2kHz (similar to the “sh” sound in “shoe”) and 4kHz (similar to the “ss” sound in “hiss”).

2) Hand-held machine sounds that do not test individual frequencies/pitches such as animal sounds (sheep, geese, bird), musical sounds (bell, drum), recordings on a tablet or other electronic device.

When a child does not show interest in warbletone sounds, a hand-held machine can be used to make broadband sounds, as some children find these sounds more interesting than warbletones such as the “baa” noise that a sheep makes or the ringing sound that a bell makes.

If a child responds to broadband sounds at quiet levels, it is likely that they will be hearing at least part of each word when they are being spoken to. However, because broadband sounds contain lots of different pitches/frequencies, a child could still respond at quiet levels when they have a significant hearing loss for example if a child has a high frequency hearing loss at 4kHz they will still hear broadband sounds at quiet levels, but will not be able to hear the sound “ss” when they are spoken to.

3) The High Frequency Rattle and live voiced “ss” When a child does not show interest in warbletone sounds, it is still possible to test their hearing for high frequency/pitched sounds. The Manchester High Frequency Rattle makes a sound that is above 5kHz and the Audiologist can make a “ss” sound that has a frequency/pitch of about 4kHz. Most children that have a permanent hearing loss do not hear high frequency/pitched sounds at quiet levels, so a significant hearing loss in both ears is less likely when a child responds to the High Frequency Rattle or live voiced “ss”” at quiet levels.

4) Sounds that do not test individual frequencies/pitches for example musical toys, rattles, singing

Broadband sounds can be made by the Audiologist and their loudness level can be measured for example a tambourine being shaken or a child’s name being called. As described earlier, a child can still have a significant hearing loss even when they respond to broadband sounds at quiet levels.

During the test, sounds are presented at different intensity/loudness levels and at irregular intervals, so that it is difficult for the child to anticipate when the sound is going to come on. The Audiologist will also try to make it difficult for the child to predict whether the sound will be made on the right or left side.

The Results

When the assessment has been completed the following results are possible on the day of the test:

A) Satisfactory Result

If your child gave repeatable head-turns at a quiet level of 25dBHL for 500Hz, 1kHz, 2kHz and 4kHz with good reliability, this is considered to be a satisfactory result.

When a satisfactory result has been achieved, it is likely your child has sufficient hearing for the sounds of speech to be heard in at least one ear.

B) Satisfactory Result Not Achieved

If your child did not give repeatable head-turns at a quiet level of 25dBHL for 500Hz, 1kHz, 2kHz and 4kHz with good reliability, further testing will usually be required.
The options will be discussed with you and a plan agreed before you leave.

If you have any further queries 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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