

Medical tests used to diagnose the cause of permanent deafness in Paediatric Audiology

Important information for patients

For further detail, please see 'Understanding your Child's Hearing Tests' booklet from the National Deaf Children's Society (NDCS)

Sometimes, hearing loss can be part of a condition or syndrome (meaning a collection of symptoms commonly appearing together). This is why tests on other parts of your child's body may be suggested (like the eyes and heart). For approximately 50% of children, it is not possible to find a cause for permanent hearing loss (but it can be helpful to know what did not cause it).

The tests will be performed by a number of specialist staff and a brief description of what to expect is given below. Your child may not need all of these tests, which will be discussed in detail with you by the doctor

Medical History:

This will include questions about pregnancy and questions about your child's development, illnesses, medications and family history.

Physical Examination:

The doctor will look at your child and may also take measurements. They are looking for minor signs which may help to diagnose the cause of hearing loss. The doctor will also assess your child's development (see your child's Personal Child Health Record (red book) for further details on this).

Family hearing tests:

As hearing loss tends to run in families in more than half the cases, you will also be asked about the hearing of family members. We will arrange to test the hearing of all immediate family members.

Imaging:

This is a term to describe ways of looking at parts inside the body. The main scans are the MRI (Magnetic Resonance Imaging) and CT (Computerised Tomography). These can both look at the structure of the ear and hearing nerve. The MRI scan is used more often and can be done from birth. For both scans, children need to be absolutely still for the time of the scan, which can involve a light sedative or anaesthetic, depending on their age.

A scan of the kidneys (Renal Ultrasound) may also be performed on some children.

Blood, Urine and Saliva tests:

There are several infections that can cause hearing loss in babies, the commonest being a virus called Cytomegalovirus. This can be detected by a salivary swab or urine test before 1 year of age or a blood test after 1 year of age. Infections due to Cytomegalovirus are very common in all ages and do not usually cause any symptoms, but if acquired during pregnancy, can cause a hearing loss

in children. The doctor may request your consent for retrieval and testing the heel prick blood spot (Guthrie card), which was taken at the time of birth, in order to establish if Cytomegalovirus infection was acquired before birth.

There are other blood and urine tests that are sometimes done and the doctor will discuss them with you if they are needed. All of the blood tests are usually done using one blood sample.

Urine tests are also done in older children to rule out a rare kidney problem which may be associated with a hearing loss.

Genetic testing:

In around 50% of children with hearing loss, there is a genetic cause. A genetic test will involve your child having a blood test. The commonest gene that causes hearing loss is the Connexin gene. There are several other genes that can cause hearing loss but not all genes related to hearing loss have yet been identified. Your child may be offered a new genomic test, which looks for more than 100 common genes that cause deafness. The doctor will discuss this with you and obtain your consent before requesting the test. Information from genetic testing can sometimes be used to predict the likelihood of you having another child with a hearing loss.

Depending on your child's history, examination findings and results, the doctor may refer your child to a Clinical Geneticist or a Genetic Counsellor.

Ophthalmology (eye test):

Children with hearing loss rely on their eyesight more so than other children. Some children with a permanent hearing loss also have an eye problem. In babies, an assessment of the eye is done to check the eyes are healthy. All children with hearing loss should have regular eye tests throughout childhood.

Electrocardiography (ECG):

This is a test to record the electrical activity of the heart and the specialist will discuss with you if your child needs to have it done.

Inner ear balance assessment (vestibular assessment):

Up to a quarter of children with a significant hearing loss may have problems with their balance. The doctor may carry out inner ear balance tests in clinic. If your child needs more detailed balance assessments, these will be discussed with you.

Next steps:

Some of the test results take a few weeks or months to be processed. The doctor will be in touch with you to inform you and discuss with you the test results as they are received.

Based on the outcome of the above assessments and tests, the doctor will discuss with you if your child needs any further tests or assessments.

This information is available in audio, Braille, large print and other languages. To request a copy, please ask a member of staff.

