

## **What to Expect during Your Child's Visit**

There are a variety of tests that can be used to assess how much hearing your child has. The tests used will vary with your child's age and stage of development. Whilst it should be possible to assess the hearing at any age or stage of development it may be necessary to perform several different tests over more than one appointment to build up a clear picture of your child's hearing ability. The information below is offered as a guide to what to expect during your child's appointment.

### **Tympanometry (All Ages)**

Tympanometry is used to check how well the moving parts of the middle ear are working. A soft earpiece is held gently in the ear canal. A pump causes the pressure of the air in the ear canal to gently change. The eardrum should move freely with the change in pressure. This test is quick to perform and can be done on most children, however this cannot be done for some conditions such as excessive ear wax for example.

### **Oto-Acoustic Emissions (OAE) - Newborn to around 4 months**

The otoacoustic emission test is commonly used for new-born screening and works on the principle that a healthy cochlear will produce a faint response when stimulated with sound. A small ear-piece is placed in the child's ear. A clicking sound is played and if the cochlear is working the ear-piece will pick up the response and it will be recorded by a computer. An OAE can be recorded quickly, but it is affected by background noise, excessive ear wax or middle ear fluid. Whilst it is technically possible to use this test on any age group, in general a child older than 4 months is not still/quiet for long enough for this test to be performed.

### **Auditory Brainstem Response (ABR) – Newborn to around 4 months**

This test is used for babies who have not had a clear response on their new-born hearing screen. It measures sounds being sent from the cochlear and through the auditory nerve to the brain. The audiologist will lightly scrub the skin on the child's forehead and behind both ears. Three sensors will then be placed on the skin. Sound is delivered through an insert or headphone and the response will be recorded on a computer. The audiologist will interpret the results to find the quietest level of sound being picked up by the hearing nerves. For an accurate result the child must be sleeping throughout, as other brain or muscle activity will interfere with the ability to record the response from the hearing nerve. The testing can take up to two hours. Whilst it is technically possible to use this test on any age group, in general a child older than 4 months is not still/quiet for long enough for this test to be performed.

### **Visual Response Audiometry (VRA) - Around 6 months to around 2 and a half years**

During this test sounds of different frequencies and loudness will be played either through speakers or insert phones. When the child hears the sound they will turn their head and a visual "reward" is activated, such as a video or a puppet lighting up. Your child will be trained to turn through a process known as "conditioning". The toy and a loud sound are played simultaneously at first so that your child learns to associate the reward with the sound. Once conditioned the reward is only activated when your child turns their head for the sound. It is possible to test a well-conditioned child more quickly, at more frequencies and at lower levels than are possible during an ABR test. Whilst it is possible to perform this test on a 6 month old, the ability of a child to be conditioned varies and some children are not developmentally ready until they are around 9 months or older. There may also be a short period where a child becomes too old for VRA but not yet ready for PTA (see below). In this case the audiologist will discuss games you can play at home to train your child for the next appointment.

### **Pure Tone Audiometry (PTA) – Around 3 years and above**

From about the age of three children are actively involved in testing. Younger children are shown how to move a toy (for example putting a man in a boat) each time they hear a sound. Older children will be asked to press a button in response to sounds. During this test sounds of different frequencies and loudness will be played either through a speaker for younger children, or headphones for older ones.