

Hearing Testing for Children

The audiologist will use a combination of tests to measure your child's responses to sounds and the function of your child's ears. Each of the tests measures a different part of the auditory (hearing) system and adds information to the overall picture of your child's hearing.

Behavioural Audiometry

The audiologist will be measuring your child's hearing levels for several different frequencies (itches) of sound. This will let the audiologist generate your child's audiogram, the overall picture of your child's hearing.

School age children are generally able to raise their hand or press a button when they hear the tone. Hearing testing for younger children and children with additional needs can require a little more creativity. The audiologist will work with you to figure out how your child can demonstrate his or her best hearing.

Hearing Testing for Toddlers and Preschoolers

Conditioned Play Audiometry: This is a hearing test in the form of a game and is typically used for children 2 to 4 years developmental age. Your child will be taught how to do a specific action, such as dropping a block in a bucket or feeding Cookie Monster, every time he or she hears a tone. Tones are presented at different pitches through headphones or speakers. This test relies on the cooperation of your child to sit still and listen.



Conditioned Play Audiometry

Hearing Testing for Infants

Visual Reinforcement Audiometry (VRA): This hearing test is typically used for infants over 6 months of age who are not yet developmentally ready for Conditioned Play Audiometry (above). This test takes advantage of your baby's natural head turn to look for sounds in his or her environment. The audiologist will train your baby to turn towards sounds, using of toys that light up as a visual reward. Sounds are presented through earphones and/or speakers.

Behavioural Observation Audiometry (BOA): BOA is a test used to observe hearing behaviour to sound when VRA is not possible. This is often used for infants less than 6 months of age or who are developmentally not able to turn their head towards a sound. Additional testing is often necessary to supplement BOA.

Tympanometry and Otoacoustic Emissions

Tympanometry and Otoacoustic emission testing are two of the most commonly used measures of ear function. These results are added to your child's behavioural audiometry results to give an overall picture of your child's hearing.

Tympanometry is a quick test that measures movement of the eardrum by changing the pressure inside the ear canal. This is the best test for detecting middle ear fluid and other problems of the middle ear. Tympanogram testing also may be used to check if pressure equalization tubes (tympanostomy tubes) are in place and working properly. Tympanometry testing does not, however, show whether hearing is normal or abnormal.



Tympanometry testing

Otoacoustic Emission (OAE) testing is a quick measure of cochlea (inner ear) function. For OAE testing, a soft probe tip is placed into the ear canal. Sounds are sent through the probe tip into the ear. When the ear detects the sounds, the cochlea emits a response back that is measured by a sensitive microphone in the probe tip. This response is called an otoacoustic emission (OAE). When OAE responses are present, it often means that the hearing is near-normal. There are many reasons why OAE responses might be absent, including middle ear fluid and/or permanent hearing loss.



Otoacoustic emission probe tip

Electrophysiological Hearing Testing

Sometimes a complete picture of your child's hearing cannot be determined while your child is awake and responding to sounds using the hearing tests described above. Electrophysiological hearing testing is completed for infants less than 6 months of age, or for older children whose hearing status cannot be reliably determined using behavioural audiometry.

Auditory Brainstem Response (ABR)/Auditory Steady-State Response (ASSR):

Your child is set-up for ABR/ASSR testing with two electrodes (sensors) on the forehead and one behind each ear. Sounds are played through earphones that fit inside your child's ears. The electrodes detect how your child's ears and auditory (hearing) nerve respond to sounds and testing can take several hours. In most cases the results will be explained to you immediately after the test. ABR/ASSR testing is done regularly for infants who do not pass their newborn hearing screening. ABR/ASSR is safe and non-invasive but it can only be completed while your child is sleeping. See the BCEHP Sleep Instructions handout for more information. For children older than 6 months of age, ABR testing is typically done under sedation. See the BC Children's Hospital Sedated ABR handout for more information.



ABR/ASSR testing

Cortical Testing is done rarely and only for certain situations. The test setup is very similar to that described for ABR/ASSR except for this test, your child must be awake and relatively still. Depending on the age of your child, he or she may be asked to watch a movie, or have their attention focused on a visual object. For more information, please discuss with your local public health audiologist.



Cortical testing