

## **Hearing Tests for Young Children**

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Parents often wonder how hearing tests are performed on young children. Young children may not be able to raise their hands or press a button in response to sounds, like older children or adults when they hear a sound. There are different audiological tests that can be performed, depending upon the age of the child. All of these tests are painless, but some children may be frightened by some of the procedures.

**Visual reinforcement audiometry:** Children who are old enough to hold their heads up and turn their heads in response to a sound can be tested using “visual reinforcement audiometry.” This test is often performed using speakers mounted on either side of an audiological test booth, but it can also be done using earphones. When the child turns his/her head toward the sound, the audiologist provides something to encourage the response called a “reinforcer.” The reinforcer might be a light or movement that comes from a lighted animated toy. The light or movement from the toy serves as a reward for the head turn.

When there is no sound, the audiologist waits for the child to look in the center of the room by using a lighted toy or by using an assistant to draw the child’s attention to the center. Then, another sound can be presented and another head turn can be encouraged. The reinforcers act to keep the task interesting so the child will continue to turn his/her head in response to the sounds. Children below the age of about 18 months may not respond in what is considered the normal range of sound, even if they have normal hearing because they are not mature enough to know that very soft sounds have meaning. So, they may appear not to respond to these sounds. This test may only be an estimate of hearing sensitivity at this age. See the following link for more details:

[http://www.medicinenet.com/detecting\\_hearing\\_loss\\_in\\_children/page2.htm](http://www.medicinenet.com/detecting_hearing_loss_in_children/page2.htm).

**Play Audiometry:** Older children can play a listening game called “play audiometry.” The child is asked to put a block in a bucket, put a peg in a peg board or perform some play task in response to a sound. This test is normally performed on children over 2 to 3 years of age and usually gives very accurate information about hearing sensitivity, as long as the child understands the task. The following link explains play audiometry in more detail:

[http://www.medicinenet.com/detecting\\_hearing\\_loss\\_in\\_children/page2.htm](http://www.medicinenet.com/detecting_hearing_loss_in_children/page2.htm).

**Auditory Brainstem Response (ABR):** For babies, testing that does not require a response from the child is performed. The child must be sleeping because there can be no movement during the testing. These tests are called “auditory brainstem response” or “ABR” and “auditory steady state response” testing. Electrodes (similar to those used for an electroencephalogram (EEG) are placed on the child’s head. Sounds such as clicks or tone bursts are sent to the child’s ear. The machine reads the responses from the auditory nerve, indicating whether or not the child is hearing the sounds. If there is no response or a reduced response from the auditory nerve, there is most likely a hearing loss. For more information:

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[http://www.medicinenet.com/detecting\\_hearing\\_loss\\_in\\_children/page3.htm](http://www.medicinenet.com/detecting_hearing_loss_in_children/page3.htm),  
[http://www.medicinenet.com/detecting\\_hearing\\_loss\\_in\\_children/page5.htm](http://www.medicinenet.com/detecting_hearing_loss_in_children/page5.htm).

**Otoacoustic emissions:** Sounds are put into the ear canal with a small earphone. If the inner ear hair cells are healthy, they will emit a sound back into the ear canal, which the machine can detect. If the response is detected, the child most likely has normal hearing, but a mild hearing loss, a hearing loss due to an auditory nerve abnormality, or a problem processing sounds in the brain will not be detected by this test. This is normally used for hearing screening or to add more information to the other tests that are performed. Alone, this procedure cannot be used as a complete hearing test. Here is more information:

[http://www.medicinenet.com/detecting\\_hearing\\_loss\\_in\\_children/page3.htm](http://www.medicinenet.com/detecting_hearing_loss_in_children/page3.htm).

**Tympanometry:** Since many children are prone to getting ear infections and/or middle ear fluid, testing is performed to determine the integrity of the middle ear (where ear infections and middle ear fluid occur). This testing is called tympanometry. A small amount of air pressure is put into the ear canal to measure the amount of eardrum movement. If the eardrum moves well, there is air in the middle ear (as there should be). If the eardrum is stiff, there is most likely middle ear fluid and possibly an ear infection present. If this is the case, the audiologist will refer the child to a physician for treatment. For more information:

[http://www.medicinenet.com/detecting\\_hearing\\_loss\\_in\\_children/page4.htm](http://www.medicinenet.com/detecting_hearing_loss_in_children/page4.htm).

An accurate and reliable hearing test can be performed at any age. Therefore, if a parent or teacher suspects that a child has a hearing loss, schedule an appointment with an audiologist or contact the local school district child find team to determine whether there is a hearing loss as soon as one is suspected.