



Canadian Hard of Hearing Association
Association des malentendants canadiens

X-rays and Other Diagnostic Tools

Admittedly, you may never get or even need an x-ray of your inner ear, but x-rays are just one type of tool that help you understand your hearing loss. Here are a few others worth noting.

Acoustic Reflex Threshold Measurement

This test measures a muscle reflex in the middle ear in response to loud sounds. This combined with other tests gives the audiologist information about how well the middle ear is working, nerve function, and hearing level or sensitivity.

Audiograms

An audiogram is a test done in a sound proof booth. Sound is transmitted via headphones or inserts, (small sponges connected to tubing which puts sound directly into the ear canal) and determines at what loudness you can hear various frequencies. You will increase your understanding of your hearing loss, limitations, and how to maximize your residual hearing by understanding your Audiogram. Never leave your Doctor's, Audiologist's or Dispenser's office without getting an explanation of your Audiogram and a copy to take home. Audiograms are useful tools for Speech Language Pathologists, Rehabilitation Counselors, Employment Specialists, etc.

ABR's (Auditory Brainstem Response)

This test will determine the brain's response to sound. Did the brain receive any sound? What was its response? Sometimes it is referred to as a BAER (Brainstem auditory evoked response), a BSER (Brainstem evoked response), or a BAEP (Brainstem auditory evoked potential).

Blood Tests

If the cause of your hearing loss is uncertain your doctor may order blood testing. With advances in genetics and medicine, the cause of some types of hearing loss may be determined by checking for genetic markers, or testing blood for thyroid, diabetes or other medical conditions. This can help give

information about whether your hearing loss may change, or if there is treatment that may help improve or stabilize your hearing.

CT scan

CT scans (computed tomography) shows structures made of bone, such as the hammer, anvil and stirrup middle ear bones, the bony casing around the cochlea and semi-circular canals (balance), and the passageway for nerves entering the skull. CT scans can tell the doctor if there is malformation.

MRI Scan

A MRI (magnetic resonance imaging) shows the structure of soft tissue, such as the auditory nerves and other structures of hearing.

Otoacoustic Emissions (OAE)

This test will determine the cochlea's response to sound. Did the cochlea receive sound, and what was its response? It can help determine if the ear is blocked or the cochlea is damaged.

Pure Tone Audiometry

This test finds out if you hear different tones. Tones are sounds with different loudness and pitch. Children may be given two kinds of pure tone audiometry. The first kind is called Visual Reinforcement Audiometry. It trains children to look at sounds when they hear them. The second kind of Pure Tone Audiometry for children is called Conditioned Play Audiometry. In this test the child is trained to do something when they hear the sound.

Speech Audiometry

This is a test which determines if you hear and understand speech. Three things may be measured: 1) A threshold for speech - called the speech detection threshold. This is the softest speech you can hear; 2) Speech recognition threshold - this is the softest level at which you can hear and repeat two-syllable words; and 3) Word recognition testing (also called Word Discrimination) - this is the number of words (in percent) you can identify by repeating them, presented at a normal listening level.

Tympanometry Test

This test tells the audiologist how well sounds travel to the middle ear and if there are any problems with the eardrum, middle ear bones or fluid in the middle ear.

For further information go to:

- <http://www.pacificaudiology.com/>
- <http://www.raisingdeafkids.org/hearingloss/testing/audiogram/>

- <http://www.ibwebs.com/Medical%20Information/Diagnosis.htm#ABR>
- <http://www.audiologynet.com/audiological-tests.html>
- <http://www.raisingdeafkids.org/hearingloss/testing/hearingtests/>
- <http://www.audiologyawareness.com/hhelp/htests.htm>
- <http://www.asha.org/public/hearing/testing/assess.htm>
- <http://www.asha.org/public/hearing/disorders/>
- <http://www.canadianaudiology.ca/index.html>

Information Kits, Letters and other Publications

What do Information Kits, letters and publications have to do with X-rays? Simple, they are the second most important communication tool available to you after diagnostics.

In an article entitled: *In one Ear and out the Other - What do Patients Remember*, by Robert H. Margolis (http://www.audiologyincorporated.com/ai_wpr.htm), he described how many studies found that only "50% of information provided by healthcare providers is retained. Depending on conditions, 40-80% can be forgotten immediately." This is due to many factors including familiarity with hearing loss terms, emotional and physical state, age, and anxiety, how the information is presented, and the clinician's communication style. How many critical facts will you miss or misunderstand the next time you see your Doctor, Audiologist, or Hearing Aid Dispenser? You cannot expect to remember it all, the above studies show it is highly unlikely you will. To maximize your understanding ask for written information about the issues discussed, especially if it related to testing, diagnosis, treatment, operations, hearing aid or device selection, purchases, costs, community services, etc.

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