Hearing tests can be confusing. Although we are familiar with the pure tone hearing test that is the test with a series of “beeps” that combines various frequencies and loudness. The person being tested presses a button or raises their hand to indicate they heard the tone. There are many other tests that remain a mystery to many.

Some people wonder why they need to visit an audiologist to test their hearing. Skepticism arises since audiologists also sell hearing aids and therefore give the impression they may not be objective. It’s important to remember that hearing aids are fitted to the individual’s needs and lifestyle. Audiologists have an important place in evaluating a person’s hearing from a paramedical standpoint. People are aware of hearing loss due to aging but may not be familiar with other causes of hearing loss such as tumors, medication induced hearing loss, noise, etc.. The audiologist's tests add valuable information to diagnosing medical conditions that affect hearing.

In New York State audiologists are licensed by the NYS Education Department. They must fulfill both the educational and ethical standards of practice to obtain licensure. More information can be found at the Office of Professions: http://www.op.nysed.gov The following is the link directly to the speech and hearing section of the NY hearing and speech association. http://www.op.nysed.gov/prof/slpa/speechlic.htm.

Selling hearing aids to someone who doesn't need them would soon put an audiologist out of business and of course they would lose their license. Most audiologists are also certified by The American Speech, Language, and Hearing Association http://www.asha.org. This certification group also upholds standards for audiologist (and speech and hearing professionals) who apply for certification through them. Audiologist also must meet strict standards, if they want to be certified by them.

ONLINE TESTING: You may have seen hearing screening tests that can be taken online. There are many factors which may interfere with the accuracy of online testing such as background noise in home or office, the inability to check the ears for earwax or growths, and not knowing the quality or settings of the speakers in a person’s computer, to name a few. Taking one of these tests may provide you with additional information, but won’t take the place of an accurate screening test.

One new test, which came about in 2015, is testing over the telephone. This test does not use the familiar pure tone test tones, but rather uses a masked sound approach. It is said to be quite accurate. The cost to take the test is $5.00. The test is based on science and the testing entity does not sell hearing aids. Additional information is located at: https://www.nationalhearingtest.org/index.html. Be advised this test does not test for all types of hearing loss so read the information on the Website carefully.

IN OFFICE TESTING: Below you'll find some of the most common hearing tests that an audiologist uses when testing your hearing and the health of your ears. Some of these tests are used to find the best hearing aid, if that turns out to be needed; other tests may indicate a problem for which a referral to a specialist is required, note the progression of hearing loss or help with diagnosing a medical problem.

A **Pure-Tone Air Conduction Hearing** test determines the faintest tones a person can hear at selected pitches (frequencies), from low to high. The person sits in a sound attenuated booth or room, wearing a headset. You will hear a series of "beep" or tones and signal the tester by pressing a button or raising your hand. This is probably the most well known hearing screening test.

A **Pure-Tone Bone-Conduction Hearing** test determines the faintest tones a person can hear at selected pitches (frequencies), from low to highest but instead of using an earphone; an electromechanical device is placed on the mastoid process...the back, side of the skull. This test allows for stimulation of the inner ear by a mechanical vibration of the skull bones with almost no stimulation of the outer and middle ear. This test is used to help determine if a hearing loss from a problem in the pathway from the outer to middle ear.

An **otoacoustic** emissions (OAE) test is a computerized hearing *screening* test which is typically used to assess newborn hearing ability. It is also used to assess the function of the inner ear structures, for evaluation of tinnitus (ringing or other sounds) in patients, and to monitor hearing loss caused by Ototoxicity (medicine which affect hearing).

Sound is sent into the ear through a small earplug. The nerves of the inner ear move in response to a sound, and produce another sound that travels back to the small earplug and then measured. The response tells your audiologist how the inner ear is functioning in response to the sound.

Auditory Brainstem Response (ABR) and Auditory Steady State Response test (ASSR)

An Auditory Brainstem Response (ABR) and Auditory Steady State Response (ASSR) are computerized "hearing tests" which are used to measure the brain waves your brain produces when it hears sounds.

An ABR test is ordered when complete results cannot be obtained with a routine screening hearing test (audiogram). An ASSR test may be used in conjunction with the ABR for identifying hearing loss at specific pitches. The ABR test is also helps in ruling out or confirming auditory nerve lesions such as acoustic neuroma, a tumor affecting the nerve that carries sound to the brain. In addition, it is helpful in diagnosing demyelinating diseases such as multiple sclerosis.

There is no discomfort during the test or after.

The **electrocochleography** test is an objective measure of the electrical potentials generated in the inner ear as a result of sound stimulation. This test is most often used to determine if the inner ear (cochlea) has an excessive amount of fluid pressure. Excessive fluid pressure in the cochlea can cause symptoms such as hearing loss, the sense of fullness in the ear, dizziness, and/or tinnitus. These symptoms are sometimes indicative of certain ear pathologies such as Meniere's disease.

The electrocochleography takes up to 40 minutes to complete. Several surface electrodes placed on the head and a tiny microphone and an earphone is placed into the canal of the test ear.

Tympanometry assists in the detection of fluid in the *middle ear*, perforation of the eardrum, or wax blocking the ear canal. Tympanometry pushes air pressure into the ear canal, making the eardrum move back and forth. The test measures the mobility of the eardrum. This test can reveal a stiff eardrum, a hole in the eardrum, or an eardrum that moves too much.

Acoustic reflex measures additional information about the possible location of the hearing problem. A tiny muscle in the middle ear contracts when a loud sound occurs. The loudness level at which the acoustic reflex occurs—or the absence of the acoustic reflex—gives information to the audiologist about the type of hearing loss.

Static acoustic impedance measures the physical volume of air in the ear canal. This test is useful in identifying a perforated eardrum or checking the openness of ventilation tubes.

The speech audiometry portion of your audiological evaluation consists of not just one, but two "word" tests—the Speech Reception Threshold (SRT) test and the Speech Discrimination (SD) or Word Recognition (WR) test. The SRT and the SD/WR tests are entirely different tests—each with totally different objectives.

SPEECH RECOGNITION TESTS

Speech Reception Threshold (SRT) Testing

The purpose of the Speech Reception Threshold (SRT) test, sometimes called the speech-recognition threshold test, is to determine the softest level at which you just begin to recognize speech. The test does not determine if you understand what you've heard, just that you heard the speech.

The audiologist reads a list of easy-to-distinguish, familiar spondee words. (Spondee words are two-syllable words that have equal stress on each syllable. You'll notice that when you repeat a spondee, you speak each syllable at the same volume and take the same length of time saying each syllable. Some examples of spondee words are: baseball, cowboy, railroad, hotdog, ice cream, airplane, outside and cupcake. The

audiologist will vary the volume to find the softest sound level in decibels at which you can just hear and correctly repeat 50% of these words. This level is your SRT score expressed in decibels (dB).

Discrimination Testing
The purpose of Speech Discrimination (SD) testing (also called Word Recognition (WR) testing) is to determine how well you hear and understand speech when the volume is set at your Most Comfortable Level (MCL).

To do this, your audiologist says a series of 50 *single-syllable* phonetically balanced words. For this test, your audiologist will say, “Say the word ‘come.’ Say the word ‘high.’ Say the word ‘chew.’ Say the word ‘knees,’” and so on. You repeat back what you think you hear. During this test, your audiologist keeps their voice at the same loudness throughout. A record is kept of the percentage of the words you correctly which you repeat correctly (for each ear).

Your **Speech Discrimination** score is an important indicator of how much difficulty you will have communicating and how well you may do if you wear a hearing aid. If your speech discrimination is poor, speech will sound garbled to you. If your speech discrimination falls below 40%, you may be eligible for a cochlear implant.

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