

AUDIOMETRY GUIDES

AUDIOMETRY SPECIAL TESTS

ABLB

The perceived growth of loudness of a suprathreshold tone in an impaired ear may differ from the compared growth of loudness of a tone of identical frequency in the normal ear. Recruitment, if present, may be found.

SISI

SISI stands for Short Increment Sensitivity Index. This is a legacy test in audiometry that determines site of lesion. Patients with cochlear hearing loss are able to detect very small changes of loudness when compared to patients with normal hearing or retrocochlear pathology.

Tone Decay

Tone decay is a legacy test in audiometry that evaluates abnormal adaptation to sound caused by a retrocochlear pathology such as an acoustic neuroma. This is a subjective evaluation that can add diagnostic value to an audiometric evaluation.

Stenger

The Stenger is an audiometric test that is used quite frequently when patients are giving inconsistent responses and malingering is suspected. The Brain is an amazing tool. If two stimuli identical in all ways except loudness are introduced simultaneously to both ears, only the louder tone will be perceived. It is possible to use either Tone or Speech stimuli to find malingerers with the Stenger test.

Masking

Masking is a technique to isolate the test ear when there is suspected crossover in an asymmetric loss. Narrow band noise or speech noise is introduced to the non-test ear to ensure that the response is from the test ear. Masking is a fun challenge because you have to consider the transducers, the interaural attenuation, and the thresholds to make sure you have an effective masking level.

Bekesy

Bekesy audiometry is a method in which the patient controls the attenuator to identify his/her threshold. The patient is given the response switch that controls the audiometer. Then s/he is instructed to press the button when the tone becomes audible and release the button until the tone is inaudible. Essentially, the audiometer is recording a "zig-zag" pattern based on when the button is pushed. Per the literature, the button controls the intensity of the signal and records.

There are two methods of Bekesy Audiometry. Sweep-Frequency Bekesy Audiometry is when the stimulus is a frequency sweep. The test tone increases smoothly from 100-10,000 Hz at a rate of one octave/second. The other method is Fixed Frequency Bekesy Audiometry and is achieved in the same fashion – just one frequency at a time (for a period of about 3 minutes). The rate of attenuation

increase or decrease is typically 2.5 dB per second. For both methods of Bekesy audiometry, each "sweep" is repeated two times. One time is presented with a continuous tone and the other presentation is a pulsed stimulus. Interestingly enough, there is no specific method for "automated tone decay - Bekesy method;" however, the tracings are classified and tracing III appears to be the result of tone decay.

TEN Test

The TEN test, or Threshold Equalizing Noise test, uses a specific broad band noise for ipsilateral masking to determine whether or not there are cochlear dead regions. A hearing loss of 60 decibels or more could be caused by outer hair cell loss OR inner hair cell loss. If it's inner hair cell loss, that's considered a cochlear dead region.

Pediatric Noise

Pediatric hearing testing requires fast thinking and lots of variation of stimuli to get results. Historically, audiologists have used narrow band noise as an additional stimulus to create interest and keep attention of their little patients. NBN is definitely frequency specific, but it is calibrated as effective masking and has a wider spectral envelope - which could lead to false thresholds. Pediatric noise is a super steep narrow band noise that is calibrated to the pure tone standards. it's easy to access and gives the audiologist a unique stimulus that they can trust to elicit accurate responses.