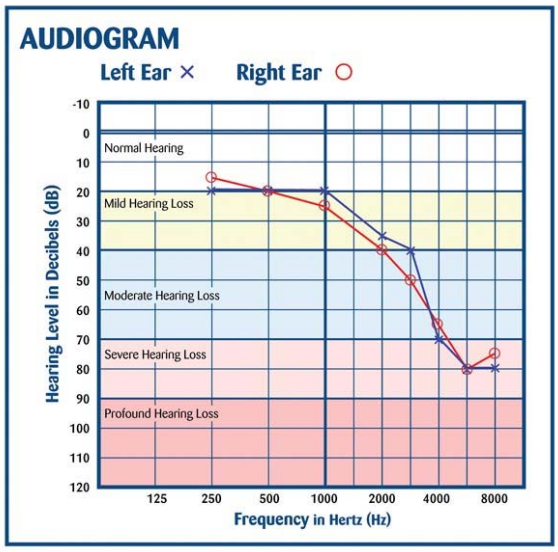
Audiogram Interpretation

The audiogram is a graphic or numeric representation of hearing sensitivity and word understanding ability. Some will also including information on middle ear function. The combination of these tests provides information on the function of the auditory system.



The graphic audiogram is laid out with frequency, or pitch, across the top. The frequency is arranged from low (bass), on the left to high (treble), on the right, and is measured in Hertz (Hz). Loudness, measured in decibel (dB), is arranged from soft to loud reading from top to bottom.

Using headphones to deliver a tone to each ear the patient's response to the softest level is plotted using a red circle (or triangle) for the right ear and a blue 'X' (or square) for the left ear. This is considered the air conduction (AC) threshold.

A bone conduction oscillator (vibrator) is placed behind the ear(s) on the mastoid bone (bony bump on the skull behind the ear at the hair line). The responses to the softest tone heard with the oscillator are considered the bone conduction (BC) thresholds. The symbols used to plot the bone conduction threshold are <, [, >,].

Hearing loss is described by the mathematical average of 500 Hz, 1000 Hz, and 2000 Hz. This is referred to as the pure tone average (PTA). Words used to describe the degree of hearing loss are: *normal*, *slight*, *mild*, *moderate*, *moderately-severe*, *severe* and *profound*. The larger the PTA the greater the hearing loss.

There are three (3) types of hearing loss: conductive (when the BC thresholds are better than the AC thresholds); sensorineural (when the AC and BC thresholds are essentially the same); and mixed (when both AC and BC are abnormal but the BC thresholds are better than the AC thresholds).

Speech testing is also part of the diagnostic audiological evaluation. There are two main types of speech testing. The first is a crosscheck of the PTA. Two-syllable words are presented at decreasing levels to find the softest level the words can be repeated back correctly. The second speech test is a word discrimination test. A list of single syllable words is presented at a loudness compensating for the degree of hearing loss. A percentage of correct responses is then calculated. This is referred to as the word discrimination score or word recognition score.

Finally, middle ear testing may or may not be included with diagnostic audiological evaluations. This test is very helpful in determining middle ear function and determining the type of hearing loss. For more information on these tests please see the **Immittance Testing** handout.

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