

Effects of middle ear disorders on wideband acoustic immittance in clinical populations

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Overview:

Wideband acoustic immittance (WAI) noninvasively measures middle ear function by measuring the conduction of sound from the outer to the middle ear over a wide range of audible frequencies (250 to 8000 Hz). WAI measures may be considered as extending the capabilities of standard 226-Hz tympanometry by incorporating a large number of measures such as admittance magnitude, admittance phase, ear canal volume, wideband absorbance (WBA) and resonance frequency of the middle ear. The most commonly used measure of WAI is WBA which can be measured at ambient pressure or other ear canal pressures. WBA has emerged as a new clinical tool with greater accuracy than standard tympanometry in identifying middle ear pathologies.

The efficacy of assessing and monitoring middle ear disorders most commonly encountered in a clinical population using WAI will be discussed in this learning lab using case reports and examples. Hands on experience with the WAI unit will be provided. The following pathological and non-pathological effects on WAI will be discussed in this learning lab: (1) developmental aspects with normative WAI data in newborns, infants, school-aged children and adults; (2) ethnicity and races; (3) otitis media with effusion, including the thickness of effusions; (4) otosclerosis; (5) Eustachian tube dysfunction; (6) ear drum perforation; (7) patent grommets; (8) retraction pockets; (9) cholesteatomas, and (10) evaluation of type I myringoplasty.

Learning Objectives:

- Learn the principles of wideband acoustic immittance (WAI) measurements
- Understand the application of WAI in clinical diagnosis of middle ear pathologies in infants, children and adults
- Understand the effects of pathological and non-pathological effects on WAI
- Hands-on experience with the WAI equipment is emphasized