

# Clinical Tidbits

...for Physicians

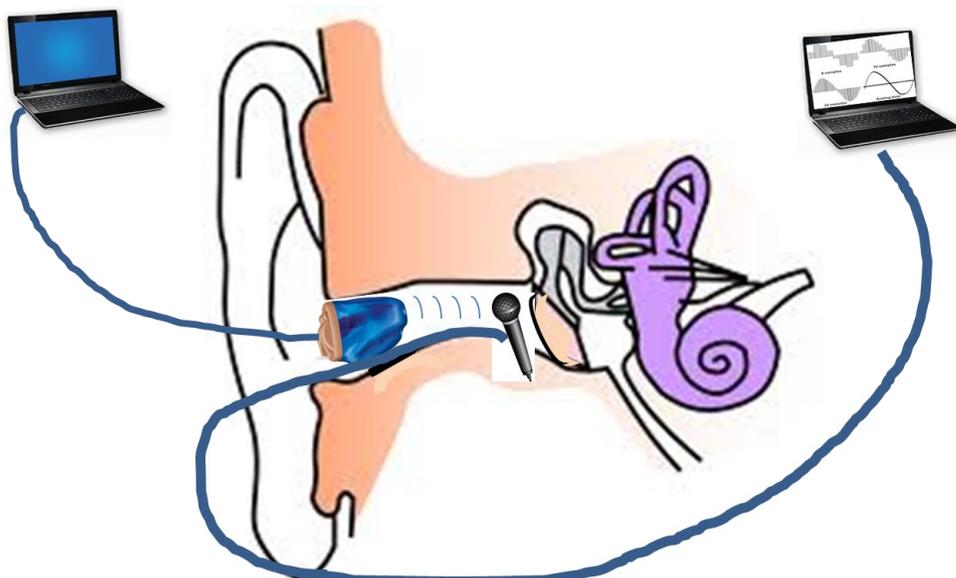
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## In-Situ Measurements of Hearing Aid Output

Hearing aids are devices intended to provide a finely prescribed amount of amplification at different frequencies to best correct for hearing loss. If the patient receives the correct amount of prescribed amplification, then speech understanding and environmental awareness of sounds will be maximized. In-situ measurements (i.e. "Real-Ear-Measurements") of hearing aid output confirm a correctly delivered amplification treatment for hearing loss.

Due to the acoustic effects of different sizes and shapes of individual ear canals, the tuning of prescriptive amplification needed to correct for hearing loss often becomes distorted on the way to the eardrum. Therefore, hearing aid fittings that rely solely on averages and predictions of the amplification response in the ear canal are almost always **significantly** incorrect. Incorrect or sub-optimal amplification causes a reduction in hearing aid benefit by reducing speech understanding, lessening environmental awareness, and sub-optimally stimulating remaining auditory hair cells and/or nerve fibers. Differences of 15-20dB from treatment targets are reported in the literature, which can easily result in a halving of speech understanding performance. To avoid these negative outcomes, real-ear-measures are the recommended procedure for all adult hearing aid fittings according

to the American Academy of Audiology. It is the gold standard procedure for verifying hearing aid function. Real-ear measurements are an in-situ measurement taken from less than 6mm away from the eardrum in a patient wearing hearing aids. This way, the amplification delivered to the patient can be adjusted for individual ear canal acoustics, and hence result in the most hearing aid benefit.



Schematic of a Real-Ear-measurement

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