Abstract

Background: Verified hearing aid fitting using Real Ear Measurement (REM) contributes to better outcomes for the user, but few audiologists use REM routinely. To increase REM usage, integrated and automated REMs have been introduced into hearing aid manufacturers' fitting software in recent years.

Purpose: The purpose of the following study is to investigate whether it is possible to achieve similar results when using Oticon REM AutoFit compared to REMs with manual adjustments when evaluating the accuracy of achieving target gain prescribed by NAL-NL2. REM AutoFit was also compared to a first fit procedure.

Method: Repeated measurements were taken on 20 ears using three fitting methods (REM AutoFit, first fit and manual REM). Real Ear Insertion Gain (REIG) was measured at nine discrete frequencies between 250 and 8000 Hz at two input levels (50 and 65 dB SPL). Differences between measured REIG and target gain were calculated to determine if deviations from the target gain were present as a function of frequency, input level, and fitting method.

Results: Using a first fit procedure, 85 and 70% of fittings deviated by more than 5 dB from the prescribed target gain at one or more test frequencies between 250 and 8000 Hz at an input level of 50 and 65 dB SPL, respectively. When using REM AutoFit, 80 and 65% of fittings deviated from the ±5 dB criterion at an input level of 50 and 65 dB SPL, respectively. When using REMs with manual adjustments, 15 and 5% of fittings deviated from the ±5 dB criterion at an input level of 50 and 65 dB SPL, respectively.

Conclusion: Based on the results found, REM AutoFit is not an equivalent method compared to manual REM if the goal is to achieve accurate hearing aid fittings based on a validated prescription procedure at all input levels and for all users. Since fittings that more closely follow the target gain provide better outcomes for the user, REM AutoFit should not replace REMs with manual adjustments in clinical settings.

Key words: automated real ear measurement, autoREM, first fit, hearing aid fitting, initial fit, target gain, NAL-NL2, prescription procedure, real ear insertion gain (REIG), real ear measurment (REM), verified fit