"Sounds just like my old hearing aid" – making a smooth transition

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Abstract

Background: Clients who are long term wearers of hearing instruments (HI) have particular preferences about the settings in their devices. When a "new" HI doesn't "sound like" what they are used to, particularly for severe-to profoundly impaired listeners, the adaptation period can be prolonged (Convery, E. & Keidser, G. 2011). This group of clients often presents unique fitting challenges because their ability to adapt to changes in sound is limited. This means the potential benefits of new hearing instruments can also be delayed during the replacement process. Some clients are good performers with and have strong preferences for their current instrumentation, but they require a change in technology for increased flexibility due to more complex listening situations. Whether transitioning to like technology or changing fitting strategies, it can be important to provide a baseline of familiarity.

This efficient procedure makes the transition from "current" to "new" HI go much smoother. Comparative coupler and real ear measures of the "current" and the "new" HI at various input levels and the application of percentile analysis provides the clinician with the tools to ensure that initial programming of the "new" HI is appropriate for that individual client. The measurements include the use of 55 dB SPL International Speech Test Signal (ISTS), 80 dB SPL (ISTS) and a measure of Maximum Power Output (MPO) to make sure that the hearing instrument's dynamic properties are assessed, but the procedure can be easily modified.

Procedure

HI Evaluation:

1. Measure the client's RECD. This will be used by the fitting software to enhance first fit to the chosen prescriptive algorithm; and will allow 2 cc measurements to better approximate real ear performance. *Optional step.*
2. Measure the probe microphone baseline measurement sequence for the "current" hearing instrument with ISTS at 55 dB, 80 dB and MPO. *(Figure 6).*
3. Measure the 2cc baseline measurement sequence for the "current" hearing instrument with ISTS at 55 dB, 80 dB and MPO. *(Figure 5).*

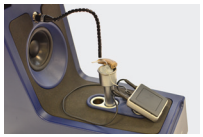
Pre-fitting:

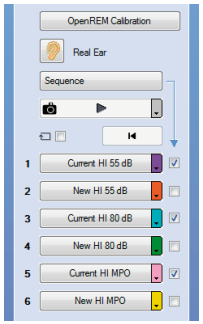
1. Attach the "new" HI to the coupler and prepare it for programming.
2. Using the 2cc baseline measurements as "targets," measure and adjust the "new" HI until the LTASS measurements between the current and new devices match as closely as possible. *(Figures 4 and 5).*
3. Once the "new" HI is programmed according to the above instructions to provide the closest 'match' to the "current" HI, it can be put onto the client's ear for additional fine tuning and REM. The additional gain handles available for the "new" HI make fine tuning to match the "current" HI relatively simple. *(Figures 2 and 3).*

Fitting:

1. Measure Openness of fit to establish any necessary modifications to the fitting procedure, related to acoustic coupling. *Optional step. (Figure 1).*
2. The probe microphone baseline measurements can serve as "targets" for comparative measurements with the "new" HI in the ear. *(Figure 6).*

- *Some verification systems allow comparisons using dB Gain Difference curves. This can be applied for both the REM and 2cc measurements for the 55 and 80 dB levels. MPO Response curves are compared in SPL.*





Transition Curves

Figure 1.

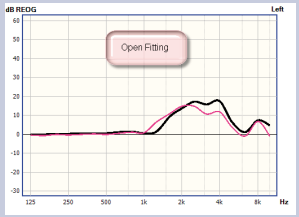


Figure 2.

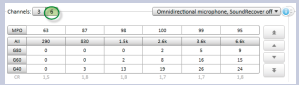


Figure 3.

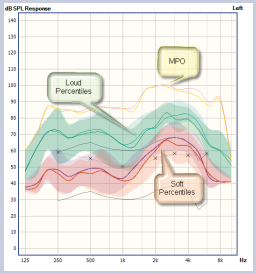


Figure 4.

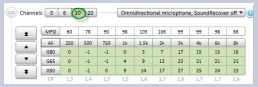


Figure 5.

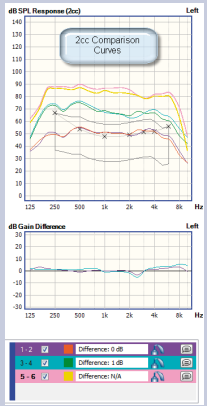
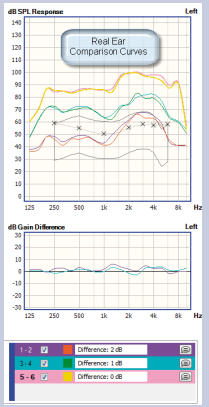


Fig. 6.



Percentile Analysis

- Being able to view the 30th and 99th percentiles enables the clinician to see fine tuning when matching the new HI to the current HI does not compromise audibility. It also allows for viewing the subtle differences in compression for the two instruments. *(Figure 3).*

Conclusions

- For long term hearing instrument wearers who are reluctant to change, using the frequency response of client's "current" HI as "target" for fitting the "new" device can help transition them into new class of device, new signal processing strategies, or even new HI brands.
- When using this simple HI transition approach, the clinician should consider the full dynamics of the measured responses; the impact of the compression strategies and variations in feature sets of the two devices.
- Counseling can therefore include informed discussions about the client's individualized advantages (familiarity) and disadvantages (under-utilization of new device capacity) for using existing instrumentation as the prescriptive target.

Future steps

- Investigation and case studies of the actual added benefit of using the presented approach to achieve faster acclimatization.
- Investigation into the use of this approach to compare and counsel regarding dynamic features.

References

- *Convery, E. & Keidser, G. (2011). Transitioning hearing aid users with severe and profound loss to a new gain/frequency response: benefit, perception and acceptance. Journal of the American Academy of Audiology. 22, 168-180*

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