

## **September 10, 2009 – What Audiologist Do**

Suzette Fields graciously gave a presentation on what Audiologists do.

The fitting of hearing aids involves three things, the physical fit, target settings based on the audiogram showing the hearing loss and any special features. Special features often first appear for the premium product and then migrate downward to other price levels.

The physical fit involves open or closed, which is whether the ear is physically closed off or not. Any closed fitting will have a vent to let air in and alleviate that stuffed up feeling (occlusion). An open fitting most often has a dome that fits in the ear, although a custom fit is possible.

The open fit permits more “natural” sound to enter the ear and uses natural hearing at lower frequencies (and more of the amplified sound to escape). It is best for people with high frequency hearing loss, and is generally more comfortable than a closed fit. Custom fit hearing aids require a mold of the ear. Tubing length and different dome sizes permit fitting without customization for the open fit. Resound was the first manufacturer to come out with the thin tube for cosmetic purposes. Suzette reminded us that thin tubing does not mean an open fit.

Venting permits air into the ear for those people with a closed fit, and helps with the occlusion. The more severe the hearing loss, the smaller the vent has to be to keep the amplified sound in the ear.

Feedback is when the amplified sound is re-captured and re-amplified and a whistle occurs. Hearing aids have feedback management systems (different names for different manufacturers). The system needs to be calibrated. One type of system uses out-of-phase cancellation (it provides additional sound which is up when the feedback is down and vice versa so the average is steady). The other management system drops the volume when feedback is occurring and is not as good. The feedback systems include Digital Feedback System (ReSound), Whistleblock (Phonak) and PureWave Feedback Eliminator (Starkey).

Background noise is handled in various ways. For the smallest hearing aids there is a directional filter on the microphone. Larger hearing aids have two microphones in each aid, and they may have either automatic directionality or fixed directionality. The noise control basically drops the volume on the outside of an approximately 60° sector facing forward. The reason that the smallest hearing aids use only one microphone is that space is needed between them. Some brands have a steady state noise control (this is what helps with road noise). The noise management systems are noise tracker (ReSound), NoiseBlock (Phonak) and Acoustic Scene Analyzer (Starkey). The beam width can be adjusted (that's the 60°) and the relative emphasis of low and high frequencies can also be adjusted.

To add clarity, the compression ratio (the volume of the soft sounds to the hard sounds) can be adjusted. High frequency adjustments usually help with the consonants and the overall volume can be increased.

### **Multiple Programs**

Digital programming allows for automatic changes. A program is a set of settings for a particular situation such as general speech, speech in noise, telephone or road noise. Often the hearing aids will adjust automatically and switch from one program to another; however some people want to be able to tell the aids which program they want to be in. This is done either with a push button on the aid or with a remote control. Some hearing aids do not offer this option (so if you want it, you need to make that clear).

## **Common Adjustments:**

“ Background Noise is too much”

This can be dealt with by making the noise control more aggressive, or decreasing the width of the beam for directionality, fixing directionality (as opposed to automatic), increasing the volume on speech frequencies or decreasing the bass tones.

“Speech is not clear”

This can be dealt with by increasing the volume on speech frequencies, increasing the overall volume, making sure that the aids are set on recommended targets or decreasing the compression ratio.

“ Everything is great except ...”

Warning: Don't make changes for an exception.

Consider an additional program for that environment, and premium hearing aids usually allow for adjusting for a specific environment.

## **Quick Fixes**

Tinnyness- Decrease the volume for high frequencies.

Echo- Decrease the volume for high frequencies.

Barrel feeling or stuffed up (occlusion). Increase venting, and adjust bass tones (could be up or down)

Own voice is too loud (decrease gain for loud sounds)

**ANext meeting October 8, 2009 – 3:00 p.m. - Annex**