Use it or Lose it

The importance of using recorded speech materials, Speech-in-Noise testing, and Speech Mapping for Comprehensive Hearing Evaluation and Hearing Aid Fittings

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What are you telling your patients about their hearing?

What is your responsibility?

Scenario...

How many of you have done a case history on a patient and thought, "oh boy, this person’s got PROBLEMS?"

Only to find out that their hearing is mostly within normal limits with maybe just a drop off in the highs?

But are you getting the complete picture? Is there something ELSE you should be doing?
Fact:
Recent research shows that as many as 2/3 of Caucasians over age 70 have hearing difficulties (mild to severe).

Fact:
Being African American gives you some protective factors against hearing loss (rates are 1/3 of that of whites).

Fact:
Only 1 in 5 people with hearing loss will successfully use a hearing aid.
Fact:
People with even mild hearing loss have accelerated brain shrinkage with aging.

Fact:
Adults with mild age-related hearing loss (right) show brain reorganization in hearing portions of brain, which are recruited for processing visual patterns. This is not seen in age-matched adults with normal hearing (left).

Fact:
Of those with only mild hearing loss, only 3% took advantage of hearing aids.
Fact:
Even a mild hearing loss doubles your risk of developing Alzheimer’s disease.

Summary of Research Findings
- Researchers Discover Brain Reorganization after Hearing Loss. The Hearing Review. Online article reviewed May 27, 2016 published May 28, 2015

What are you telling your patients?
What is your responsibility as a hearing professional?
Case Study 1: JM

- Male, married and employed full-time, aged 56
- First visited Lafayette Hearing Center in 2013
- Primary complaints of tinnitus and some milder complaints about not hearing well
  - Meetings
  - Teenage daughter in a restaurant
  - Work environment has concrete walls, hard floors, lots of echoes

Audiogram from 2013

- How many of you would have recommended a hearing aid(s) for this person?
- What if he really didn’t want a hearing aid(s)?

Quick Speech-in-Noise Test

- First published data from 2004 by Mead Killion
  - Uses a female speaker at different signal to noise ratios over a multi-talker background
  - Included in GN Otometric & Madsen diagnostic audiometers now
  - Now available from Etymotic Research for $160
Quick SIN Score Sheet

<table>
<thead>
<tr>
<th>TRACK 10</th>
<th>Line 8</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The sip caused us to light the western sig.</td>
<td>SIN 25</td>
<td></td>
</tr>
<tr>
<td>2. The tale needs of old face.</td>
<td>SIN 20</td>
<td></td>
</tr>
<tr>
<td>3. The clock was flat on the shifty floor.</td>
<td>SIN 15</td>
<td></td>
</tr>
<tr>
<td>4. A tap of papers is caused around the hands.</td>
<td>SIN 10</td>
<td></td>
</tr>
<tr>
<td>5. The tap caught a dish of feathers.</td>
<td>SIN 5</td>
<td></td>
</tr>
<tr>
<td>6. The hand drifted over the sill of the old train.</td>
<td>SIN 0</td>
<td></td>
</tr>
</tbody>
</table>

RT: 8.0 dB SNR
LT: 4.5 dB SNR

Case Study JM
- Was subsequently fit with bilateral deep fit “IIC” style hearing aids
- Tinnitus is gone while pt. wears devices
- Reported improved function in noisy places (work, restaurants)
- Successful user
Case Study JM
Audiogram from 2014

Quick SNR scores improved:
Right Ear: 8.0 dB SNR to 4.5 dB SNR
Left Ear: 4.5 dB SNR to 0.5 dB SNR

Pure tone Audiogram and Word ID scores largely unchanged

If you can’t hear it, you can’t use it....

How many patients do you see with long standing hearing loss who have never worn amplification whose understanding is in the toilet?
How do you know what’s happening in the ear if you don’t measure it?

Are you really willing to trust your patients’ hearing to luck and good faith?

Speechmapping…. Your friend

- If you are not measuring what is happening IN the ear with the hearing aids, you have no clue if your amplification is appropriate.
- **There are very real long-term costs for inappropriate fits**.
  - Many new users will not tolerate an “appropriate” fit, but you need to at least document that you tried, and then document what the patient is willing to wear.
  - Then gradually work the patient into a more appropriate fit as they will tolerate it.
  - This can also be a useful counseling tool for the patient, and for friends and family to explain why some sounds are still not audible or why speech is not as clear as they want it to be.
So I use “Real-Ear”… isn’t that the same thing?

- We don’t hear beeps and boops in real life
- Hearing aids do strange things with beeps and boops
- If you are doing “real ear” without turning off all the features of the device, you aren’t getting accurate results
- Measure what the aid does to speech with speech!

Speechmapping is your friend...

- You measure speech with speech
- You measure what the hearing aid does at user settings with all the features ON
- You can make real-time adjustments
- Patients can see and hear the changes you make

Speechmapping is your friend...

- Saves you time in getting the fitting “right”
- Helps you counsel the patient appropriately if the patient cannot tolerate an “appropriate” fitting
- Helps family members understand why the person wearing the hearing aid isn’t “fixed”
- Worth the investment
Speechmapping is your friend...

Is the price of failing to measure the outcome of your fitting worth it??

Case Study: BG

- Long term patient of LHC
- Initially seen in 1999 by Mary Caccavo, PhD at age 73
- History of long-standing loss in right ear from gunshot blast in 1948 (age 22)
- Working as farmer and school bus driver at that time
- Word ID Right ear 24% Live Voice

Purchased 1 BTE for his right ear at that time (tried ITE first) in January 2000
- Replaced aid for right ear with BTE in 2008
- Purchased BTE for left ear in 2009 (1st time for left)
- Purchased power BTE aid in 2011 for right ear (3rd aid)
Case Study: BG

- Frustrated
- "I never really have ever heard much in that right ear"
- Not really using Rt aid much
- SRT so difficult for patient that no open set discrim attempted in right ear

Case Study: BG
HAE 2011 Right

- "I can tell there's sound on the right side now"
- Wears at average volume 2 ½ on a 4 volume scale
- Chili SPS BTE with lucite mold

Case Study: BG
HAE 2011 Left

- Adjusted fit with speech mapping
**Case Study: BG 2015**

- Open set word ID now at 40% with **RECORDED** stimuli in the right ear
- Left ear improved to 92% open set **RECORDED** stimuli

**Case Study: BG 2016**

- Open set word ID now at 60% with **RECORDED** stimuli in the right ear

Moral of this story—
Open set word rec can improve! But if you can’t hear it, you can’t use it!

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Something to keep in mind…

Thornton and Raffin (1978) tables on what a “real” difference is in word ID scores…

Still….

Quick SIN is your friend….
Case Study: RA 2011
• No Quick SIN done
• Fit with RIC hearing aids
• Trouble keeping receivers in ears
• "DB Junkie" Likes it LOUD
• Word ID not done with recorded materials

Case Study: RA 2012
• No Quick SIN done
• Continued trouble keeping receivers in ears
• "DB Junkie" Likes it LOUD
• Word ID not done with recorded materials—limited number of words presented (done on the fly?)

Case Study: RA 2013
• No Quick SIN done
• Continued trouble keeping receivers in ears
• "DB Junkie" Likes it LOUD
• Word ID still not done with recorded materials, and score is dropping in left ear
• Pure tone air thresholds within test/retest 5dB
Case Study: RA Speechmapping June 2014

- Quick SIN done (finally!)
- Liked “online” aids because he could hear on the phone (open domes)
- “DB Junkie” still likes it LOUD—LOTS of FB with “online” aids (open fit)
- Word ID done with recorded materials, score dropped in both ears—difficult to compare to previous results
- Pure tone air thresholds within test/retest 5dB of last audio

Lessons to be learned from RA

Knowledge and Wisdom are NOT the same thing.
Really smart people still make really stupid decisions.

someecards
Lessons to be learned from RA

- #1 Patients who are frustrated may take matters into their own hands
- #2 Patients do not know how to fit themselves
- #3 Patients may or may not give you the opportunity to help them make better choices so be prepared
- #4 Patients probably know they need to make a different choice, but you need to give them a reason to do so

Case Study: JA

- Beautiful woman
- Fit, active, single
- Travels frequently
- Bilateral SNHL
- Using HA in left ear only
- Active in local philanthropic club

Case Study
JA 2011

- Fit with aid in left ear
- Did well from beginning
- Regular user
- Word ID done live voice
- No Quick SIN
Case Study JA 2014

- Continues to only wear aid in left ear
- No Quick SIN scores
- Speech done live voice, still very good in both ears
- Pt. not unhappy, states she is doing well with device

Case Study JA 2015, 2016

- Not doing as well per self report
- Word ID done with recorded materials and is markedly worse
- Quick SIN done for first time--
  - Note difference between ears! 10.5 in right ear, 6.0 in left

Case Study JA

- Verifit results
JA’s comments about 2nd aid

- I can’t believe the difference it has made
- I wish I had done this sooner
- It’s so much easier to hear in background noise
- I am shocked at the difference having 2 aids makes

Case Study AH

- Progressive loss
- First eval from 2009
- Wearing bilateral ½ shell aids with program button

Case Study AH speechmapping from 2010
Case Study AH speechmapping from 2010

AH 2013

- Word ID has dropped in right ear
- Pt. advised to get new hearing aid with more power for right ear at a minimum
AH 2015

• Very happy with newer right device
• Now sometimes complains about left
  • Feedback
  • Not as powerful

Case Study AH

• Not hearing as well as she was
• Right rear mic port blocked with debris
• Device sounded good post cleaning but...
Case Study AH

Post adjustment:
- Improved sound quality
- More balanced with left now

If you remember nothing else…

• Use it or lose it
  • If you don’t know what’s happening in your patient’s ears, you are not doing your job
  • Patients will search for alternatives, and many will fail to treat themselves adequately
• If you see something...say something!
• Measure what’s happening with your patient’s hearing
• Measure what’s happening with your patient’s hearing aid
• Oftentimes word ID alone is not enough! Live voice word ID is not good enough IMHO
• Quick SIN is your friend...
• If you don’t have enough time, be bold and have the patient return!

Questions