

JAN/FEB
2018

American Academy of Audiology
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AUDIOLOGY

TODAY

The magazine of, by, and for audiologists

Maximize Children's School Outcomes

THE AUDIOLOGIST'S RESPONSIBILITY

PRIMING CHILDREN FOR ACADEMIC SUCCESS

Interview with
Dana Suskind, MD

WHAT PATIENTS SAY ABOUT THEIR HEARING AIDS

Patient-Centered Interview

OTOACOUSTIC EMISSIONS

Toward an Updated
Approach

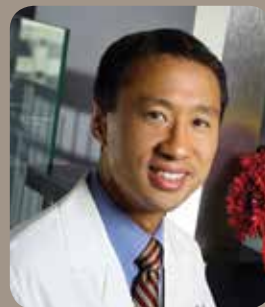


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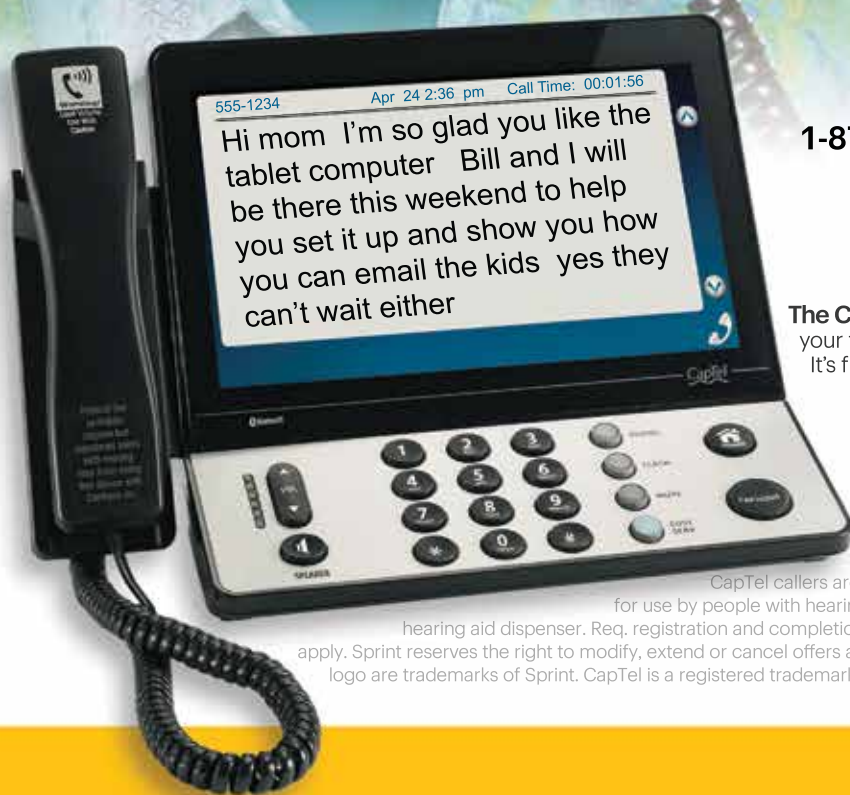
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Maximize Children's School Outcomes: The Audiologist's Responsibility

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EDITORIAL MISSION

The American Academy of Audiology publishes *Audiology Today* (AT) as a means of communicating information among its members about all aspects of audiology and related topics.

AT provides comprehensive reporting on topics relevant to audiology, including clinical activities and hearing research, current events, news items, professional issues, individual-institutional-organizational announcements, and other areas within the scope of practice of audiology.

Send article ideas, submissions, questions, and concerns to fabryd@icloud.com.

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Getting to the “Us”

In the current era in which we live, we reap the benefits of easily utilizing social media. One can “virtually” interact effortlessly on various platforms, spanning generations, cultures, geographic areas, and economic bounds. Challenges and joys are shared with friends, colleagues, or acquaintances from distances near and as far away as the other side of the globe. As an academic, there is value in sharing publications, research, and scholarly debates.

As a private practice co-owner, information and stories can be shared with the public about the importance of hearing, etc. As the president of the American Academy of Audiology, it fills me with pride to witness our member-to-member online mentoring through addressing professional questions, trouble-shooting equipment, or explaining the nuances of audiological procedures, or even commiserating about the challenges in serving the difficult patient or obtaining reimbursement for services.

Of course, with the positives of social media, one doesn't have far to look, even in the Academy's Audiology Communities, to be confronted by looming figures in the shadows making hateful comments for “infractions” of misspelling or opposing opinions, and ultimately judged as illiterate, uneducated and/or even unworthy of being an audiologist. Unsurprisingly voices silence themselves of opt out in fear of being ridiculed, bullied or indicted by a critical jury of one or two. Sometimes the

posts turn from indicting colleagues to the entire Academy for any number of “transgressions.”

One repercussion from such contentious social media posts is a perception held by the general public about a presumed conflict between the audiology organizations producing a fractured profession. In fact, this perception about the audiology organizations could not be further from objective evidence that is regularly demonstrated by the audiology organization's leadership and staff who collegially communicate over multiple issues impacting our profession.

I challenge anyone to find any public forum or social media in which any of the audiology organizations' exchanges are anything less than professional and collegial. Quite the opposite! There have been repeated sentiments by various notable individuals over time that “the biggest threat to audiology is audiologists.” Professional behaviors from any other health-care provider (e.g., physical therapists, otolaryngologists, cardiologists, etc.) have not been exhibited with such unprofessionally contentious behaviors. We are overdue for immediate and dramatic changes in our own personal professional behaviors toward each other.

Demonstrating respectful attitudes can begin with that universal adage (as paraphrased) to “treat others how you would like to be treated,” incorporated by the following:

- When pointing the blaming finger, you have many of your own pointing back at you.



- Pause 24–36 hours for a cool down period.
- Examine all perspectives before reacting.
- Encouragement rarely destroys.
- Use diplomacy rather than being tactless.
- Tolerance depends upon self-reflection.

Our profession and the American Academy of Audiology is dependent upon “YOU,” “ME,” and “US.” Let's get to the “US” by remembering we are all part of the solution. 🗣️

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How and Why the “Future of Audiology” Mini-Seminar Came to Be

By David Fabry

REFLECTIONS FROM ACADEMY FOUNDERS RICK TALBOTT, JAMES JERGER, LUCILLE BECK, AND JAMES HALL

In 1987, Dr. Rick Talbott was head of the Division of Exceptional Children at the University of Georgia, and was sitting in his office working on how to finance the three departments and a 40-bed ICFMR under his administrative responsibilities when he received a call from Mike Dennis, the audiology program coordinator for the upcoming American Speech-Language-Hearing (ASHA) Convention to be held in New Orleans. Mike asked if Rick would facilitate a mini-seminar session at the convention addressing the future of audiology—a topic that had often been debated with former classmates and, at that time, still relatively young professional colleagues, at ASHA meetings for several years.

It had been some 25 years since the historic Highland Park Conference, and there were several organizations and committees of ASHA, CAPCSD, ADA, and state associations, to mention a few, working

on addressing the future course of the profession. Since the ASHA national convention was attended by a large representation of audiologists, it seemed the logical place to offer the opportunity to hear the perspectives of well-known leaders in the field and have opportunity for reaction from those in attendance.

The meeting was scheduled for an auspicious Friday the 13th of November, from 12:00–1:30 pm in the Sheraton Grand Ballroom. To optimize the potential for a good turnout, Rick’s first thought was to invite Dr. James Jerger, who was a prolific and well-respected researcher/clinician and had also been a participant in the Highland Park Conference. Jim enthusiastically agreed to participate, and also provided encouragement/support in planning. The rest of the panel (Drs. Lucille Beck, James Hall, and George Osborne) comprised nationally recognized professionals and opinion leaders that represented

a broad spectrum of academic, clinical, research, and private practice settings.

One stipulation was that Rick had requested panel members *not* to collaborate before the meeting, but give their independent insights into the *status quo* of the profession in terms of three major areas.

1. The knowledge and skills needed for the independent/competent practice of audiology, and the educational models that would be needed to ensure graduates had such competence.
2. The potential future employment environment for audiologists and their prognostications regarding the evolving role of audiology in the health and health care arena. Dan Schwartz’s (1987) recent philosophical allegory served as a reference.

3. Their prediction regarding the most critical controlling variables for the future of clinical audiology.

Audiology Today (AT) recently had the opportunity to revisit memorable moments from the ASHA seminar and the events leading up to the founding of the American Academy of Audiology 30 years ago this month, on January 30, 1988.

AT: First of all, thank all you for taking the time to reflect on the origins of the Academy. We are saddened that George Osborne is no longer with us, as well as other Academy Founders Leo Doerfler, Maureen Hannley, Bob Harrison, Nikki Pikus, Roger Ruth, and Laszlo Stein. Why did you agree to participate, and what were some memorable moments from the New Orleans mini-seminar?

Beck: At the time, audiology was not attracting good students as evidenced by low scores on the GREs. Students were not coming out of MA degrees trained to their full scope of practice. There wasn't sufficient clinical training and students were not being trained by master clinicians but rather research/professor types with little clinical experience.

The audiology profession had evolved to be a strong clinical field with much research to support an evidence base for quality clinical practice. The representative professional association at the time did not recognize the evolution of both audiology and speech each into their own separate and distinct specialties. As a result, the audiology profession was denied the professional support and representation needed to advance the discipline. Those are among the reasons I wanted to participate in the New Orleans mini-seminar.

Hall: My memory of the event is best described with a series of adjectives...a tingling combination of nervousness, anticipation, and wordless audiology comradery. Just before the session officially began, I remember standing up in my reserved seat location near the podium in the very large ballroom. Turning around, I witnessed a seemingly endless line of audiologists streaming through the open doors. There was an unmistakable buzz and energy in the room that reflected my excitement. By the time Rick stepped up to the podium for his opening remarks, the crowd was crammed into every corner of the room and standing along every inch of wall space.

“I think that the most remarkable experience for me was seeing the enthusiasm, dedication, and personal sacrifice of time and energy that so many folks gave to the cause, including many volunteers for the exponentially expanding needs of the new organization.”

AT: Yes, I remember, because I was one of the faces in the back of the room! Rick, what was going through your mind?

Talbott: Whatever word is the superlative of overwhelmed, fill it in here for what I felt when taking the podium to give my introductory remarks and introduce the panel. Obviously, the future of audiology

was a topic that resonated with almost every audiologist in attendance at the convention. Three major observations about the presentations by the panel that day.

1. Every panel member had obviously given serious and focused attention to their remarks and offered articulate, insightful, and thought-provoking presentations.
2. One of the most interesting aspects of everyone's comments, was the almost uniform comments and recognition of the failing of our current academic models to provide the knowledge and skills needed for competent clinical audiology practice, as evidenced not only by employer informal comments but by very poor performance of graduates on the national standardized qualifying exams—something had to change.



3. The most remembered moment was the call by Jim for what became the American Academy of Audiology, a name which was in and of itself not without debate and only agreed upon after several iterations and much



discussion at subsequent meetings in Houston.

Jerger: Indeed, there was unbelievably thunderous applause following my suggestion that we needed our own, independent, professional home. I really did not expect such a positive response. Incidentally, the “of, by, and for audiology” quote (a shameless theft from Abraham Lincoln) came somewhat later. It developed as a small group of board members were chatting while driving from Vail to the Denver airport.

Beck: It was an amazing session that found each of us independently advocating for the following:

1. Doctoral-level training and moving to the professional doctorate.
2. A strong and robust curriculum training to the full scope of practice robust clinical training.
3. An organization of, by, and for audiologists.

AT: Okay, if New Orleans served as the catalyst—*then what?*

Beck: Well, that momentum carried us on to Houston two months later at the Founder's meeting. The most memorable moment for me there was the overwhelming concern with existing professional representation from ASHA. I realized that we all kept saying “if only ASHA would change, then we would progress.” I knew that I did not want to be sitting



around 20 years later repeating the same thing. There really was no other choice except to form our own organization in order to achieve the requisite professional goals and represent our profession.

We focused on deliberating our internal goals, the AuD, scope of practice expansion (e.g., cerumen removal), but were never able to successfully unify all audiology voices. While we made incredible progress, we also engaged in internal disputes and never successfully addressed the critical issues of reimbursement, accreditation, clinical site accreditation, and regulatory recognition.

Talbott: The history of the meetings in Houston followed a predictable path in the life cycle of a cause, moving from the initial crusade phase to the ultimate bureaucracy stage. The work of the original executive board was overwhelming in terms of the challenges of establishing a new organization. There were seven original board members: Jim Jerger, president; Fred Bess, president-elect; Brad Stach, secretary/treasurer; Rick Talbott (4yr), Gus Mueller (3yr), Jerry Northern (2yr), Laura Wilber (1yr).

Everyone had their niche to fill and took on a major task to get things moving. I think that the most remarkable experience for me was seeing the enthusiasm, dedication, and personal sacrifice of time and energy that so many folks gave to the cause, including many volunteers for the exponentially expanding needs of the new organization.

Hall: All in all, the early leaders of the Academy made bold but good decisions, even though we were all clearly making things up along the way. Much of the governance structure for the Academy was in place within a few months after the historical New Orleans session, as well as other important components of a



new professional organization such as a journal (*JAAA*), a publication for updating and informing members (*Audiology Today*), and a membership committee. I think it's important to keep in mind that almost all of the Academy decision-makers then were clinical directors or academic chairs with administrative experience. The group was idealistic about goals for the Academy, but quite pragmatic about how to achieve them.



AT: Some people might be surprised to learn that Jim wasn't the first member of the Academy—who was?

Jerger: The first member, number 101, was Louise Loiselle. From 1983 to 1996, Louise was a valued member of our audiological team at the Methodist Hospital in Houston and a dedicated worker on behalf of the developing Academy. Brad Stach was in charge of assigning membership numbers and he thought that the honor of first member should go to someone from the trenches who exemplified the spirit of the young organization. Louise was the logical choice.

AT: Dr. Jerger, as the Founder and first Academy president, do you think that we have achieved the goals established during those early meetings in New Orleans and Houston?

Jerger: Most, but not all. We have certainly created our own home and established our identity as the “go-to-place” for audiologists, but I continue to be concerned by the sheer number of training programs and their variable quality. I had hoped that the Academy would play a more effective leadership role in this arena. I think that we should have taken an earlier lead in, and worked harder to develop and promulgate, minimal standards for doctoral training programs.

AT: From the benefit of hindsight, what else might you have done differently?

Talbott: There is no question that the room of 32 Founders was filled with very bright and committed professionals, each dedicated to moving the field of audiology forward and each having their own thoughts as to how that might be best accomplished. The significance of the efforts of hundreds of leaders over the past 30 years is self-evident in the evolution of a well-established, fiscally viable, and influential national organization of, by, and for audiologists.

Fred Bess and I have long argued, however, that we have not focused enough on the continuum of education from undergraduate through graduate work in audiology. Other health-care professions have increased the rigor of the basic science prerequisite requirements for admission to their professional programs of study.

As we said 30 years ago, the future of audiology is dependent on audiologists providing care and outcomes that significantly improve the quality of life of our patients and meet the quadruple aim of health and health care. Attracting students with the intellectual horsepower to achieve this goal will require continued “tweaking” of our academic models.

Beck: Although we have transitioned from the early years, when we were often fighting ourselves, we have not yet been able to transform into a mature profession and remain vulnerable to so many threats.


As stated earlier, my regret is that we never were able to address reimbursement issues, true ownership of our scope of practice, or recognition for the value of professional services. There is still much work left to do. From the start, we were all concerned with serving persons with hearing loss by having

a strong evidenced-based profession providing quality services with excellent diagnostic procedures and outstanding rehabilitative outcomes. That is still our mission today.

AT: As Academy Founders, what insights do you have for students and young professionals entering the field?

Beck: During my tenure as Academy president, the first AuD program opened and we established the government affairs group. The day that I took office was when the FDA re-opened the regulations requiring medical clearance prior to hearing aid use. As you know, FDA is finally dropping that requirement, so my advice is to never give up!

Jerger: Dedicate yourself to the Academy! Make it your sole professional home. Support it in any way that you can. If you encounter an old-timer like me, ask what it was like before we had our own professional home.

AT: Thank you all for your dedication to the Academy, and congratulations as we celebrate Founder’s Day on January 30! 

David Fabry, PhD, is the vice president of medical affairs for GN Resound and the editor-in-chief for Audiology Today and www.audiology.org.

Reference

Schwartz D. (1987) Philosophical controversy in audiology an allegory. *Ear Hear* 88(4):55–57.



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January 8

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February 23–24

Meeting

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Audiologist: “There’s a huge connection” between Lyme Disease and profound hearing loss.

Published on November 25

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Check out the #voicesof-hearingandbalancewellness story: “A year of listening,” is what our audiologist, Eileen Rall, at Children’s Hospital of Philadelphia, preached when our son Ethan was first fit with hearing aids in March at Age 2.

Published on November 1

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Maximize Children's School Outcomes

THE AUDIOLOGIST'S
RESPONSIBILITY

BY JANE R. MADELL
AND CAROL FLEXER

No matter where our practice settings are situated, audiologists must appreciate the role and responsibility we have in promoting children's academic and social well-being in their varied learning environments.

For children with hearing loss to succeed in school, good access to classroom information is absolutely essential. Acoustic accessibility means that the child's technology and classroom acoustics need to be monitored, educational staff need to understand the effect of hearing loss on the reception of academic and social information, and teachers need to know how to employ useful classroom modifications. If there is no educational audiologist to advocate for the child, someone else needs to pick up the slack.

Very few parents can identify problems in the classroom and help teachers modify their classroom behavior; many do not advocate sufficiently for their children in schools. Parents cannot identify and suggest solutions for keeping the classroom quiet, or teach modifications such as facing the students when speaking, and appropriately using a remote microphone system. Some schools have teachers of children who are deaf or hard of hearing who can help mainstream teachers, and other schools do not. For many children, clinical audiologists in hospitals, clinics, and private practice are the only ones who have the information schools need to support children with hearing loss.

The purpose of this article is to detail information needed by school staff to manage today's children with hearing loss. Specifically, this article will outline contemporary audiological needs of children with hearing loss in schools, how clinical

audiologists can help meet those needs, and how to network with school personnel from a clinical setting.

THE PROBLEM

Moeller and McCreery (2017) report that, sadly, children who are hard of hearing remain a “forgotten” group. Many school districts no longer have educational audiologists, yet students with hearing loss continue to need all of the services that educational audiologists have provided (Anderson, 2016). Clinical audiologists now need to pick up this slack if their young patients with hearing loss are going to succeed in today's challenging academic environments. In fact, for many children, clinical audiologists in hospitals, clinics, and private practice are the only ones who have the necessary information schools require.

While most audiologists who practice outside of school focus on diagnostic evaluations and fitting of technologies, if today's children are to succeed, the audiologist's prime consideration must be the child's life/school setting.

HOW A CHILD SUCCEEDS

For children to succeed in school, they need language, literacy, and social skills at age level. For children to have those skills at age level, they need to have been identified early and fit early and appropriately with technology that permits them to have sufficient auditory access to develop their brain with information/knowledge (Dillon et al, 2013; McCreery et al, 2015). Children need support by families who can provide rich language environments with many and varied opportunities for brain reception of information/

knowledge (Suskind, 2015). In short, children with hearing loss need the following:

- Early identification
- Early, optimally fit technology allowing auditory brain access through at least 8000 Hz
- Full-time use of technology—at least 10 hours per day to get auditory information to their brain
- Use of a remote microphone in all learning environments, inside and outside of school including the home
- Therapy, preferably auditory-based, involving the family
- Family support, which includes a rich language model
- Language and information-rich environments
- Opportunities to learn
- An educational program willing and able to make the necessary adaptations for maximizing learning (Anderson and Arnoldi, 2011; Johnson and Seaton, 2012)

HOW AN EDUCATIONAL AUDIOLOGIST CAN HELP

Educational audiologists (EdAuds) provide services that can make a significant difference in whether or not a child with hearing loss can succeed in the classroom. EdAuds educate school staff about the effect of hearing loss on academic and social learning, help school staff recognize that hearing loss is not “cured” when children are fit with technology, and assist teachers and other school staff in understanding what information this child with hearing

loss is receiving and what he or she is missing (Johnson and Seaton, 2012).

EdAuds have multiple opportunities to explain to school personnel that we hear with the brain (Kral and Lenarz, 2015). The ears are the doorways to the brain for sound/auditory information, but actual hearing occurs in the brain and not in the ear (Cole and Flexer, 2016; Kral, 2013). Consequently, hearing loss is primarily a brain issue—not an ear issue; hearing is a stepping stone to cognition (Kral and Sharma, 2012).

EdAuds also talk with teachers about what can be done to make it easier for a child's brain to receive classroom information. Accommodations such as strategic seating, facing the child when speaking, keeping classrooms quiet, using remote microphone systems, and repeating comments of other children so the child can follow classroom discussion, can be reviewed. EdAuds monitor classroom noise levels and sources including heating, ventilation, and air-conditioning systems; install “footies” on table and chair legs; and close windows and doors to impede noise entering the classroom from outside sources (Smaldino and Flexer, 2012).

In addition, EdAuds are critical participants in Individualized Education Program (IEP) or 504 Plan development meetings, where they where they can help assure that needed services are included, such as educating the speech-language pathologist (SLP) about helping build auditory skills during therapy (Anderson, 2016). EdAuds may also run the school hearing screening program.

In some schools, there are teachers of children who are deaf (TOD) or hearing impaired who can carry out some of the required services. However, there may be no TOD unless there are many children with

hearing loss in the district. If present in a school, TODs will be able to help cover some of the child's needs. They will be able to help explain what a child hears and what he or she is missing, and identify the effect hearing loss has on the child's brain access of curricular and social information. They should be able to help classroom teachers learn how to improve auditory and academic access in the classroom. Some TODs will be good at monitoring room noise and hearing technology, but others will not.

In the absence of an EdAud or TOD, the school may expect the speech-language pathologist or the special education teacher to do what is needed for the child with hearing loss. Unfortunately, in many training programs, SLPs have very limited exposure to providing services for children with hearing loss, and many programs have only one class or part of a class on the topic. Special education staff may also have had limited contact and experience with children with hearing loss. There really isn't a replacement for the audiologist!

The first critical step in supporting a child's academic and social development is the optimal fitting and full-time use (at least 10 hours per day) of technology (Dillon et al, 2013; McCreery, et al, 2015).

DELIVERING EFFECTIVE AUDITORY INFORMATION

Hearing technologies such as hearing aids, cochlear implants, bone-anchored devices, and remote microphone systems are engineered to break through the ear/doorway to allow access, activation, stimulation, and development of auditory neural pathways with auditory information, including spoken language. Therefore, the only purpose of wearing hearing technologies is to deliver auditory information through the ear/doorway to the brain. When technology is not fit appropriately or not worn at least 10 hours per day, the child's brain is deprived of academic and social information/knowledge.

One way to explain to school personnel what effective auditory brain access looks like is to use the construct of the Speech String Bean (Madell, 2016). For a child to hear well in the classroom and in all other situations that offer academic and social information, the child needs to hear throughout the frequency range—through 8000 Hz. By assuring hearing through the high frequencies, we can be certain that a child has access to all phonemes, including high-frequency sibilants and fricatives. The goal is that the child hears “in the string bean” (FIGURE 1).

Aided or cochlear implant thresholds obtained for each ear separately is a validation procedure that will

confirm whether or not a child is hearing in the string bean and, therefore, has sufficient auditory brain access.

For the fitting of hearing aids, real-ear measures are necessary verification procedures to administer prior to validating the fitting through behavioral measures, such as aided sound field thresholds and speech perception testing.

Another foundational step in supporting a child's academic and social development is acoustic management of learning spaces and use of remote microphone technology (Peters, 2017).

ACOUSTIC ACCESSIBILITY IN TODAY'S CLASSROOMS

The classroom is an auditory verbal environment in which accurate transmission and reception of speech between the teacher and students, or students and students, is critical for effective learning to occur. Therefore, the purpose of all environmental and technological management strategies is to enhance the reception of clear and intact acoustic signals/information in order to



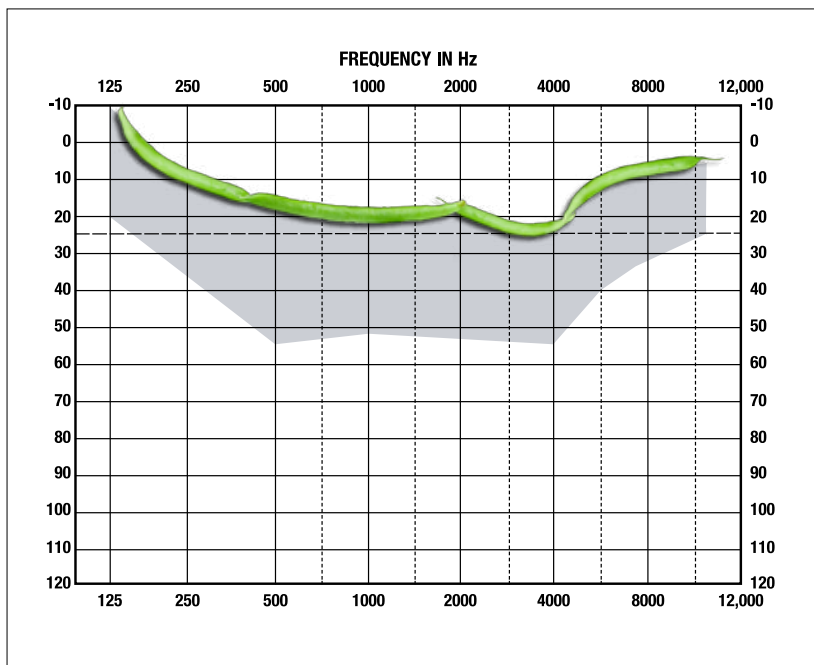


FIGURE 1. The Speech String Bean for use in counseling.

access, develop, and organize the auditory centers of the brain (Smaldino and Flexer, 2012).

The acoustic characteristics of the classroom mainly determine the adequacy of the speech signal received by the students. Speech intelligibility is based on the science of signal-to-noise ratio (SNR)—the relationship of the desired signal to all background/competing noise. Children need the desired signal to be 10 times, or approximately 15 to 20 dB, louder than background noise to clearly discriminate words (ANSI, 2010). The audiologist is the primary professional to evaluate, manage, and explain the child's auditory learning environments (AAA, 2008).

The most effective approach to improving the child's brain reception of auditory information in environments that contain noise, reverberation, and distance from the talker is the use of hearing assistive technology (AAA, 2008), which includes remote microphone (RM) technologies. The types of RM systems include personal, sound-field or classroom audio distribution,

and personal soundfield. Personal RM units are essential for a child with any type and degree of hearing loss, from minimal to profound, who is in any classroom or group learning situation.

The fitting and management of RM technologies must be done by an audiologist, and their rationale and use must be explained to school personnel. The audiologist also should consider fitting, for home use, a RM accessory that is an added feature for many of today's hearing aids and cochlear implants.

An additional problem caused by noise in the classroom concerns listening fatigue experienced by all children, and by children with hearing loss in particular. In fact, cognitive fatigue from mental exertion during listening tasks is very problematic for children with hearing loss in classrooms (McCreery, 2015). Because the child has to allocate more of his or her cognitive resources to listening tasks, fewer resources are available for higher level processes such as problem-solving, and cognitive integration of new information. Without an educational audiologist, it will be the responsibility of the clinical audiologist to explain to parents and schools the problems associated with fatigue, and help with suggestions for its management.

PROTECTION IS PROVIDED BY THE LAW

Several laws offer protection for children with hearing loss.

AMERICANS WITH DISABILITIES ACT

Under the Americans with Disabilities Act (ADA), schools are responsible for ensuring that communication access is as effective for children with hearing loss as it is for their typically hearing peers. Children with hearing loss are entitled to the same opportunities to

obtain the same academic results, and need to be able to participate in all of the district's services, programs, and activities.

Without an audiologist in the school, how will communication access be accomplished? For a child who uses sign language, communication access may be accomplished by using an interpreter. But for a child who uses listening and spoken language exclusively (85 percent of children with hearing loss), staff needs to understand the effect of hearing loss on the child's academic and social development, and teachers need to know how to use technology appropriately. The child's language skills need to be considered and improved (U.S. Department of Justice, 2008).

INDIVIDUALS WITH DISABILITIES EDUCATION ACT

The Individuals with Disabilities Education Act (IDEA) requires routine checking of hearing technology to be sure it is working well. Children need functional evaluations with technology, and schools are responsible for selecting, designing, fitting, customizing, adapting, maintaining, and repairing or replacing assistive technology. Technology must maximize access to the general curriculum for children with disabilities. IDEA regulations indicate that a child does not have to fail a grade to receive services. In addition, accommodations are required to assure that children can participate in extracurricular activities with other children in the district.

If there is not an EdAud or TOD who can advocate for children with hearing loss, how will a child's needs be met at an IEP meeting? As well intentioned as school staff may be, if they do not have the information, it will not be possible for them to know what technology and services to provide (U.S. Department of Education, 2006).

CLINICAL AUDIOLOGISTS CAN HELP

Audiologists need to know more than how a child is hearing with and without technology. They need to know how a child is functioning both in and outside of the classroom. Does the child have the necessary and age-appropriate language and literacy skills for success in the classroom? Is the child receiving academic assistance from a TOD or from a special educator such as preview and review of vocabulary and concepts so that the child can keep up with peers? Is there an SLP in the school who understands how to build auditory and language skills for a child with hearing loss who uses listening and spoken language?



When there is no educational audiologist, the clinical audiologist needs to accept some of the responsibilities.



Unless the audiologist has a full picture of the child's functioning, it will not be possible to make appropriate recommendations. Although the audiologist is not able to recommend, for example, the specific number of SLP therapy sessions needed per week, audiologists can recommend what kind of assistance a child needs and explain why. For example, if a child's language levels are 6–12 months delayed, the audiologist can recommend language therapy with a clinician who is experienced in providing listening and spoken language enrichment.

CLINICAL AUDIOLOGIST AND AUDIOLOGICAL EVALUATION

As audiologists, we have a responsibility to look at the whole child (Madell and Flexer, 2014). We can only do that if we ask the appropriate questions. If there is no educational audiologist, we cannot assume that there is someone in the school who is watching over a child with hearing loss. We have seen too many cases where a child with a hearing loss was fit with technology, and then sent to school with no additional assistance.



The most effective approach to improving the child's brain reception of auditory information in environments that contain noise, reverberation, and distance from the talker is the use of hearing assistive technology.



School personnel assumed that hearing aids or cochlear implants cured the problem and no further accommodations were needed. Not until the child started to fail did parents ask if there was something else that should be done. By asking the appropriate questions, the audiologist might have learned a great deal and could have made recommendations that would have supported the child in an educational environment, from the beginning.

WHAT QUESTIONS MIGHT AN AUDIOLOGIST ASK TO IDENTIFY POSSIBLE SUPPORT NEEDED BY THE CHILD?

1. Is there an educational audiologist in the school, either full or part time?
2. Is the child using a RM? Who fit the RM? Who is monitoring the RM? Ask the family to bring the RM system to the clinic to evaluate it to be sure it is working well.
3. Listen to the child as you have a conversation. How does his speech sound to you? Is it clear? What about his language? Do language and pragmatic skills seem age-appropriate?
4. Does the child read for pleasure? Is his reading level age-appropriate? Do parents read aloud to the child? (It is important to read aloud to the child above levels at which the child reads to him- or herself.)
5. Is the child on an IEP or 504 plan? If not, why not?
6. Ask the child how he or she hears in the classroom. Are there situations where he or she thinks he/she is missing something? Does the classroom seem noisy to him?
7. What grades did the child receive on his last report card? Were they acceptable?
8. When was the last speech-language evaluation and what were the results? Are language skills delayed? By how much?
9. Ask the child if he or she feels that he or she is accepted. Does the child have friends? How many?

Does the child have a best friend? Is he or she invited to parties, play dates etc.?

10. For older children, ask if the school has a bullying policy? Does the child know what the policy is? Has he or she been bullied?

OBSERVED SITUATIONS IN SCHOOLS

The authors have observed multiple cases of children with hearing loss being sent to school with no audiological recommendation for RM systems, and no recommendation for speech-language evaluations. If an audiologist identifies a child with a hearing loss, he/she cannot assume that "someone" else will figure out what the child needs in order to access the academic curriculum and social environment of the school (Anderson, 2016).

Not all SLPs have expertise in providing auditory and spoken language enrichment designed specifically for children with hearing loss. We have seen multiple cases where the therapy was not meeting the needs of the child. For example, we observed an SLP who had spent months working on a child's /s/ perception, when the child did not have access to /s/ with his/her hearing aids. The SLP didn't recognize that the hearing aids first needed to be adjusted to provide more high frequency gain.

We have seen cases of children lagging far behind their hearing peers and not receiving appropriate help. Teachers often believe that "least restrictive environment" means continuing to promote children to the next grade even if their delayed language and literacy skills will not allow them to learn in the classroom in which they are placed.

CONCLUSION: WHAT THE CLINICAL AUDIOLOGIST CAN DO

In addition to the evaluation of hearing and management of technology, every audiologist needs to consider the whole child (Madell and Flexer, 2014). Ask the questions that will allow us to understand how a child is performing academically and socially. Based on answers to those questions, recommendations may include: suggestions about needed therapy, read alouds, and educational support; use of RMs in the classroom and at home; and controlling noise.

As detailed in this article, clinical audiologists must have an understanding of the needs of children with hearing loss, including the legal requirements mandated

to meet those needs. We should expect children with hearing loss to achieve at the same academic level as their hearing peers (Moeller and McCreery, 2017). Then, a case needs to be made to school districts helping them understand that if they do not adequately meet the listening needs of children with hearing loss, they are not only limiting the child's academic and social opportunities, they are also putting themselves in jeopardy and open to possible lawsuits. Then, school districts need to understand the laws as they currently stand and think about how they are going to meet the requirements.

Finally, audiologists need to educate the families they work with to be sure families understand their rights and the questions they should be asking when they deal with the school. Parents are critical advocates, but they are not hearing professionals who can provide all of the necessary auditory information and guidance to school personnel.

When the initial steps have been accomplished, the audiologist needs to determine, with program administrators, the cost of providing educational services. For

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a clinical audiology program that serves many children with hearing loss, it may be reasonable to hire an audiologist who works with schools providing educational audiology services. For other clinical audiology programs with fewer pediatric patients in schools without an educational audiologist, the clinical audiologist can offer services that can be met either in person or through phone or video conferencing.

Whenever possible, try to include a school visit. In our experience, the value of seeing what is actually happening in the classroom is invaluable. The school may be very happy with the child who just sits quietly and is well behaved, but careful observation can indicate that this child is not hearing in the classroom and just doesn't understand what is happening. No matter where our practice settings are situated, audiologists must appreciate the role and responsibility we have in promoting the child's academic and social well-being in their varied learning environments. 

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Parents *to* Prime Children *for* Academic *and* Long-Term Success

BY BRENNA CARROLL

Dr. Suskind will be the featured presenter of the 2018 Marion Downs Lecture in Pediatric Audiology at the AAA Annual Conference 2018, in Nashville, Tennessee.

AN INTERVIEW WITH DANA SUSKIND, MD

The Marion Downs Lecture in Pediatric Audiology is one of the highlights of the annual American Academy of Audiology (AAA) Conference. The 2018 conference in Nashville, Tennessee, will feature Dana Suskind, MD, as the presenter for this year's lecture on the morning of Friday, April 20.

Dr. Suskind is a professor of surgery at the University of Chicago and director of the Pediatric Cochlear Implant Program at University of Chicago Medicine Comer Children's Hospital. She is also the founder and director of Thirty Million Words™ (TMW). Rooted in scientific research focused on the importance of early language exposure and the developing child, TMW assists parents and caregivers in enhancing the home language environment to optimize their children's brain development. This has downstream impact enhancing a child's ability to learn, and long-term impact on behavior and self-regulation. This program is for all children, though children with hearing loss can be particularly

vulnerable to the 30-million-word gap if early intervention is not provided.

Dr. Suskind's work relies on many health-care disciplines to interface with families. The audiologist plays an important role in this network with universal newborn hearing screening. Early intervention means that the audiologist may be one of the first points of contact as parents enter the health-care arena and learn their vital role in the development of their young children.

I had the pleasure of interviewing Dr. Suskind, and discussing TMW and how the audiologist fits into this program. This discussion provides a preview of what is sure to be an engaging presentation at the AAA Annual Conference 2018.

Brenna Carroll (BC): Thank you, Dr. Suskind, for accepting the Foundation's invitation to speak at the conference this year. It sounds like you are in the middle of clinic; thanks for taking the time to squeeze me in! The Marion Downs Lecture is one of the highlights of the conference.

Dana Suskind (DS): Thank you for speaking with me. We are all busy, aren't we?

BC: I am curious... how did your background evolve from pediatric cochlear implant surgeon to include Thirty Million Words?

DS: I am a cochlear implant surgeon who became an accidental social scientist and it's been an amazing ride! It began with me starting the pediatric cochlear implant program at the University of Chicago about 10 years ago. I started implanting kiddos and noticed profound outcome differences on children post implantation that looked like they should have been compared.

Some children would be talking and learning on par with their hearing peers while others would have much more difficulty communicating. I tried to figure out why this was and what I could do about it. I then started to educate myself about childhood development and learned that one of the critical factors of childhood development is early language exposure from birth to age three in his or her environment. A cochlear implant can bring sounds to a child's brain, but there really is more needed for language development. And the role of the parent is really vital to the child and child's brain development.

BC: For those unfamiliar with the term, what is the 30-million-word gap?

DS: The 30-million-word gap can either be a concrete or metaphorical term. There was a famous study done about 30 years ago by researchers Betty Hart and Todd Risley that explored the early experiences of children around language. What they discovered is that children from poorer homes will have exposure to 30 million fewer words by their fourth birthday than their more affluent peers. But what is really important to consider is that this is a small part of what they found.

They also discovered that there is a huge disparity in the quality of the language exposure. Children from poorer homes experience verbal prohibition, hear less affirmation, less verbal back and forth, and less complex verbal vocabulary. And all of this is termed the "30-million-word gap." What they also discovered is that this impacts not only vocabulary, but also IQ and test scores in the third grade. The important thing to emphasize is that at first glance it all appears to be about socioeconomic status, but careful analysis really honed it down to language. It is metaphorical as well, because it also highlights the power of parent talk and parent interaction. The downstream impact of the power of the parent includes literacy, math and spatial ability, grit, perseverance, and emotional development. Parent interactions are the building blocks of children's brains.

BC: When you look at children with hearing loss from homes with a lower socioeconomic status, are you finding that the gap is even greater?

DS: Well, that is exactly why early intervention is so critical. What is interesting is that when looking at children with hearing loss prior to the advent of cochlear implantation, language skills were comparable across socioeconomic groups and sign language was the primary mode of language. But the advent of cochlear implantation ushered in a golden age for children with hearing loss. That language gap disappears for children who are identified and receive early intervention. The earlier the intervention occurs, the better.

BC: The TMW initiative mentions the 3Ts. Can you tell us what the 3Ts are?

DS: At the core of all of our programs are two things. One is the idea that babies aren't born smart, they are made smart. They are made smart by parent/child interaction. It is a fundamental idea because it isn't just about talk; it is about the idea that when parents invest in a certain way, they build not only the relationship but also the brain. So, it is really about getting the parents to buy into

this idea that I like to call “growth mindset parenting.” Once parents are committed to this idea, it then becomes a concept of how to put it into action. The way we have done this is that we have parceled this into three behaviors that we like to call the 3Ts: Tune In, Talk More, and Take Turns.

These ideas have come from the audiology/speech-pathology world. “Tuning In” involves using child-directed speech and joint attention. “Talk More” is just as it sounds. It involves using rich vocabulary and talking about the past, the present, and the future, and conceptualizing language. “Take Turns” involves hearing your child as a conversational partner from day one. These 3Ts are at the core of all of our curriculum, and whether or not you are using math and spatial talk, or reading a book, parents can use these 3Ts to ensure that they are providing the richest language environment possible.

BC: What kind of feedback have you received from families?

DS: What is interesting is that after our first randomized control trial with TMW, we went back and spoke with families to ask about aspects they liked, aspects they didn’t like as well, and opportunities for improvement. We received feedback from parents that they liked the program and were empowered to grow their babies’ brains better. But they also wanted to know how they could assist in improving their child’s behavior and self-regulation. We started to examine how we could use the 3Ts to help a child behave.

It is important to remember that the early language environment does not just impact vocabulary, math, and spatial abilities, but also socio-emotional development. In the same realm, when you think about what you need to do to help a child learn self-regulation and

the behavioral stoplight, parents also need to learn the impact of toxic stress and harsh language in their children’s brain development. We now measure these things. I can’t tell you that using the 3Ts results in less stress environment. But theoretically, if parents use the 3Ts as we imagine, we expect less directive and harsh speech because if you are “Tuned In,” you don’t use that sort of speech. It would be a large overstatement to say that the 3Ts removes toxic stress. There are many things that cause significant stress in the lives of families living in poverty. We view this as one component to assist a family.

“
A cochlear implant can bring sounds to a child’s brain, but there really is more needed for language development. And the role of the parent is really vital to the child and child’s brain development.”

BC: How do you find the families participating in your program?

DS: We are actively participating in research so it depends on which program is active. We recruit several ways. With some programs we recruit from daycares, buses, etc. We also have a program that overlays with Universal Newborn Hearing Screening, and we recruit with health-care partners,

Pediatrician, and pediatricians. It is much easier to recruit participants through the health-care system.

BC: Is TMW for all children or for children with hearing loss only?

DS: TMW is for all children. I like to call it a public health approach to early learning. We have a touch point with Universal Newborn Hearing Screening. It doesn't mean that all families need early intervention. We would like to approach a community rollout of who needs what services and where. Not all families living in poverty need the TMW program. And coming from a more affluent family does not mean that TMW strategies aren't needed.

“

It is important to remember that the early language environment does not just impact vocabulary, math, and spatial abilities, but also socio-emotional development.

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BC: What barriers have you encountered implementing successful intervention?

DS: That is a great question. What I can tell you is that working in the health-care system is a much more efficient and effective mechanism for connecting with families. Home visits are a much more natural conduit. But we don't always have the ability

to connect with families at multiple points without the health-care system. We have a challenge with the early childhood piece. When you think of an educational audiologist, the audiologist has the ability to connect with families and children with school. But the early childhood (birth-to-three) is much more challenging for continuity and doesn't have a similar situation like the school component.

BC: It sounds like success in the program involves multiple touch points with families. Do you have scheduled intervals to meet with families? How do you ensure follow-up?

DS: Each of the interventions has been tested individually. TMW-Home Visiting includes 12 home visits over the course of six months. TMW-Newborn is a single-shot intervention, administered postpartum. TMW-Well Baby is a series of four modules screened at one-, two-, four- and six-month well-child visits. Up to this point, all of our programs have been implemented only in the context of research studies. In this context, follow-ups have been built in to the study timeline at various intervals. As we think about how to embed the entire suite of interventions through existing systems simultaneously, we will embed the follow-up that will be needed to support the work of the various interventions.

Ideally, follow-up for TMW-Newborn and TMW-Well Baby are happening within the health-care system. In the case of the former, audiologists and pediatricians are following up on babies who don't pass UNHS. In the case of the latter, pediatricians are monitoring and following up on families at risk among their patient population.

The next step is looking at all of the interventions together in a large rollout. We are looking at a request for



partnership with communities around the country moving forward. We want to look at the whole continuum.

BC: What can audiologists do to assist with this?

DS: Audiologists are a key part of this continuum. Our first touch point is through Universal Newborn Hearing Screening. I say that we, as a community, are not just doing the screening because we want to know if a child is deaf. That is important. But language and interaction are the first steps in a developing brain. My hope is that our first collaborations are audiologists and newborn hearing screeners. I would like to build this important first touch point in conveying that parents are so important and critical. And, of course, the important role of the audiologist is expanded and continues if a child is identified with hearing loss.

BC: What is your evidence-based intervention?

DS: The TMW Center's public-health approach for early learning uses different channels over time to catalyze the role of parents and caregivers. Its multi-touch point behavioral interventions are designed to work across the birth-to-five developmental continuum and reach English- and Spanish-speaking families in settings they naturally frequent.

The first in our set of behavioral interventions, TMW–Newborn is administered in maternity wards during the Universal Hearing Screening. Over the next six months, TMW–Well Baby deepens parent knowledge of foundational brain development at key touch points that overlay the standard immunization schedule at one, two, four, and six months.

As children move along the developmental continuum, TMW Center for Early Learning + Public Health offers families two options, depending on need: TMW–Home Visiting or TMW–Let's Talk! The first is home-based; the second offers group classes at community-based organizations. Two forthcoming programs, TMW–Dads and TMW–Healthy Mind, Healthy Body, target select audiences and combine nutrition and education services. In addition, TMW–Early Childhood Educator provides professional development to care providers in center- or home-based child care settings while TMW Center's preschool curriculum, Cog-X, provides parent academies that teach cognitive and non-cognitive skills to prepare children for success in school. The TMW Center also anticipates a delivery mechanism that will guide families and practitioners to choose the best course of action and appropriate interventions to ensure their needs are met across the birth-to-five continuum.

BC: You have developed a tool called the SPEAK (Survey of Parents'/Providers' Expectations and Knowledge) Survey that you plan to use during your presentation at the national convention in Nashville. Can you tell us a little bit about this survey and what makes it so unique?

DS: I am really excited about this survey because it uses your own data. Basically, it is a clinical and a research survey to see if we understand parent and provider knowledge and belief about parent and child language development. I have shared it with the American Academy of Pediatrics and at a Head Start Conference. It is so fun to see your own data! Of course I suspect the audiologists will get it all right!

As an audiologist working with a family, it is easy to imagine pondering how much the family you work with knows or doesn't know. This survey came out of working with families to help them interact more with their children. I needed some sort of tool to measure whether the parent teaching was successful. It started off as a need and evolved into a valuable clinical and research tool. The survey is only 10 questions. Audiologists can use it; pediatricians and early care providers can use it to accurately assess their families.

BC: What are the take-home messages you would like to share with our readers?

DS: Thirty Million Words is a translational research program that continually develops and tests a set of evidence-based interventions focused on impacting knowledge, and ultimately changing the behavior of parents and caregivers in an effort to prevent disparities in foundational brain development. Our end goal is a population-level shift in the knowledge, beliefs, and behaviors of parents and adults who interact with and care for young children. We advance a community-wide approach in which our evidence based interventions creates multiple touch points for English and Spanish-speaking families. For example, TMW-Newborn is administered at the Universal Hearing Screening and TMW-Well Baby follows the standard immunization schedule of pediatric well-baby visits.

The health-care system plays an important role in this community-wide, public health approach, beginning at birth and following children along the continuum of care. Such an approach unifies existing health and education systems, and focuses every effort toward the prevention of early cognitive disparities, and NOT their remediation.


Our next step is to learn how to bring what we know works to scale. Our new TMW Center for Early Learning +

Public Health creates a unique platform for practitioners, researchers, policymakers, and parents to drive healthy brain development and prevent early learning disparities before they start.

BC: Where can Academy members go to learn more about Thirty Million Words?

DS: Members can visit our TMW Center for Early Learning and Public Health website at <http://tmwcenter.uchicago.edu> and the Thirty Million Words Initiative website at <http://thirtymillionwords.org/>

BC: Thank you for taking the time to speak with me today. The Foundation thanks you again for joining us in April. Your evidence-based, early interventions sound very innovative. Thank you for sharing your research with the Academy in Nashville.

The American Academy of Audiology Foundation, in partnership with The Oticon Foundation, is proud to present the 13th Annual Marion Downs Lecture in Pediatric Audiology at the AAA Annual Conference 2018, April 18–20, in Nashville. 

Brenna Carroll, AuD, Board Certified in Audiology, is a clinical audiologist with Swedish Medical Group in Seattle, Washington. She is also the chair of the American Academy of Audiology Foundation.

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WHAT PATIENTS SAY ABOUT THEIR HEARING AIDS...

PATIENT-CENTERED INTERVIEW

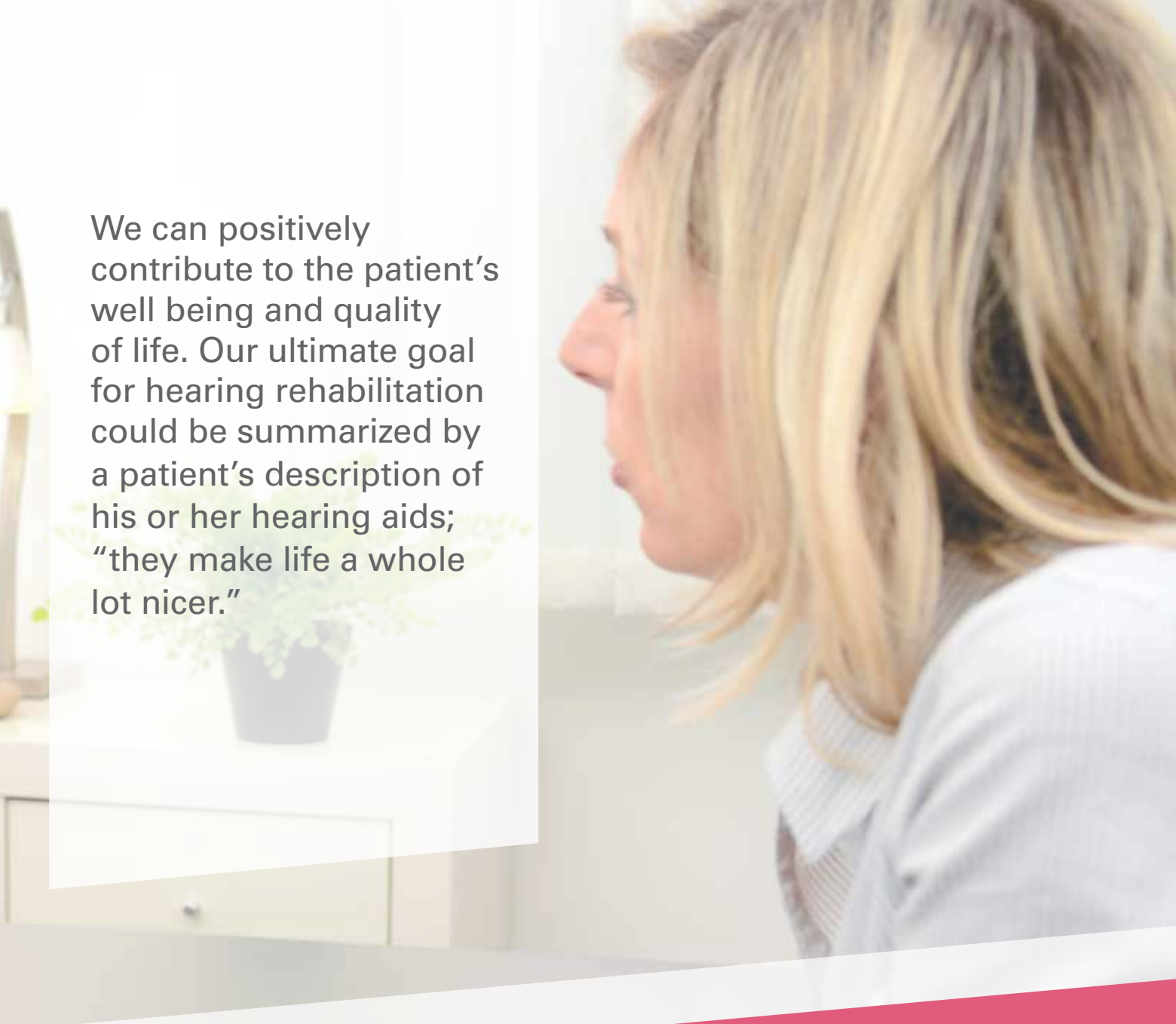


BY MARTHA W. WILSON

History intakes and patient interviews can be a complex, but enjoyable process. In the first article on this topic, “What Patients Say: Patient-Centered Interview,” audiologists and student clinicians were encouraged to invite and listen to each patient’s story about their feelings and the impact of their hearing loss (Wilson, 2015). We must ask the right questions, actively listen to the responses, and carefully document the

comments to understand the patient’s presenting complaints and concerns about hearing difficulties.

Audiologists must comprehend each patient’s story to carefully, thoroughly, and competently assess, treat, and care for the individual. Comments from patients and their family members were presented, in their own words, describing hearing difficulties, experiences, and feelings about their hearing loss (Wilson, 2015).



We can positively contribute to the patient's well being and quality of life. Our ultimate goal for hearing rehabilitation could be summarized by a patient's description of his or her hearing aids; "they make life a whole lot nicer."

Patients continued to share their heartfelt opinions and descriptions about their experiences with their hearing aids and related technology. Clinicians are encouraged to carefully listen and accurately document the patient's comments, concerns, and issues. Britton (2005) reminds us that listening is not a passive activity, but a learned behavior that requires skill and practice. According to Nitzky (2016), "we...must be fully engaged,

fully focused on the patient during the time they are with us."

We want our patients to hear better and easier, with less effort. But sometimes our best intentions and efforts cannot be met, as evidenced by these comments.

- "Hearing aids are okay, but I wouldn't say they are the best thing I ever owned."

I have a love-hate relationship with my hearing aids.

- “Hearing aids are good, but not good enough.”
- “Not perfect, but doable.”
- “It’s an adjustment.”
- Hearing aids “have their own personality.”
- “I have a love-hate relationship with my hearing aids.”
- “Started out really good, but now a little disappointing.”

Typically, when a patient returns to the clinic for follow-up visits and hearing aid checks, we ask how he or she has been hearing with the devices. Their comments can be comical or disappointing. Sometimes, the patient’s goal with amplification use may not be realistic. When asked, “What would you like your hearing aids to do?” a patient commented, “Iron and fly me to the moon.”

- “I was hoping to hear rats pee on cotton.”
- “I guess it’s about as good as it can be.”
- “When I get them in, I didn’t hear what I wanted to hear.”
- “Not like night and day.”

We want the sound quality to be natural and comfortable, but sometimes we are not able to achieve that goal.

- “They speak like Limoges China; I need Fiesta Ware!”
- “Listening hard doesn’t help; words don’t really clear up.”
- The right hearing aid “fizzles like a carbonated drink.”
- “I am still struggling with the strangeness of sound.”
- “I feel like there’s a bucket over my head. It’s still hard to describe, but maybe it sounds tinny or like a cracker wrapped in paper.”
- “Like a microphone right at the fringe of squealing.”

We encourage our patients to wear the devices consistently to acclimate to new sounds and to become accustomed to the devices. Many patients take our suggestion to heart and form a bond with the hearing aids.

- “You form your little support system. My Volvo and my hearing aids are right up there.”
- “I love my hearing aids. I try so hard to be so good to them.”
- After wearing the hearing aids in the shower, the patient said, “I am so sorry I did this to you.”

Our primary goal for the patient is use of and satisfaction with the hearing aid. We want the patient to benefit from the use of amplification. It can be gratifying when they give us a positive report about their hearing aid use.

- “I am just tickled pink.”

- “My wife has commented that I listen a lot better.”
- “These things help me a lot, but my hearing is not perfect.”
- “You fixed me up real good; really turned the juice up.”
- “I could hear a pin drop with these.”
- “It’s like night and day.”
- “Pretty close to 10.”
- “I feel like a new person.”

Sometimes, the patient does not perceive benefit from hearing devices until the individual removes the hearing aids.

- “I can tell when I don’t have them in.”
- “I can tell when I take them off, it’s more silent.”
- “The world is dead without them.”

New hearing aid users can be surprised when they realize the impact of their hearing loss. Often, they are not aware of sounds they could not hear.

- “One of the nicest things; I can hear the birds.”
- “I had no idea my phone makes a noise when you take a picture.”
- “I heard the clock ticking; has it always been that loud?”
- “I hear grass flutter.”
- Hearing clothes rustle; “a really big surprise.”

Patients frequently complain environmental sounds and ambient, background noises are too loud or noticeable.

- “I find myself paying attention to the noise more than the people

talking just trying to figure out what that sound is.”

- “I heard the ice machine; like a hailstorm inside a car.”
- “The rain on the windshield sounds like rocks hitting the windshield.”
- “When I first got my hearing aids, the tires on the pavement sounded like a meteor coming in.”
- “There’s a crackling sound, like stiff paper wadded up.”
- “I can hear them crack an egg in the kitchen.”

As patients become more accustomed to amplified sound and have more experience with hearing devices, they are able to make judgments about the hearing aid fitting, including sound quality.

“One of the nicest things: I can hear the birds.”

- “I think I need a tune-up.”
- “They work, almost too well; a little too shrill, treble.”
- “Left hearing aid is not pulling its full weight; right hearing aid is pulling more; is left hearing aid along for the ride?”

- “The left hearing aid is getting some age on it.”
- Low battery tone “sounds like a whale moaning or dying.”

Patients offer unusual descriptions about their hearing devices. They also make comments about their ability to manipulate the hearing devices and physical comfort.

- “I’ve been challenged on this installation.” (inserting receivers with domes)
- “Umbrellas” (domes) “keep falling off in my ear.”
- “My leash keeps falling out.” (sports lock)
- “These are right-handed domes and I am left handed.”
- “At the end of the day, I’m so relieved they’re out. It’s like taking your bra off.”
- “The left hearing aid battery drawer is a little floppy floppy.”

Focused attention and active listening are paramount to establishing an interpersonal relationship with each patient. People want to be understood, validated, and appreciated. When one truly listens to the person, we demonstrate compassion, respect, and understanding (Ciardello and Janssen, 2011).

We must listen to the patient for important information. Clinicians should apply attentive listening skills to learn the patient’s story, and personal attributions, beliefs, and feelings (Fortin et al, 2012). According to Nitzky (2016), “we need to understand their priorities, lifestyle, goals, and values.” Many patients explicitly and eloquently describe their experiences, their communication struggles, and their objectives (Wilson, 2015). We must value the patient’s input and feelings, and we should trust what the patient shares with us (Wilson, 2015). “Trust is one of the most powerful forms of motivation and inspiration. People want to be trusted” (Covey and Merrill, 2006).

According to Draper and Goynes (2017), “if patients feel understood, it builds an atmosphere of trust and collaboration.” We must establish an effective working relationship with the patient, characterized by honesty and integrity. We want the patient to trust us and believe in our sincere desire to help. “Simply put, trust means confidence. When you trust people, you have confidence in them—in their integrity and in their abilities” (Covey and Merrill, 2006). We can positively contribute to the

patient’s well-being and quality of life. Our ultimate goal for hearing rehabilitation could be summarized by a patient’s description of his hearing aids; “they make life a whole lot nicer.” ^{AT}

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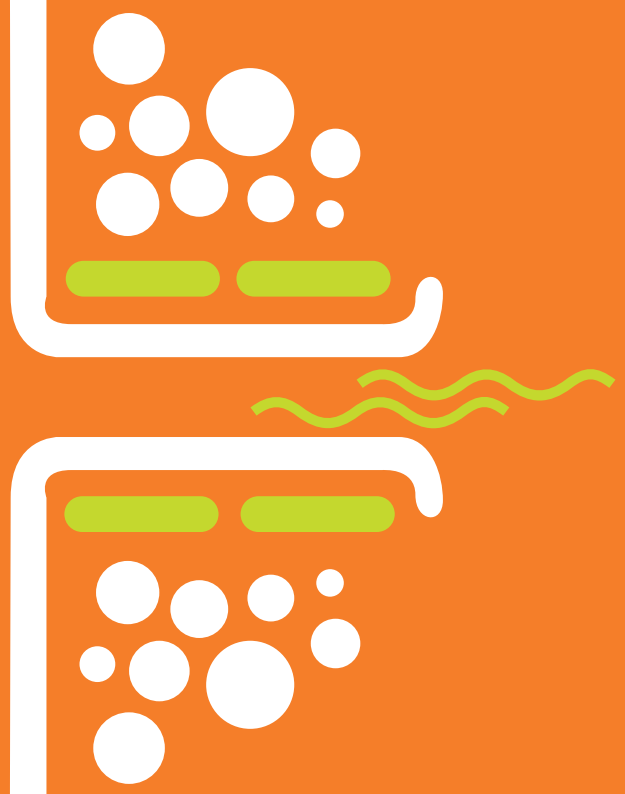
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Otoacoustic Emissions: Toward an Updated Approach

BY CAROLINA ABDALA

Here we discuss how distortion and reflection OAEs are different, and how combining them in a strategic way and using a more flexible test protocol could improve their clinical utility.

Otoacoustic emissions (OAEs), low-level sounds produced by the healthy cochlea, require normal or near-normal outer hair cells (OHCs) to provide amplification of the backward traveling waves so the outgoing energy can be detected in the ear canal and, for some types of OAEs, to produce the nonlinearities that give rise to the emission itself. As most audiologists know, these low-level acoustic by-products provide an invaluable window into the otherwise inaccessible cochlea and a useful gauge of OHC health and hearing.

When OAEs were first discovered (Kemp, 1978), it was thought that each type of emission was basically a duplicate of the other; that is, although some were evoked with clicks and others with tones, we assumed that they all came about the same way and provided redundant information about the cochlea. However, in the last decade or so, we have come to understand that not all OAEs are alike (Shera and Guinan, 1999). There are two basic types of OAEs: nonlinear distortion and linear reflection. The familiar OAEs that audiologists use in the clinic generally fall into one or the other of these two categories, or include a mix of the two.

Distortion-type emissions are created by nonlinearities in OHC transduction. Nonlinearity in the cochlea likely originates at the ion channels found on the tips of OHC stereocilia. A stimulus vibrates the basilar membrane within the cochlea and in doing so, displaces the OHC and stereocilia atop these specialized cells. The thin filaments

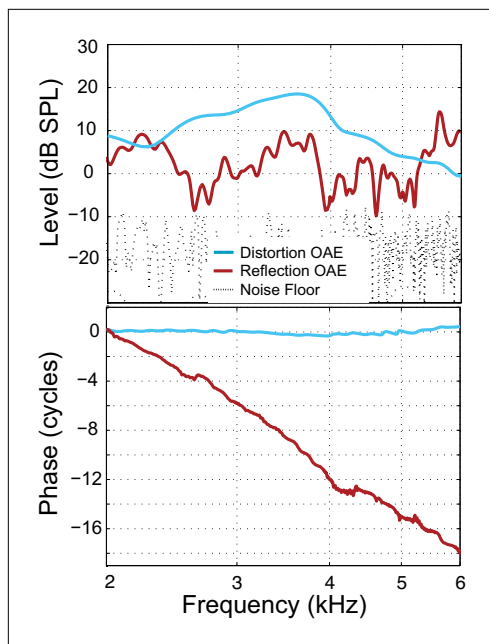


FIGURE 1. The upper panel shows amplitude spectra for a distortion-type otoacoustic emission (cyan) and a reflection-type otoacoustic emission (red). Distortion OAEs have smoother spectra and little fine structure once the reflection energy is removed, as in this example. In contrast, the stimulus-frequency OAE, a reflection emission generated by one low-level pure tone, has fine structure with many peaks and valleys due to its origin in back-scattered wavelets. The bottom panel shows a phase versus frequency function for each OAE type. OAE phase is used to classify emissions as distortion or reflection: Distortion OAE phase is relatively invariant across much of the frequency range (when a fixed f_2/f_1 is used), whereas reflection OAE phase rotates rapidly across frequency producing longer delays. These very different patterns of phase across frequency provide evidence that each OAE comes about by a distinct generation process within the cochlea.

attached to the tips of the stereocilia sway with the motion and pull open ion channels like trap doors, near the ciliary tip. Opening the ion channels [mechanoelectric transduction (MET) channels] allows current to flow into the cell and change the intracellular voltage, initiating OHC motility which powers the “cochlear amplifier.” Because there are only a limited number of MET channels, the intracellular voltage and resulting OHC force cannot increase in direct proportion to an increasing stimulus, but grows more slowly (i.e., compressively). As a result, the cochlear response to sound slows and saturates. We believe this cochlear compression is the principal nonlinearity gauged by distortion-type OAEs.

Reflection-type emissions are another animal. Reflection OAEs arise through a linear reflection process: that is, the back-scattering of incoming waves, much as waves might bounce back off of pier pilings in a large body of water. No biological membrane or array of cells can be perfectly smooth and uniform along its length—the cochlea is no exception. When a sound is presented to the ear, traveling waves are launched down the cochlear spiral on the basilar membrane. As they propagate, they encounter irregularities that disrupt the smooth forward flow of energy and give rise to back-scattered wavelets that turn energy around. This reflected energy travels back toward the base of the cochlea and some of it makes its way into the ear canal. The physics of this scattering process indicates that the strongest reflection occurs near the peak of the traveling wave (Zweig and

Shera, 1995). When enough of these back-scattered wavelets sum in a coherent way, they produce an emission that is large enough to be recorded in the ear canal as a reflection OAE.

How do familiar clinical OAEs fit into this taxonomy? As you might have suspected, the DPOAEs, which are evoked by two tones presented simultaneously near the overlap of the two traveling waves elicited by these two primary tones, are nonlinear distortion emissions, though they also include a small reflection component. (The DPOAE is really a mixed OAE but the distortion part is dominant under most clinical protocols.) Click-evoked or transient-evoked OAEs, stimulus-frequency OAEs (OAEs generated with one low level pure tone), and spontaneous OAEs are all reflection emissions.

By now it is clear that these two classes of OAEs—distortion and reflection—come about by two different processes in the cochlea. Their distinct generation mechanisms produce distinct phase signatures, which is a convenient way of distinguishing them. The reflection-emission phase rotates rapidly across frequency, whereas distortion-emission phase is relatively invariant across frequency when a fixed f_2/f_1 ratio is used as shown in the bottom panel of FIGURE 1. The top panel contrasts the amplitude spectra from a distortion (smooth, with little fine structure) versus reflection (much fine structure related to back-scattering of wavelets) emission. For more details on generation mechanisms, see Shera and Guinan (1999) or Shera (2004).

Experimental Evidence

Are these two OAE types fundamentally different? Yes. Empirical evidence is abundant. First of all, their remarkably different phase responses provide evidence that the two OAEs come about in very different ways. Experimental manipulations also suggest different origins. For example, strong doses of aspirin, which impairs OHC motility, and sound-evoked activation of the medial olivocochlear reflex both impact reflection emissions more than distortion emissions (Abdala et al, 2009; Deeter et al, 2009; Roa and Long, 2012).

Age also impacts the two OAE types differently: during maturation, distortion emissions appear to be nearly mature early in neonatal life (except for their phase at low-frequencies, but that is another story); reflection emissions, by contrast, show non-adult-like features in newborns. Ironically, they are bigger than adult OAEs, which may be partly due to middle ear immaturities (Abdala and Dhar, 2010, 2012; Abdala and Keefe, 2012). During aging, the distortion emission is more reduced with advancing age than is the reflection emission (Abdala and Dhar, 2012; Abdala et al 2017a).

Finally, a strong piece of evidence can be found in genetic mutations that cause hearing loss. A genetically engineered mouse, the stereocilin mouse, lacks thread-like lateral links between stereocilia. This mouse does not have distortion-type OAEs but its sensitivity and tuning are near normal early in its life, suggesting that reflection emissions would be present if they had been measured (Verpy et al, 2008). Another transgenic mouse, the Ceacam16 mouse, has a ragged, porous tectorial membrane; this mouse produces abnormally high-level reflection emissions and normal distortion products (Cheatham et al, 2014). *Thus, both human and mouse evidence tell us that*

the two OAE types can be independently affected and are indeed sensitive to distinct cochlear properties.



There are innovations looming on the horizon that will enhance measurement and analysis of OAEs and facilitate this more comprehensive strategy.



Can the two OAE classes tell us different things about human cochlear function and dysfunction? We think so. Anecdotally, many audiologists observe that the click-evoked OAE becomes unmeasurable (and yields an “absent” test) with milder degrees of hearing loss than the DPOAE, which can be present with a moderate degree of loss. In this way, reflection emissions appear to be more sensitive to slight amounts of hearing loss than distortion emissions and perhaps, to broadened tuning. Why? Reflection emissions backscatter from the peak region of traveling waves in the cochlea, which is where the cochlear amplifier gain is strongest and tuning is sharpest. So, even a slight-mild hearing loss can reduce reflection emissions.

The DPOAE, in contrast, is strongest at moderate stimulus levels where cochlear response growth is compressed and nonlinear distortion is created. A handful of studies offer bits of evidence consistent with click-evoked or stimulus-frequency OAEs (both reflection emissions) being more sensitive to slight amounts of hearing loss than the DPOAE (Gorga et al, 1993; Lapsley-Miller et al, 2004; Abdala and Kalluri, 2017). However, research is needed measuring both OAEs together in ears with varied degrees and etiologies of hearing loss to confirm and define these distinct sensitivities.



Thus, both human and mouse evidence tell us that the two OAE types can be independently affected and are indeed sensitive to distinct cochlear properties.



If each of the two types of OAEs—distortion and reflection—offer unique and non-redundant information about the ear and provide a more complete picture of the hearing loss when considered together, why record only one in the audiology clinic? Considering both OAEs together may be maximally informative because we exploit the information offered by both. The common OAE clinical

protocol at present seems to resemble the following: one OAE type (but not the other) is applied during hearing assessment at one stimulus level (~65–55 dB SPL for DPOAEs; ~80–86 dB pSPL for CEOAEs) across an abbreviated range of frequencies. Given what we now understand about OAEs, perhaps it is time to update this protocol.

Three Suggestions

1. Record both OAE types together.

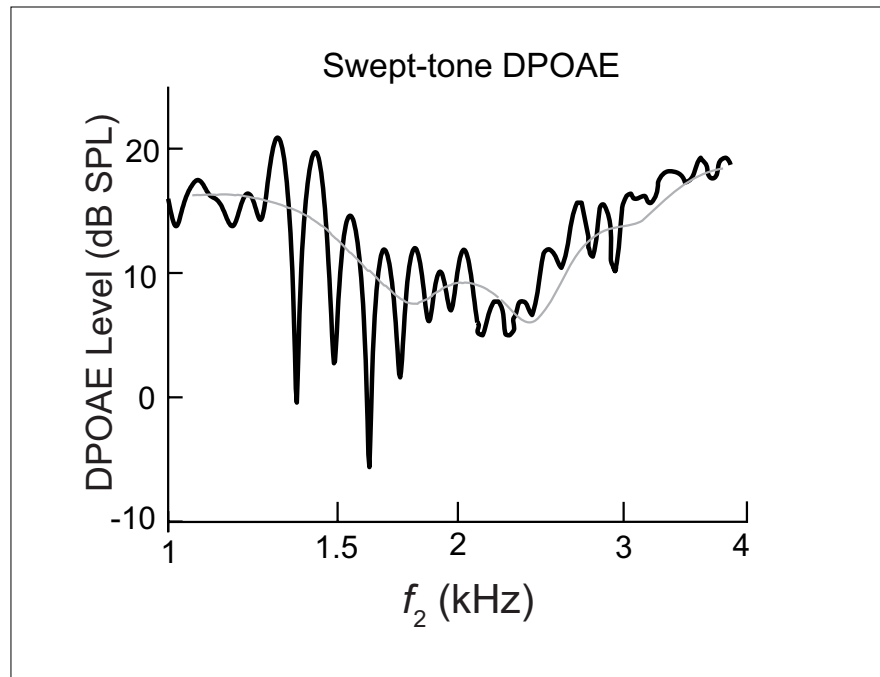
The idea of using both OAEs together moves beyond the rudimentary (but critical) goal of detecting a hearing loss. The two genetic mutations presented previously have been found in humans. An individual with a stereocilin deficiency or a Ceacam16 deficiency might walk into your audiology clinic tomorrow. If only one OAE class is impacted by these mutations, how will you identify the genetic hearing loss and refer for appropriate genetic testing and counseling by recording only a DPOAE (or CEOAE)? It is true that these mutations are relatively rare, but perhaps they are more common than we think—perhaps we have simply failed to identify them due to our limited testing protocols (much like disorders such as auditory neuropathy and “hidden hearing loss” went undetected for decades).

A thought experiment might help us consider the impact of this suggestion: a child comes into the clinic and has an absent click-evoked OAE. (The ABR exam has not yet been scheduled for this child.) The absent CEOAE tells you that some degree of hearing loss is present but little more. Thinking strategically, you record a DPOAE also. The DPOAE is present (low in amplitude perhaps, but measurable

with adequate signal-to-noise ratio), which expands your understanding of the hearing loss. You have recorded an absent CEOAE, which is a reflection emission sensitive to even small amounts of hearing loss, but a present DPOAE, which is often measurable even with a moderate degree of hearing loss. What does this combination of results tell you? It tells you that the sensorineural hearing loss is more likely to be moderate in nature than profound. Profoundly hearing-impaired ears do not produce cochlear nonlinearities. The results of these two OAE tests combined have allowed you to estimate the degree of sensory loss.

Though not ready for prime time, there is also work afoot combining novel features of the SFOAE and DPOAE (e.g., emission strength and compression) into a merged profile to better characterize hearing loss and to distinguish among seemingly similar sensory hearing losses (Abdala and Kalluri, 2017). In this preliminary work, we have plotted a measure of OAE “strength” for both reflection (SFOAEs) and distortion OAEs, one against the other on a two-dimensional plot to define the relationship between the two emission types in any given ear. Interestingly, the normal relationship has a well-defined pattern or “cluster” and atypical patterns are emerging in hearing-impaired ears.

But questions remain: do ears with a similar dual reflection-distortion OAE




profile have similar underlying pathologies? Conversely, can dissimilar dual-OAE profiles discriminate between two hearing losses with similar audiograms but different types of deficits? This work is currently in progress but by exploiting both OAE types in a combined profile, we hope to capture variance among hearing losses that is not currently detected by the audiogram.

2. Record the DPOAE at higher stimulus levels.

In our thought experiment above, the DPOAE might have been initially absent when attempted at default stimulus levels of 65–55 dB SPL. You might then have presented slightly higher-level primary tones, 75–75 dB SPL perhaps, in an attempt to evoke a DPOAE. It is sometimes the case that DPOAEs in

FIGURE 2. The DPOAE shown here was recorded using swept-tones and analyzed with fine frequency resolution (approximately 500 points across frequency). Because the DPOAE is comprised of both distortion and reflection components, the spectrum shows fine structure, i.e. peaks and valleys, when recorded with sufficient resolution (because the two components interfere with one another in constructive and destructive ways). This DPOAE spectrum generated with sweeping stimulus tones provides a much more detailed picture of cochlear distortion across frequency than a conventional clinical DP-gram. (Note: Once the DPOAE is separated from its reflection components, it produces a smoother spectrum, which is shown here as a thin gray line).



impaired ears are not measurable at default primary-tone levels but measurable at higher primary-tone levels. Of course, a threshold test such as an ABR or behavioral test will verify and confirm the estimate, but this combination of OAE results (non-measurable CEOAE and measurable DPOAE even at higher levels) lessens the likelihood of profound hearing loss. Note: the audiologist must know the system distortion levels of the equipment when presenting primary tones at higher levels (Siegel, 2002).

lifespan is important in determining normalcy.

These three guidelines may help you utilize the rich and varied information OAEs offer about cochlear health and hearing.

To Infinity and Beyond

Recording both OAEs and presenting more than one primary-tone level takes time and in the clinic, time is money. How can an audiologist make up this added test time? OAEs can be recorded with rapidly swept tones (or chirps) rather than conventional single, discrete pure tones. Tones are swept continuously upward or downward at rapid rates (approximately one octave per second) many times and the average OAE is extracted from the sweeps after the test has been completed (Long et al, 2008; Kalluri and Shera, 2013; Abdala et al, 2015, 2017b). The entire test can take only minutes. And resolution of the swept-tone OAE is unparalleled because it is possible to estimate magnitude and phase offline at as many points along the frequency range as desired. The resulting waveform is not a gross clinical DP-gram but a complex, nuanced OAE spectrum as shown in FIGURE 2. It is a well-defined, intricate record of cochlear emissions across frequency, showing characteristic peaks and valleys in the DPOAE (unless it has been unmixed from its reflection parts) (Long et al, 2008; Abdala et al, 2015).

An extension of the above innovation is a rapid swept-tone OAE program that interleaves the measurement of reflection and distortion OAEs for nearly simultaneous recordings of both, i.e., every other sweep includes either two tones for the DPOAE or a single probe for the SFOAE. The SFOAE is not a familiar OAE to most audiologists but it is the most simple form of reflection since it is evoked with one single low-level tone. Recording both SFOAEs




3. Look at Normative Data to Interpret OAEs.

If you deem an OAE absent or present and proceed no further, the diagnostic process is incomplete. An OAE recorded in the clinic is typically considered “present” if it is 3–6 dB above the noise floor recorded in the ear canal (the actual SNR criteria vary from clinic to clinic). This “present” diagnosis provides critical information but OAE levels should also be compared to those published in the literature or to the normative amplitudes generated in your own clinic, to determine whether the response falls within the range of levels a normal-hearing individual of the same age is expected to produce. As an example, newborns have click-evoked OAEs that are robust and broadband; it is not unusual to observe 10–20 dB SPL responses from neonatal ears. If you see a newborn with about 5 dB SPL CEOAE present from only 1–3 kHz, can you consider it normal? No. But it is likely to be normal for a 65-year-old adult. Awareness of OAE level trends across the human

and DPOAEs in a combined fashion will exploit the power offered by both. Our preliminary work suggests the relationship between the two emissions may hold diagnostic clues that neither OAE recorded alone can provide.

Thirdly, we are hopeful that OAE phase and its derivative, group delay, will make its way into the clinic as a diagnostic tool in the near future. The variation of OAE phase with frequency provides a measure of the emission delay, which can be thought of as the latency of the response. In laboratory studies, the SFOAE delay has been reliably linked to measures of cochlear tuning (Shera et al, 2002). Other work has also shown DPOAE phase to be sensitive to changes in intra-cranial pressure—it may offer a non-invasive probe of this important neurological indicator (Voss et al, 2006). More translational research needs to be done to study and quantify how various auditory pathologies impact OAE phase, but it seems obvious that we should exploit the entire information package available in each OAE rather than only half of it.

Finally, new calibration techniques have decreased the sometimes-excessive variability in OAE measures among subjects and within one subject over time, making serial monitoring for ototoxic drug treatments or noise exposure more precise. They are beyond the scope of this paper, but these calibration techniques mitigate the contaminating effects of ear canal acoustics on the stimulus level (Scheperle et al, 2008) and the OAE itself (Charaziak and Shera, 2017).

Over the years, OAEs have taught researchers much about the mechanical workings of the cochlea. Advanced signal processing has allowed us to do so rapidly and efficiently with enhanced resolution. However, the ultimate sign of progress is when these discoveries and innovations are applied in the audiology clinic to enhance the diagnoses of auditory pathology and positively impact the individual lives of those with hearing impairment. Inarguably, OAEs have yet to reach their full potential in this realm. Combining reflection and distortion OAEs to generate a comprehensive dual-OAE profile may be one step in that direction. Technical innovations on the horizon should facilitate this endeavor. In the end, our lofty goal is to fully extract and exploit the information these unique probes of cochlear health offer us to better understand and treat sensory hearing loss. 

Carolina Abdala, PhD, is a professor in the Caruso Department of Otolaryngology at the University of Southern California in Los Angeles, California.

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TREATMENT WITH A HIGHER PURPOSE

By Suzanne Robbins, Marketing Manager

Advertisement

Lofty Aging Goals

We live in a world that operates on time. Aging is the name we have given to our personal relationship with time. After centuries of experience and scientific observation, humanity has defined social norms that explain aging trends and establish expectations. Most people come to accept these expectations and live their lives accordingly. However, you never have to look far to find exceptions to the accepted aging trends; nor do you have to go too far back in time to see that these trends and expectations shift over time.

For a moment, imagine that all your patients are the exception to the rule, completely free from any aging expectations. They are free to paint a picture of aging to their complete liking—life with a healthy body and mind, uplifting and sustainable friendships, and engaged in meaningful activities for quality living.

Realistically, most of your patients are already well along the aging path, and momentum is carrying them swiftly through well-defined social expectations. Many of them may even feel like it's "too late" to experience any degree of quality aging, but it's not! Science has discovered a powerful tool to combat the

physical and mental conditions of aging as we know them—social engagement and human interaction!

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Consider the important link between "being social" and "quality aging." Studies reveal that sociality is your first line of defense when it comes to helping your patients experience quality aging because it:

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- Assists with better sleep
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Hearing Loss and Isolation

People unknowingly put their potential for aging well at risk

as they delay or avoid getting their hearing loss treated. In time, face-to-face interactions become difficult for them and telephone conversations become extremely frustrating. Eventually they choose social isolation over social engagement, which can lead to loneliness and a host of other health risks. Hence, one of the best defenses of quality aging is for all aging adults to have their hearing examined, and treated if necessary, to ensure they are able to stay socially active.

As Hearing Care Professionals, you understand this link between sociality and wellness more than most. In fact, sociality and connectedness is the gift you offer your patients each and every day – hearing care with a higher purpose. CaptionCall salutes you and joins you as an ambassador for hearing health and an advocate for those with hearing loss. CaptionCall encourages people everywhere to actively manage their hearing health through regular hearing evaluations, and to seek early treatment when hearing loss is identified. CaptionCall is committed to helping people with hearing loss stay socially engaged for a longer, happier, healthier life.

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Partnering with Pediatrics: A Case for Tablet Audiometry in Childhood Screening

By Renée Lefrançois



One thing we can all agree on—our children deserve their best opportunity to succeed. Whether academically, socially, or emotionally, our job as parents, caregivers, and health-care providers is

to remove any obstacle that may hold them back. So, why don't our kids have more frequent hearing tests? Because access to services and specialists isn't always available. But we can change that.

Audiologists don't have to be the only professional to administer a diagnostic hearing test. New advances in tablet audiometry is making it possible—easy even—for us to partner with colleagues in primary care and pediatrics, enabling them to make use of automated testing functionality that produces a clinically valid audiogram.

It may seem counterintuitive for an audiologist to advise that someone without specific hearing testing training could administer these tests. But wouldn't it be amazing if the children who really needed our assistance were referred to us sooner? This is not to suggest that our array of specialized services can be provided by a family physician. Rather, by enabling them to make use of new, easy-to-use, interactive technology that is clinically validated to produce a diagnostic audiogram we can provide better access to hearing verification earlier and more often.

Let's aim to remove the very real obstacle that is undetected hearing loss. Learn more about tablet audiometers at SHOEBOX Audiometry (www.shoebox.md).

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Renée Lefrançois, MSc (A) Reg. CASLPO, is the director of audiology with SHOEBOX Audiometry, in Ottawa, ON Canada.

A photograph of a white sign with the word "ADVANCE" written in large, bold, black, sans-serif capital letters. The sign is mounted on a dark pole and is angled slightly upwards. The background is a clear blue sky.

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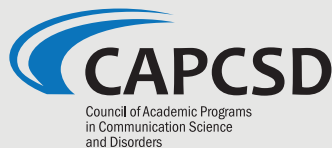
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WELCOME BACK to an ongoing series that challenges the audiologist to identify a diagnosis for a case study based on a listing and explanation of the nonaudiology and audiology test battery. It is important to recognize that a hearing loss or a vestibular issue may be a manifestation of a systemic illness. Being part of the diagnostic and treatment team is a crucial role of the audiologist. Securing the definitive diagnosis is rewarding for the audiologist and enhances patient hearing and balance health care and, often, quality of life.

CSI Reference Guide:

Visit www.audiology.org and search keywords "CSI Reference Guide."



Considering Birth History When It Comes to High-Frequency Hearing

By Mindy Brudereck

Case History

The 26-year-old mother was healthy throughout the term of the pregnancy and went into labor at 40-weeks' gestation. The pregnancy was complicated just prior to delivery with a possible abruption. There was significant bradycardia with the heart rate of the patient down to 40 beats per minute prior to delivery. This required a stat cesarean section.

At the delivery of the head, a deep scalpel injury occurred on the patient's scalp measuring about two centimeters in length for which stitches were required. After delivery, a large vasa previa was noted. Vasa previa occurs when fetal blood vessels from the placenta or umbilical cord cross the entrance to the birth canal, and can cause oxygen loss and bradycardia.

The patient did not cry at birth and had extremely poor perfusion with no activity and no respiratory effort. The patient was covered in

a thick meconium and required suction and saline rinse of the mouth, nostrils, and nasopharynx, aspiration of the stomach, and chest physiotherapy. He was subsequently diagnosed with Meconium Aspiration Syndrome. The Apgar scores were two, five, and six, at one, five, and ten minutes, respectively.

Upon admission to the Neonatal Intensive Care Unit (NICU), umbilical arterial and venous catheters were placed immediately and the patient was given normal saline bolus to improve his blood gas. He was placed on nasal continuous positive airway pressure (CPAP). He had a sepsis workup performed and was started on ampicillin every 12 hours and gentamicin every 24 hours. The CPAP and antibiotics were discontinued after three days.

The patient was released from the NICU at five days old with no required follow-up. Prior to release,

he passed his hearing screening in both ears at the 35-dB level.

Pop Quiz

What are the high-risk factors of hearing loss related to this experience?

- A. NICU admission
- B. Ototoxic medications
- C. Meconium Aspiration Syndrome
- D. Scalpel injury
- E. Low Apgar scores

Risk factors for hearing loss in this case include: B. the use of ototoxic medicine, C. Meconium Aspiration Syndrome, and E. low Apgar scores (Biswas, et al, 2011; Eichwald and Mahoney, 1993; Halpern, et al, 1987; Kraft, et al, 2014; So, 2009).

B. The patient was given gentamicin for three days as a precautionary measure following the birth. The Joint Committee on Infant Hearing Year 2007 Position Statement lists ototoxic medications as a risk factor for hearing loss. Aminoglycosides, such as gentamicin, are considered ototoxic medications.

C. The patient was diagnosed with Meconium Aspiration Syndrome. According to Halpern et al (1987), meconium aspiration is a risk factor for permanent hearing loss, especially in term infants.

E. According to Biswas et al (2011) and Eichwald and Mahoney (1993), Apgar scores of 0–4 at one minute or 0–6 at five minutes are significant

risk factors for hearing loss in children.

He was not admitted to the NICU long enough to be considered at risk for hearing loss. According to Kraft, et al (2014), a child is considered at risk with an intensive care unit stay of greater than five days. The scalpel injury only required stitches.

Audiometric Findings

Distortion product otoacoustic emissions screenings were performed when the patient was eight weeks old. The right ear passed at 2000–3000 Hz, but absent responses were noted at 4000–6000 Hz. The left ear passed at 2000–5000 Hz, but absent responses were noted at 6000 Hz. This was repeatable. The results “passed” according to the settings of the equipment.

A screening audiogram using standard methods was performed at two years, ten months of age, and showed normal responses from 500–4000 Hz bilaterally.

An audiogram was performed using standard methods at three years, zero months old (see TABLE 1). Speech reception thresholds were consistent with these findings. Type A tympanograms were obtained bilaterally and ipsilateral acoustic reflex thresholds were within normal limits, with the exception of an elevated response at 2000 Hz in the right ear. Contralateral acoustic reflex thresholds were absent when stimulated on the right at 1000 Hz and 4000 Hz. Ipsilateral and contralateral acoustic reflex thresholds were normal in the left ear at 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz.

TABLE 1. Pure-Tone Air-Conduction Test Results at Age Three Years, Zero Months

	500HZ	1000HZ	2000HZ	3000HZ	4000HZ	6000HZ	8000HZ
RIGHT (DBHL)	10	10	10	25	55	55	60
LEFT (DBHL)	10	10	10	NT	20	NT	NT

	250HZ	500HZ	1000HZ	2000HZ	3000HZ	4000HZ	8000HZ
RIGHT (DBHL)	50	45	20	15	30	75	75
LEFT (DBHL)	20	15	15	10	NT	15	35

TABLE 2. Pure-Tone Air-Conduction Test Results at Age Three Years, Six Months

A subsequent audiogram was performed at three years, six months old (see TABLE 2). Tympanograms were Type B on the right ear and Type A on the left ear. Pure-tone air- and bone-conduction testing for the right ear showed a moderate conductive hearing loss in the low frequencies and a severe mixed hearing loss in the high frequencies. The left results indicated normal hearing sensitivity from 250–4000 Hz, dropping to a mild hearing loss at 8000Hz.

A hearing screening was performed at preschool during this time and the patient was deemed “too inconsistent to test.” It was recommended he wait until the following year for repeat screening.

At four years, one month old, pure-tone air-conduction results indicated the right ear results were within normal limits from 250–3000 Hz sloping to a moderate hearing loss from 4000–8000 Hz. The left ear results were within normal limits from 250–4000 Hz, sloping to a moderate loss at 6000Hz and 8000Hz (see TABLE 3).

Audiometric testing performed at five years old, eight years old, and 12 years old are all consistent with a moderate high-frequency sensorineural hearing loss bilaterally. Word recognition scores have consistently remained at 100 percent when performed at 40 dB SL. Extended high-frequency air-conduction thresholds obtained at eight years old are shown in TABLE 4.

TABLE 3. Pure-Tone Air-Conduction Test Results at Age Four Years, One Month

	250HZ	500HZ	1000HZ	2000HZ	3000HZ	4000HZ	6000HZ	8000HZ
RIGHT (DBHL)	10	10	0	0	15	55	50	45
LEFT (DBHL)	5	15	5	0	5	5	50	45

Pop Quiz

What would your recommendation be if this were your patient?

- A. Fit the patient with hearing aids
- B. Make accommodations for the classroom
- C. Fit the patient with an FM system for the classroom
- D. None of the above

Course of Care

The patient was fit with bilateral receiver-in-the-canal hearing aids at eight years old, because he was unable to hear the differences between high-frequency fricatives if he could not see the speaker’s face. He also had difficulty producing these sounds on a consistent basis in normal conversation. Prior to that time, no concerns were noted either at home or at school. After being fit with the hearing aids, he was able to consistently produce and identify high-frequency fricatives. His family reports he became more engaged in conversation and his overall attention to conversation improved.

A 504 plan was developed for the classroom to provide the patient with preferential seating, emphasizing the placement of his left ear closest to the instructor.

The patient was not fit with an FM system as he was successful in the classroom with the hearing aids

	10,000HZ	12,500HZ	14,000HZ	18,000HZ
RIGHT (DBHL)	30	30	30	15
LEFT (DBHL)	45	35	30	15

alone. While his hearing aids did have a remote microphone option, the patient chose not to make use of it.

Conclusion

The patient had several risk factors at birth for potential hearing loss, and multiple audiological tests were performed before the hearing loss was diagnosed and treatment initiated. Although his hearing loss is minimal, the patient did benefit from appropriate amplification and accommodations in the classroom. ^{A1}

Joint Committee on infant hearing. Year 2007 position statement: principles and guidelines for hearing detection and intervention programs. *Pediatrics* 120(4):898–921.

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TABLE 4. Extended High-Frequency Air-Conduction Threshold at Age Eight Years

Mindy K. Brudereck, AuD, Board Certified in Audiology, is the owner of Berks Hearing Professionals, a private practice in Wyomissing and Birdsboro, Pennsylvania.

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Updates to the Medicare Physician Fee Schedule for 2018

By: Kate Thomas

Some questions have come up regarding the billing of sinusoidal vertical axis rotational chair testing, 92546. In the November/December 2017 *Audiology Today* article, “Billing and Coding the Vestibular Evaluation,” it was recommended billing one unit per plane of testing. By definition, vertical axis rotation is evaluation of the horizontal plane only. Billing CPT code 92546 only applies to horizontal plane testing and the audiologist should not use this code to bill for additional axes.

It is important to check with your third-party payers on billing multiple units for 92546, as there may be variation in coding guidance based upon the payer. Medicare only allows the billing of one unit of 92546 per encounter. *CPT Assistant* has also published guidance advising that this code is intended to be billed once per encounter. As with all your billing and coding, make sure you check with your patient’s third-party payer prior to providing services.

On November 2, 2017, the Centers for Medicare & Medicaid Services (CMS) released the Medicare Physician Fee Schedule (MPFS) final rule for 2018. The final rule addresses adjustments to the MPFS and other Medicare Part B payment policies, including changes in valuation for services and overall payment updates.

The changes finalized in the MPFS final rule officially took effect on January 1, 2018. The Academy has prepared a list of payment rates by CPT code for audiology procedures covered under the fee schedule. This list is available on the Academy’s website, search key words “Final Rule Changes to 2018 Medicare Physician Fee Schedule.” The Academy has also prepared an analysis of the final rule below, and will continue to provide additional information and updates on the Reimbursement page of the Academy’s website.

CMS Finalizes Conversion Factor of \$35.99 for CY 2018

For Calendar Year (CY) 2018, CMS determined the MPFS conversion factor to be \$35.99. This update reflects the +0.50 percent update established under the Medicare Access and CHIP Reauthorization Act (MACRA) of 2015, reduced by 0.09 percent, due to the misvalued code target recapture amount, required under the Achieving a Better Life Experience (ABLE) Act

of 2014. The conversion factor for CY 2018 represents a slight increase over the conversion factor for CY 2017, which was \$35.89.

Valuation of Specific Services

For CY 2018, CMS is finalizing the values for individual services that generally reflect the expert recommendations from the American Medical Association (AMA)—Relative Value Scale Update Committee (RUC) without as many refinements as CMS has proposed in past years. The Academy addressed the valuation process in our MPFS proposed rule comments. Those comments are available on the Academy’s website under “Reimbursement.”

Notably, CMS also encourages the RUC to heed public comments requesting a more open valuation process and for broader medical representation across specialties on the panel. It is unclear if such comments will have an effect on the RUC, which has long been considered a private and closed process.

Professional Liability Insurance

CMS finalized its proposal to utilize the RUC and specialty recommendations related to expected specialties for low-volume codes, a change advocated by the AMA RUC and supported by the Academy. CMS did not finalize its proposal to use updated premium data in

computing the professional liability insurance relative values. CMS has stated that they will work to address the limitations with the premium data prior to updating this information in 2020.

Payment Rates for Non-excepted Items and Non-excepted Off-Campus Providers

In CY 2017, CMS finalized the MPFS as the applicable payment system for certain items and services furnished by certain off-campus hospital outpatient provider-based departments. For CY 2018, CMS is finalizing a 20 percent reduction to the current MPFS payment rates for these items and services. CMS currently pays for these services under the MPFS based on a percentage of the Hospital Outpatient Prospective Patient System (OPPS) payment rate. Specifically, the final policy will change the MPFS payment rates for these services from 50 percent of the OPPS payment rate to 40 percent of the OPPS rate.

Physician Quality Reporting System

CMS is finalizing a change to the current policy that requires reporting of nine measures across three National Quality Strategy domains to only require reporting of six measures.

MACRA Patient Relationship Categories and Codes

CMS is finalizing their proposal to use the Level II HCPCS modifiers found in TABLE 1 as the patient relationship codes. CMS will add these codes to the operational list of patient relationship categories

NO.	HCPCS MODIFIER	PATIENT RELATIONSHIP CATEGORY
1x	X1	Continuous/broad services
2x	X2	Continuous/focused services
3x	X3	Episodic/broad services
4x	X4	Episodic/focused services
5x	X5	Only as ordered by another clinician

available at www.cms.hhs.gov/medhpcsgeninfo.

CMS is also finalizing their proposal that Medicare claims submitted for items and services furnished by a physician or applicable practitioner on or after January 1, 2018, should include the applicable patient relationship modifier, as well as the NPI of the ordering physician or applicable practitioner (if different from the billing physician or applicable practitioner).

Audiologists are not considered applicable practitioners at this time. For 2018, an applicable practitioner is defined as a physician assistant, nurse practitioner, clinical nurse specialist, and a certified registered nurse anesthetist. The secretary of HHS has the authority to expand the list of applicable practitioners to include other providers, such as audiologists, in 2019.

In the final rule, CMS is finalizing that HCPCS modifiers may be voluntarily reported, and the use and selection of the modifiers will not be a condition of payment. CMS has stated that voluntary reporting will allow the agency to collect more information about the patient relationship codes, and provide more opportunities for education and outreach to clinicians. This will inform their overall ability to refine the codes in the future.

The Academy is closely monitoring this issue. We have advocated to CMS that when HHS determines


TABLE 1. Patient Relationship HCPCS Modifiers and Categories

audiologists are applicable practitioners (likely 2019), the Agency extend the same opportunities for voluntary reporting, flexibility, and education and clinician outreach.

OPPS and QPP Final Rules for 2018

In addition to the MPFS final rule, CMS released the OPPS and Quality Payment Program (QPP) final rules for CY 2018. Those rules also took effect on January 1, 2018. The Academy has an analysis of both of those final rules available on the Reimbursement page of our website, including a listing of all OPPS 2018 Ambulatory Payment Classifications for audiology codes.

Additional Information

The Academy continues to monitor CMS Medicare Part B policies, provide commentary, and meet with CMS at Agency headquarters as necessary to advocate for the profession of audiology. Look for updates in the *Audiology Weekly* e-newsletter. 

Kate Thomas is the senior director of advocacy and reimbursement for the American Academy of Audiology.



Media Training: Do I Need This?

By Vicki Bendure

As public relations professionals, we are often asked by company owners, presidents, and CEOs about media training. There are several typical questions that often arise.

1. I've done media interviews, so why do I need media training?
2. I have no intention of ever doing media interviews (leave that to someone else in the company), so why would I need media training?
3. I've done the training. I know it's valuable and I'd like a refresher and can you also train everyone else in our office?

No matter who you are, if you speak to anyone—groups, individuals, and/or the media, training will help you. It's a valuable business tool in learning the art of the sound bite and how to get your point across as succinctly and effectively as possible. It will train you to “cut to the chase” when you're speaking with other employees, colleagues, or the media.

Everyone benefits from media training and the key to becoming good at interviewing (and speaking in general) is through repetition and practice. If you've had media training, the opportunity to refresh your skills and learn about the ever-changing media landscape is always beneficial.

If you deal with media at all, then it is essential that you have media training. The press landscape is constantly changing with blurred lines between traditional and social media. With social media growing so rapidly, you can easily now set up your own media channels and reach equal or larger numbers of people on your own. But, you still need to know how to communicate your key messages; how to create a message platform and the art of the sound bite.

Everyone should have media training because everyone in a company represents that company to the outside world. They are the gatekeepers and the front line. More importantly, they are the company

ambassadors and, if they don't know what the company key messages are or how to best communicate the mission and vision of the company, they can never be part of elevating your brand and building your company reputation. They do not have to have permission to speak to media to communicate your brand. They're communicating daily with neighbors, friends, and co-workers. In fact, in many instances, they're more critical to your company messaging than a news story. Word of mouth is the most powerful form of advertising.

Even if you're not the primary person in your company to speak with the media, being able to effectively communicate your brand messaging is extremely important. And, it's not unusual for the person who isn't supposed to be talking with the media to suddenly be thrust into the limelight when a crisis arises or the desired spokesperson is unavailable.

In some of these cases, media training will teach you how to not speak to the media without raising red flags. We've all seen those 60 Minutes interviews where a camera is chasing someone across a parking lot. Those cameramen and reporters don't just chase down the people who have had media training. A wrong answer or a misstep and you can quickly escalate a situation that may have been totally innocent.

Learning how to handle yourself in tough situations is also part of media training. Not only will it teach you to think before you speak, it will train your brain to run through various scenario outcomes before answering or agreeing to take the interview. It's valuable training that, in addition to media interviews, translates to many other areas of business from speaking to colleagues and employees to addressing large groups and organizations, presenting research findings or answering the simple question—"what is it that you do?" ^A

Vicki Bendure is president of Bendure Communications, Inc. If you have questions or need additional information, please e-mail Vicki Bendure at Vicki@bendurepr.com.

Vicki will also be conducting a Public Relations Training Workshop at AAA 2018 in Nashville, Tennessee, on Wednesday, April 18. For more information, visit www.AAAConference.org.

You can also find several resources including a Public Relations Tool Kit, press release templates, and more, on the Academy's website (www.audiology.org/get-involved/public-awareness).

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Foundation Events at AAA 2018 in Nashville

By Mindy Brudereck

Each year, the American Academy of Audiology Foundation hosts multiple exciting events at the annual conference. The annual Auction 4 Audiology launches on April 9, 2018 and runs throughout the AAA Conference. It is one of the most anticipated activities during the conference. The auction provides an opportunity to shop for ear-themed artwork and accoutrements, popular electronic items, gift baskets, new jewelry, and designer duds.

In addition to the annual Auction 4 Audiology, the Foundation will be hosting a designer handbag silent

auction live during the Foundation's Happy Hour. Tickets to the Happy Hour may be purchased in advance or at the door with special rates available for students and new professionals. You will have the opportunity to bid on new and gently used high-end designer handbags, such as Burberry, Coach, and Kate Spade, while enjoying hors d'oeuvres and drinks, meeting new colleagues, and catching up with old friends. You must be in attendance to bid and win!

The Foundation Happy Hour handbag auction kicks off the first night of conference events immediately following Celebrate Audiology

on Wednesday, April 18, from 7:00–8:30 pm, at the Omni Nashville Hotel.

Join us for the Foundation's "Lead Like a Girl" featured lecture with presenter Tacy Byham, PhD, chief executive officer of Development Dimensions International on Thursday, April 19, from 3:00–6:00 pm. Dr. Byham will be on hand following her presentation to sign copies of her book, *Your First Leadership Job: How Catalyst Leaders Bring Out the Best in Others*.

To help you wake up with that philanthropic feeling on a Friday morning, Coffee for a Cause will



return at the entrance to the Marion Downs Lecture in Pediatric Audiology. Your suggested donation of \$5 per cup, will go directly to support the AAA Foundation's efforts in promoting research, education, and public awareness. This is a great opportunity to meet your Foundation trustees and discuss the latest projects and initiatives from the Foundation.

The Foundation is once again partnering with the Oticon Foundation to host the annual Marion Downs Lecture in Pediatric Audiology on Friday, April 20, from 9:00–11:00 am. This year's speaker

is Dana Suskind, MD, professor of surgery and director of the Pediatric Cochlear Implant Program at the University of Chicago. Dr. Suskind's cochlear implant work led her to found Thirty Million Words, a program empowering parents and caregivers from lower socioeconomic backgrounds to harness the power of their language with child directed speech to maximize the home language environment for long-term academic and social success. The popular Marion Downs Lecture is always highly attended; make sure you arrive early to secure a seat near

the front, while enjoying a cup of coffee from Coffee for a Cause.

For American Academy of Audiology members who are experiencing barriers to attend the conference due to financial hardship, the Foundation is offering the Membership Assistance Program. This program provides complimentary conference registration for selected applicants. Please see the Foundation's website (www.audiologyfoundation.org) for more details on how to apply for this program.

The Foundation Board of Trustees looks forward to seeing you in Nashville!

Mindy Brudereck, AuD, Board Certified in Audiology, is the chair of the Communications Committee on the American Academy of Audiology Foundation Board of Trustees.



Student Academy of Audiology (SAA) has designed numerous events to inspire confidence in the next generation. In the exhibit hall, the SAA Scavenger Hunt will give students more familiarity with many vendors in the profession. Need to prepare for the Praxis? Take advantage of the Practice Bowl to hone your knowledge and determine which audiology-related topics you owe a little more book time. No matter where you are in your student journey, SAA has a plan to help you along the way at the AAA 2018 Conference. Lastly, don't forget socialization! The SAA Mix and Mingle will be held on Wednesday, April 18 at 4:00 pm. This event allows students to network with peers and future colleagues from audiology programs across the country.

Networking

Expand your circle of connections! AAA 2018 has unlimited networking opportunities to meet new professionals, future employers, and other students.

Hot Topics and Cold Drinks is returning to include topics such as: Millennial Leadership and Self-Branding, Reimbursement and Billing, and Over-the-Counter Hearing Aids. During this event, students can meet experts in the profession and discuss hot topic issues in audiology.

Cheers for Ears will be held on Wednesday, April 18, at 8:00 pm at Rock Bottom Brewery. Cheers for Ears is a fundraising event that supports student scholarships, research grants, education and community service initiatives of SAA. Meet other students and professionals attending the conference and share the experience!

Groundbreaking Research

AAA 2018 is a great place to learn the latest in hearing science, clinical practices, and technology. As a student, you will be able to expand your knowledge with cutting-edge research being conducted by students at other universities. Graduate students in audiology and recent graduates will be sharing their latest original research in the form of research poster presentations as well as at the annual Student Research Forum.

Student Leaders in Audiology Conference

The Student Leaders in Audiology Conference (SLAC) was created to provide an open and engaging opportunity for students to grow and develop skills in leadership so that they may become active, contributory members to an already thriving audiology community. The audience will be solely comprised of audiology students who have been selected through a rigorous application process to become future leaders and decision makers in the profession of audiology. This year, SLAC will be held on Wednesday, April 18, from 1:00-4:15 pm.

SAA Conference

The SAA is excited to launch its sixth-annual SAA Conference, to be held in conjunction with AAA 2018 in Nashville on Saturday, April 21. Last year, more than 170 students attended in Indianapolis—and we expect to have even more attend this upcoming year. The SAA Conference focuses on enhancing clinical decision-making skills through case-study discussion and problem-based learning. This year, there will be a series of sessions focusing on six topic areas including

electrophysiology, vestibular assessment, pediatrics, and more!

The SAA conference is especially designed for today's audiology students, preparing them for externships and future clinical placements. Be on the lookout for registration details for the SAA Conference! [📍](#)

Mimi Moeller is currently a third-year AuD student at the Northeast Ohio AuD Consortium in Akron, Ohio. She currently serves on the national SAA Conference Subcommittee.

Claire Roland is currently a second-year AuD student at the University of Cincinnati in Cincinnati, Ohio. She currently serves on the national SAA Programs Subcommittee as the Enriching Events Chair.

Mary Byrd is a third-year AuD student at the Northeast Ohio AuD Consortium in Akron, Ohio. She currently serves on the national SAA Programs Subcommittee.

Kaci Wathen is completing her fourth-year externship at Henry Ford Health System in Detroit, Michigan and is an AuD student at University of Louisville in Louisville, Kentucky. She currently serves on the national SAA Conference Subcommittee.



New Members of the Student Academy of Audiology

Arielle Abrams
Sarah Alfieri
Meagan Allegrini
Linda Allemang
Lexie Arbour
Maryann Badura
Kelsey Baney
Amanda Bartley
Megan Bartoshuk
Emma Bartz
Brianna Bean
Casey Behre
Lydia Berger
Rachel Berry
Abigail Blauser
Maria Bonvissuto
Kristen Brancucci
Meredith Braza
Cassandra Bridge
Jessica Broesler
Kacey Brown
Lindsay Brown
Jacob Buccini
Mary Buckman
Michael Burchesky
Emily Burton
Christina Campbell
Micaela Capps
Alexandra Carmichael
Kendall Carroll
Marisa Carrozza
Katherine Chmieleski
Jacobi Clark
Erin Cook
Wilmarie Rosado Cortes
Limary Crespo
Emalee Danner
Brandi Davis
Carly Davis
Danielle Davis

Toryn Davis
Diva De Benedictis
Tabitha DeGarmo
Maevae Derrig
Madeline Dickson
Victoria Dillon
Olivia Dion
Kelsey Dougherty
Christina Dubas
Nichole Dwyer
Jenette Dziezynski
Raissa El-Houayek
Samantha English
Trenton England
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Sarah Frisina
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Carolina Garcia Nieves
Keira Glasheen
Elizabeth Goll
Victoria Golz
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Josephine Han
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Kathryn Hopping
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Jelani Johnson
Cara Jones
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Angela Lasecki
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Megan Li
Jenna Loffredo
Shea Long
Lauren Lonsway
Megan Losinski
Lilybeth Lugo Montalvo
Kaitlyn MacDonald
Jennifer Maikell
Brianna Marcucio
Kristina Martinez
Juliana Mathews
Cassandra Mazzacco
Lauren McCauley
Mackenzie McCloud
Stephanie McDowall
Carrie McElree
Ketevan Mdzinarishvili
Ali Melliti
Heather Menendez
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Nikole Miller
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Taylor Nelson
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Nicole Pearson
Marie Pellasce
Sydney Polifrone

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Taylor Proske
Sarah Pupa
Corinne Pyne
Eryn Quillen
Sophie Racine
Francisco Reyes-Santiago
Bailey Reynolds
Laura Rice
Margaret Richter
Gianna Righi
Caitlyn Ritter
Kristie Roberts
Lyndsay Rogers
Leigh Rohren
Beth Rosen
Sydney Ross
Jessica Rubin
Elizabeth Russo
Jaclyn Russo

Karson Sacca-Mayne
Eleni Santarelli
Samantha Scharf
Brittany Schmidt
Elizabeth Schneider
Richard Selleck
Kaitlyn Sheapp
Rebecca Sherman
Rebecca Sieruga
Natalie Silvia
Crystal Smaldone
Jordan Smith
Madeline Smith
Michelle Smith
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Abigail Stecker
Penny Steinberg
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Taylor Traficant
Kelsey Uguccioni
Chloe Vaughan
Keerthana Velappan
Kathryn Vlietstra
Kaitlin Walsh
Shannon Walsh
Martha Westman
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I Love My CH-AP!

By Jenne Tunnell

February is the time of year when thoughts turn to love. Recently whilst perusing the candy and card aisles, the thought occurred to me that love comes in many forms. I love my job. I love helping patients. And I love helping students who will help patients in the future!

There were 267 CH-AP certificate holders as of November 1, 2017.

However, it is widely agreed in our profession that there is a lack of formalized preceptor training, leaving preceptors ill-prepared for this important role. This gap in training is the root cause of inconsistencies in the quality of education provided to students.

Consider the number of roles receptors need to know how to fill as described by Dr. Coverstone et al, (2016).

“In their role as **coaches**, preceptors motivate students. They ask powerful questions that are short, simple, and open-ended. Preceptors affirm and acknowledge positive behaviors, and help students identify gaps between what they know and what they need to know.

Preceptors are also **teachers**. They share knowledge and expertise, and manage learning opportunities. They engage students in dialogue, offer explanations, and answer questions.

Preceptors are highly influential **role models**, who demonstrate what it means to be a professional. Students absorb and emulate the way a preceptor interacts with patients and their families, colleagues, support staff, and other health-care providers.

A good preceptor is also a **facilitator**. Preceptors connect students with opportunities to learn inside and outside of the clinic. They provide invaluable exposure to the business side of how a practice operates.

Preceptors are **evaluators** who measure performance by assessing a student’s application of knowledge and skills in the clinical setting.

Preceptors are **gatekeepers**. They are often the last teachers a student has before graduation, and are key in determining whether a student is prepared for entry into the profession, and demonstrate an interest in the student’s long-term professional development and success.”

I don’t know about you, dear reader, but I was woefully unprepared to take on such an important job without adequate education. So, my colleagues and I asked ourselves, “What’s the best way to bridge the gap in education for preceptors?” Enter Certificate Holder-Audiology Preceptor (CH-AP)! This article is my attempt to share with you the positive impact this training has had on our practice, and ultimately, the students placed with us.

Background

More than 800 audiologists from across the nation participated

in ABA's 2012 Assessment-Based Training Certificate Survey. Findings from the survey ranked improved access to preceptor training as a top priority for professional development. Based on survey results, the ABA Board of Directors approved the development of a certificate program. The CH-AP course was launched in May 2016, and consists of four modules. There were 267 CH-AP certificate holders as of November 1, 2017.

Present

My colleagues and I took the course soon after its release. Even after completing only the first module, I began to print out tool materials to implement in clinic the very next day!

Our practice attracts applicants from a variety of AuD programs both in and out of the state. As a result, we have found that the universities' evaluation standards, expectations, and the student's fundamental knowledge and preparation are different for each extern. The CH-AP training helped us realize that ultimately, we (the preceptors) were in charge of structuring the experience for our students. This transition to a standardized goal-setting and assessment schedule made our lives easier, as we learned to actively engage with the University's extern coordinators in order to align our expectations for each student.

Here's what my fellow preceptors had to say about the CH-AP.


"The CH-AP helped me understand how to cater to each student's individual learning style. I also understand better how to help them set appropriate goals and the importance of routinely checking on their progress." Nicole Krueger, AuD, CH-AP



"As preceptors, we often struggle with how to adjust our teaching styles to accommodate a student's learning style. The CH-AP gave me a deeper understanding of how to identify a student's learning style and to use that information in a meaningful way to help them achieve their goals." Katie Kendhammer, AuD, CH-AP.

"I completed my externship three years ago, at a time when there were no training or certification courses available to prepare a preceptor. I was fortunate to be hired after graduating, and am now a colleague to my then-preceptors. I thought our program was good, but the changes to it after all of us became certified in the CH-AP program made it even better. We are more standardized in our goal-setting and in holding the students accountable toward setting realistic, relevant, and achievable goals. My colleagues and I are more mindful of adjusting our teaching methods to compliment the student's learning styles. Most importantly, we now use evidence-based tools, such as questionnaires and assessments, to monitor progress and our performance as preceptors. The CH-AP is about helping preceptors function at their best so that the next generation

can perform at their best." Colleen Ireland, AuD, CH-AP

Whether you are a student looking for a placement that will help launch your career, or an audiologist looking to boost your skills and enhance your program, the CH-AP is a credential you'll love! 

Jenne Tunnell, AuD, Board Certified in Audiology PASC, CH-AP, is the audiologist managing for Mayo Clinic Health System in Minnesota. She is also the chair of the ABA Board.

Reference

Coverstone J, Brazell T, Focht C. (2016) The Ideal Preceptor: CH-AP, The First Standards-Driven Certificate Training Program for Audiology Preceptors, AudiologyNOW! April 2016, Phoenix, AZ.



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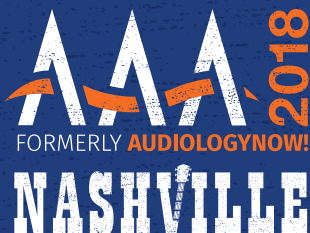
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What Is Evidence-Based Audiology?

By James W. Hall III

This article is the first of a two-part series on evidence-based audiology and the education of audiologists. A second article will offer additional strategies for more effectively instilling in students the principles of evidence-based audiology, and their application in clinical practice.

The classic 1976 Jerger and Hayes article on the crosscheck principle is perhaps the best example of highly efficient implementation of research findings into clinical practice.

To expand on this theme, let us look at the ACAE Accreditation Standards for the Doctor of Audiology Program, Standard 25:

Student Research & Scholarly Activity: The program must demonstrate that students have knowledge of the fundamentals of research and research design, enabling them to read the professional literature and understand and critically evaluate the concepts related to evidence-based practice. The students must be critical consumers of research and be able to apply this knowledge in evidence-based practice” [Accreditation Standards for the Doctor of Audiology (AuD) Program, p. 9].

Believe it or not, some 30-plus years later, I still remember the exact place where I first heard, or technically read, the phrase “best practices.” The then rather strange term caught my eye as I looked over the program of an upcoming out-of-state speech and hearing convention while standing near the window of my office on the sixth floor of the University of Texas Medical School in Houston. Truthfully, I felt a little anxious as I reread the phrase in an attempt to decipher its meaning. My first thought was that I really should at least have a vague understanding of best practices since I was one of the speakers at the same convention. Also, as director of audiology in a teaching hospital within a large medical center, I was presumably responsible for making sure that our audiology team was following best practices in the provision of diagnostic and rehabilitative services to varied clinical populations.

Momentarily taking my eyes off of the convention program to contemplate the meaning of “best practices,” my anxiety immediately faded away as I gazed down from my vantage point to Dr. James Jerger’s famed audiology clinic at The Neurosensory Center of The Methodist Hospital and Baylor College of Medicine. That’s where I acquired most of my clinical knowledge and skills over a six-year period on the way to earning a PhD in audiology. If best practice had anything to do with evidence- or research-based practice, then I was in good shape and so was my clinic.

Dr. Jerger's audiology facility was the model for translating research findings into clinical practice. Clinical services there were state-of-the-art largely because they were guided directly by research conducted in house. Multiple ongoing clinical investigations on varied diagnostic audiology themes, from speech audiometry to auditory neurophysiology, led to dozens of articles in peer-reviewed journals, sometimes at the rate of one or two per month. Importantly, the same audiologists involved in data collection also provided patient services in the clinic. Indeed, research findings were immediately incorporated into clinical practices and protocols, often before articles actually appeared in print. The classic 1976 Jerger and Hayes article on the crosscheck principle is perhaps the best example of highly efficient implementation of research findings into clinical practice.

By the 1990s, perhaps five years after my first encounter with the term "best practices," another related term...evidence-based medicine... appeared regularly in the literature. One of the well-known pioneers in the emerging field, David Sackett of the National Health Service (NHS) in the United Kingdom, offered this simple definition:

Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Sackett et al, 1996, p. 71).

Dr. Sackett and colleagues emphasized in multiple publications that both clinical expertise and external evidence are necessary

for the practice of good health care. Another quote clearly makes this important point: "Without clinical expertise, practice risks become tyrannized by evidence, for even excellent evidence may be inapplicable to or inappropriate for an individual patient. Without current best evidence, practice risks becoming rapidly out of date, to the detriment of the patient" (Sackett et al, 1996, p. 72).

In incorporating these principles of evidence-based practice in doctor-of-audiology programs, we face four inescapable and significant challenges in the education of audiologists. They are presented here in a reasonably logical sequence.

- Students must acquire knowledge and develop clinical competences, and ultimately skills, across the broad scope of clinical audiology.
- In addition to mastering technical skills in performing diagnostic procedures and implementing management strategies, students must, for any given patient, select the most effective battery of tests, and/or management options.
- Students must know how to access and critically evaluate research evidence pertaining to the identification, diagnosis, and management of hearing loss and related disorders in children and adults, such as vestibular disorders, tinnitus, and disorders of sound tolerance.
- Finally, students must learn how to integrate their clinical expertise and their knowledge of appropriate research evidence to independently make good clinical decisions for their patients.

Instilling in doctor of audiology students the principles of evidence-based audiology is truly chal-

lenging. Other health professionals are meeting this challenge and we can too. The second article in this ACAE Corner series will identify those persons and professional entities with a role and a stake in the education of students in the principles and practice of evidence-based audiology. The follow-up article will also offer some ideas about classroom and clinical instruction strategies for meeting the four challenges just listed. 📖

James W. Hall III, PhD, Board Certified in Audiology, has 40 years of experience in audiology as a clinician, administrator, teacher, and researcher. A founder of the Academy and vice chair of the ACAE Board, Dr. Hall is a professor of audiology at Salus University in Elkins Park, Pennsylvania, and at the University of Hawaii in Honolulu, Hawaii.

Reference

Sackett D, Rosenberg WMC, Gray JAM. (1996) Evidence-based medicine: what it is and what it isn't. *British Medical J* 312:71-72.

AUDIOLOGY ADVOCATE

Academy Advances Legislative and Regulatory Priorities in 2017 Primed for a Busy 2018

The American Academy of Audiology (the Academy) had an extremely active 2017 on Capitol Hill and with federal regulatory agencies, seeing multiple victories and building relationships that will allow for continued success as we enter 2018. In addition to being engaged with the House and Senate on issues related to over-the-counter (OTC) hearing aids, early childhood hearing, National Institutes of Health (NIH) funding, student loan relief, and telehealth, the Academy had extensive conversations on important topics with agencies such as the Food and Drug Administration (FDA), the Department of Veterans Affairs (VA), the Federal Trade Commission (FTC), and the Centers for Medicare and Medicaid Services (CMS).

Through 2017, the Academy was able to build upon previous relationships and issue areas to better represent the interests of audiologists in Washington.

One of the Academy's key legislative priorities entering 2017 was ensuring that Congress reauthorized the Early Hearing Detection and Intervention (EHDI) Act. The EHDI authorization had expired in 2015 and remained a priority for the hearing health community in Washington. Senators Rob Portman (R-OH) and Tim Kaine (D-VA) and Representatives Brett Guthrie (R-KY) and Doris Matsui (D-CA) introduced corresponding EHDI bills in March. The Academy, along with several other strategic partners, met with members of Congress throughout this time period to solicit cosponsors list and urge Congress to advance this bill. The Academy also had several student groups visit to lobby Congress on EHDI, including a joint group from The Ohio State University and the Northeast Ohio AuD Consortium, Nova Southeastern University, and the Student Academy of Audiology Board.

In October, the merits of the legislation prevailed and the bill was passed out of the House of Representatives through a voice vote following passage from the Senate. Less than two weeks later, President Trump signed the legislation, which

authorizes funding for state EHDI programs for the next five years. The Academy thanks all of its members who contacted their representatives to ensure that Congress was aware of the importance of passing this bill.

The Academy also engaged with Congress on the OTC Hearing Aid Act. The Academy preemptively met with staff for Senators Elizabeth Warren (D-MA) and Chuck Grassley (R-IA) in early February 2017 before they reintroduced their bill from the previous Congress. The Academy worked closely with the bill's sponsors to enact some positive changes to the legislation, including advocating for stronger labeling requirements, while also taking the opportunity to educate Congress on the role and importance of the audiologist beyond the hearing aid device itself. Following intense discussions between Congress and members of the hearing health community, the legislation was attached to the FDA Reauthorization Act, a must-pass bill. This bill was signed into law by President Trump in August. The FDA is set to begin the Rulemaking process related to developing a category of OTC hearing aids.

Several Academy Board Members met with the FDA at the end of October to get a better sense of timing and to understand the direction that the FDA plans to take when regulating the new category of OTC



hearing aids. The Academy shared a number of recommendations that included labeling recommendations, ensuring that the FDA treats OTC hearing aids as medical devices and not consumer electronics, and wanting to find out how to best mitigate consumer confusion related to OTC hearing aids and personal sound amplification products. The FDA shares the Academy's concerns about these issues and there are plans in place to remain actively engaged over the coming years as the FDA develops and distributes their notice of proposed rule making.

Additionally, the Academy recently took a position in support of H.R. 2550, the Medicare Telehealth Parity Act. This legislation will add audiologists to the list of accepted providers to be reimbursed when

Medicare services are provided through telehealth. The Academy strongly supports telehealth and allowing audiologists to be reimbursed for services provided to Medicare beneficiaries through telehealth. The legislation was introduced by Rep. Mike Thompson (D-CA), a longtime champion of hearing health care and one of the

“Through 2017, the Academy was able to build upon previous relationships and issue areas to better represent the interests of audiologists in Washington.”

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Jessica Lally, AuD

Jason Levy

Kayla Peace, AuD

David Raybine, AuD

Stacy Wright, MA

co-chairs of the Congressional Hearing Health Caucus. The Academy has begun meeting with Congress on this issue, hoping to see some movement in 2018.


Building on our work related to telehealth, the Academy filed comments with the VA on expanding the authority of VA providers to provide telehealth to their patients. The Academy supported the efforts to clarify the ability of health care providers, like audiologists, to provide care to veterans through telehealth. The Academy has also remained active in Congress on veterans' issues and audiological services provided by VA audiologists.

The Academy held dozens of meetings with key members of Congress when potential conversations over privatization of VA audiology were discussed. Luckily, these concerns never materialized and the Academy was able to engage with Veterans Affairs committee members in a productive way.

The Academy's legislative efforts for the year culminated with Senators Elizabeth Warren (D-MA), Chuck Grassley (R-IA), and Maggie Hassan (D-NH) recognizing October as National Audiology Awareness Month. While the resolution does not change federal policy, it does bolster the Academy's efforts to increase public awareness of the profession and to recognize the importance of the audiologist in hearing health care.

2018 looks to be another busy and active year. In addition to continued discussions over telehealth, student loan relief through the Access to Frontline Health Care Act (H.R. 2042), OTC hearing aids at the FDA, and other potential congressional matters, 2018 is also an election year, and the Academy is planning to focus on expanding the Academy's Political Action Committee (PAC).

In 2017, the Academy's PAC Advisory Board approved significant contributions to both the Democratic Congressional Campaign Committee (DCCC) and the National Republican Congressional Committee (NRCC). These contributions have allowed the Academy to build a strong network of support from members of Congress. The Academy also has contributed to members of Congress and candidates for office supportive of audiology and hearing health care-related issues and expects to build on these relationships in 2018. To read more about the Academy's PAC, please visit the Political Action Committee section of the Academy's website found under the Advocacy tab.

If you have any questions about the Academy's public policy agenda, contact Adam Finkel, associate director of government relations, at afinkel@audiology.org. 



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Hearing loss is the most common congenital sensory impairment and birth defect. It has been well established that genetics plays an integral role in more than half of congenital hearing losses. Given the strong relationship between genetics and hearing loss in audiological practice, the Academy continues its commitment to providing audiologists with the latest on genetics research as it relates to hearing impairment in clinical practice through the annual Academy Research Conference (ARC).

This one-day translational conference is chaired by Kathleen Arnos, PhD, who has assembled a world-renowned lineup of speakers to present their latest findings.

www.AcademyResearchConference.org

Funding for this conference was made possible [in part] by 1R13DC016546-01 from National Institute of Deafness and Other Communication Disorders.

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