SEPT/OCT
2018
American Academy of Audiology
www.audiology.org

AUDIOLOGY TODAY

The magazine of, by, and for audiologists

Audiology & Educational Health Services

A Collaborative Practice

GUIDING PATIENTS THROUGH OPTIONS
Reduce that Overwhelming Feeling

DIFFERENTIATING AUDIOLOGISTS FROM HA DEALERS
Confusion with Consumers (Part 2 of 2)

NANOTHERANOSTICS
Platform for Tinnitus Treatment

Now Connected!

Your patients can now enjoy Bluetooth connectivity with CaptionCall. This means they have more audio choices when using their CaptionCall phone, including:

- Using a streamer that connects directly to their hearing aids
- Using their favorite Bluetooth headphones
- Using the phone's handset or speakerphone

CaptionCall®
Life is Calling

Bluetooth®

To learn more or to watch a video about CaptionCall Bluetooth connectivity, visit **www.captioncall.com/provider**.

Connect more patients, and grow your practice.

Reconnect more of your patients. Offering your patients a no-cost Sprint CapTel phone helps them stay socially engaged and active. With four phone options, you have a solution for every patient. We handle all the details, and our Hearing Health Care Kit makes it easy.

Models include:
Traditional • Modern • Low-vision • Non-internet

Phones to fit every patient.

Your kit includes everything you need, and your patients get their choice of phones! We make it easy. (Registration requried.)

Get your kit **professionals.sprintcaptel.com • 877-805-5845**

Sept/Oct 2018
Vol 30 No 5

CONTENTS

14 **Audiology, Interprofessional Collaboration, and School Health Services** The increased call for interprofessional collaborative practice across educational and health profession models provides an opportunity for audiologists to increase public awareness of the role of educational audiology services.
By Anne Heassler

28 **Background and Theory of a Nanotheranostics Approach for Treating Tinnitus** Integrating diagnostic and therapeutic functions under the rubric of nanotheranostics represents a powerful and attractive paradigm that is well suited for treating tinnitus. What distinguishes this approach from other techniques is the fact that treatment can be individualized—an approach thought by some to be the future standard of care in medicine.
By Anthony T. Cacace, Stephanie M. Curley, James Castracane, Magnus Bergkvist, Aaron K. Apawu, and Avril-Genene Holt

42 **Are Too Many Choices Leaving Your Patients Dazed and Confused?** There is no one-size-fits-all answer, which is why it is important for audiologists to guide their patients in an environment where options are increasing rapidly.
By Bre Myers

50 **Branding the Lie or Branding the Truth: The Need to Differentiate Audiologists from Hearing Aid Dealers (Part 2)** The audiology and medical professions should not surrender their identities and be forced into one collective group. This gives a false impression to consumers when they are trying to make important choices and informed decisions about health care.
By Larry Engelmann

CONTENTS

8 PRESIDENT'S MESSAGE — **Can We Demonstrate Our Value?** By Jackie Clark

10 KNOW-HOW — **The Audiologist: A Partner Within a Health-Care Team** By Maggie Kettler

13 CALENDAR — **Academy and Other Audiology-Related Events and Deadlines**

66 CASE STUDY INVESTIGATION — **Influence of Provider Remarks on Efforts to Maximize Residual Hearing in a Deaf Client** By Linda G. Gottermeier

71 CODING AND REIMBURSEMENT — **What Is "Medical Necessity"?**

72 PUBLIC RELATIONS — **Is Social Media Really Worth the Effort for My Business?** By Vicki Bendure

74 FOCUS ON FOUNDATION — **Give Back to the Foundation** By Mindy Brudereck

78 SAA SPOTLIGHT — **Students and Their State Voice** By Hanna Sawher

81 ABA SOUNDING BOARD — **Tinnitus Help Is Here: Take the CH-TM Today!** By Jenne Tunnell

85 ACAE CORNER — **The Importance of Accreditation "Of, By, and For Audiology"** By James W. Hall III

Academy News

88 AUDIOLOGY ADVOCATE — **A Personal Journey Toward Advocacy** By Vivianne C. Wersel

91 JUST JOINED — **Welcome New Members of the Academy**

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.

Information and statements published in *Audiology Today* are not official policy of the American Academy of Audiology unless so indicated.

FOR SOME ELITE SOLDIERS, PROTECTING THESE COMMUNICATIONS TOOLS IS CRITICAL.

As an audiologist and officer on the U.S. Army health care team, you'll have access to the country's most advanced aural technology while working alongside dedicated professionals. You'll gain experience developing improved communication strategies, evaluating protective devices and developing hearing conservation programs. But more importantly, you'll be helping Soldiers preserve their most valuable communication tool: the ability to hear.

To see the benefits of being an Army audiologist call 800-431-6731
or visit healthcare.goarmy.com/mc36

U.S.ARMY

AUDIOLOGY TODAY

The American Academy of Audiology promotes quality hearing and balance care by advancing the profession of audiology through leadership, advocacy, education, public awareness, and support of research.

AMERICAN ACADEMY OF AUDIOLOGY OFFICE

Main Office
11480 Commerce Park Drive, Suite 220, Reston, VA 20191
Phone: 800-AAA-2336 | Fax: 703-790-8631

Audiology Today (ISSN 1535-2609) is published bimonthly by the American Academy of Audiology, 11480 Commerce Park Drive, Suite 220, Reston, VA 20191; Phone: 703-790-8466. Periodicals postage paid at Herndon, VA, and additional mailing offices.

Postmaster: Please send postal address changes to *Audiology Today*, c/o Membership Department, American Academy of Audiology, 11480 Commerce Park Drive, Suite 220, Reston, VA 20191.

Members and Subscribers: Please send address changes to membership@audiology.org.

The annual print subscription price is $126 for US institutions ($151 outside the US) and $61 for US individuals ($114 outside the US). Single copies are $15 for US individuals ($20 outside the US) and $25 for US institutions ($30 outside the US). For subscription inquiries, telephone 703-790-8466 or 800-AAA-2336. Claims for undelivered copies must be made within four (4) months of publication.

Full text of *Audiology Today* is available on the following access platforms: EBSCO and Ovid.

HAMILTON CAPTEL

HamiltonCapTel.com

Simple, seamless, no-cost* solutions for you and your patients

Hamilton® CapTel® 2400i

Connect your patients with family, friends, and you… in a matter of minutes!

Download the Hamilton® CapTel® Noah® module today!

HamiltonCapTel.com/Noah • 800-826-7111

*Independent third-party professional certification required.
The Hamilton CapTel phone requires telephone service and high-speed Internet access. Wi-Fi capable.

Can We Demonstrate Our Value?

Having grown up in a family with extremely limited financial resources, I still remain vigilant in identifying the value in all things. Many of our Academy board of directors meetings are peppered with the frequent phrase "value-added member benefit." Even as I draw nearer to the closing of my season as the president of the American Academy of Audiology, I still contemplate how audiologists can consistently demonstrate value of services offered to the consumer and our patients.

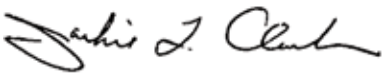
I can't help but recount a story about a young lady who decided to hire a stranger to clean her long-neglected home in preparation for a friend's impending visit. Despite returning from work to a tidy and clean home, she was horrified to discover her cherished family antique china was missing. When asked, during the phone conversation, the cleaner expressed her perception that the china in question was of no value because they were haphazardly stacked in the sink or other precarious places with solidly caked food in varying stages of decomposition. Consequently, the cleaner placed the china pieces in the garbage. That story often comes to mind when I reflect on what contradictory outward appearances I exhibit about the value I place on treasured possessions, relationships, and even my profession.

When we equate value to our professional services, it becomes implicitly necessary to quantify that value with observable action/s that are recognized as benefit/s. Unfortunately, neither graduate degrees (e.g., AuD, PhD, MS, MA, etc.), nor state licenses in isolation will ever guarantee perceived value or prove benefit. So, how can we show value?

One quick Google search will easily yield an abundance of identifiable behaviors and actions to "show your value" that are not limited to the following: demonstrate competence, challenge yourself, take ownership of mistakes, be big enough to apologize, make effective and honest communication a habit, give up feelings of entitlement, meet the benchmark/s (either perceived or stated), and exhibit authentic mutual respect and appreciation, etc.

Ultimately, isn't it really all about building honest relationships to imbue trust and respect and demonstrate value? Wouldn't we willingly hold ourselves to the utmost highest level of accountability and authenticity; as if each patient were our most beloved family member or dearest friend? Arrogant, uncivil, and/or duplicitous behaviors have irretrievable toxic effects on building relationships and/or demonstrating value, and have no place in our profession. Rather it is about maintaining professional skills in a relevant manner performed at the highest level of our scope of practice that will ultimately demonstrate that quantifiable value.

We must push ourselves to that more difficult question: Can you PROVE your value on an hourly and daily basis? Our profession is depending upon each and every one of us to do so.



Jackie Clark, PhD
Board Certified in Audiology
President
American Academy of Audiology

Made for iPhone | iPad | iPod

Introducing

ReSound LiNX Quattro™

ReSound GN

NEW! Chip takes sound quality to the next level

Our new chip delivers twice the memory, 100% more speed, 30% more computing power and a new radio with 20% reduced power consumption. Together with an extended dynamic range, improved frequency response, improved ear-to-ear performance and localization of sound, ReSound LiNX Quattro delivers our most clear, natural sound yet.

Find out more at **resoundpro.com**

GN Making Life Sound Better

The Audiologist: A Partner Within a Health-Care Team

By Maggie Kettler

Hearing loss is associated with numerous systemic disorders. Audiologists frequently provide consultation for patients whose care is managed by other specialists. In many of these situations, audiologists need to provide more than a consultative service. For many patients seeking answers, our audiological results can help in determining a diagnosis and selecting appropriate treatment.

A patient's health history may be complex and his or her health-care team can include numerous providers. Audiologists are comfortable in the role of hearing health-care provider and frequently function independently from the other health-care providers working with a patient. The best outcome, however, occurs when all of the medical professionals involved with a patient work collaboratively.

A rheumatologist treating a patient with hearing loss associated with rheumatologic disorders, for example, might have limited knowledge about audiological testing and treatment. An audiologist could be unclear about the implications of a patient's rheumatologic diagnosis on evaluation and treatment. The patient's journey to hearing health will improve significantly when these health-care experts work together.

The Role of the Audiologist

As professionals and experts in hearing health care, audiologists should strive to be an active part of a patient's multidisciplinary health-care team. It is very important that audiologists clearly explain audiological results and confirm the understanding of those results with patients and the health-care professionals involved in their case. The audiologist's work can be instrumental in leading to an accurate and timely diagnosis, while potentially ruling out other conditions.

Due to the many conditions and diseases associated with hearing loss, the audiologist must obtain as much information as possible from the patient. It is the audiologist's responsibility to be sure the patient provides a thorough personal and family medical history. Audiologists must also take the time to research the patient's other conditions to determine if they may contribute to the presenting concern or the development of a diagnosis. Obtaining thorough and accurate historical information allows the audiologist to provide appropriate, individualized recommendations for each patient. Often, patients with medical issues will need to be seen more frequently

than other patients and may require referrals to other providers.

Some patients who come to an audiology clinic will not have an identified disorder or genetic issue. Many individuals with seemingly unlinked symptoms that have auditory and/or vestibular manifestations will come looking for answers. For some patients, an audiologist may be the initial contact with the health-care system, at least for a specific concern.

Our role is the most complicated for the patient with an unknown diagnosis. That patient may come to an audiologist after experiencing dizziness or tinnitus, which are initial symptoms for numerous conditions.

The results of the medical history and testing should go beyond audiological recommendations and be appropriate to guide a referral to other health-care professionals. A comprehensive review of current symptoms, medications, and previous individual and family medical histories should be considered. Evaluation and recommendations should be thorough and referrals to other health-care providers should be anticipated.

Working with Other Health-Care Providers

Audiologists have a responsibility to educate other health-care providers in their communities about the relationship between hearing loss and other medical conditions. Increased knowledge can promote action that directs patients to appropriate care.

The Audiology Project, a grassroots effort created by Kathy Dowd, AuD, ensures that patients with diabetes have their hearing health-care needs met. The program has made great strides in a short time. This type of effort must be multiplied and replicated.

There are medical professionals in many specialty areas who treat conditions associated with hearing loss. Education and information on current research regarding untreated hearing loss and dementia is necessary for primary-care physicians providing comprehensive care for an aging population.

Neurologists should be educated about appropriate vestibular recommendations for patients with concussions. Rheumatologists need to be informed about the link between numerous rare rheumatologic disorders and hearing loss. Nephrologists need to understand the relationship between renal pathologies and hearing loss.

Medical professionals must have awareness of potential comorbidity and must know when and where to refer their patients for audiological evaluation. This education must be led by audiologists, as the experts in hearing health care.

Keeping Up with Research

We continue to see significant advancements in genetic research in our field. Audiologists must stay informed about these discoveries and their potential effects on patients with hearing loss. Within the audiology community, we must support sharing information about new conditions as are they are identified.

Hearing loss has a relatively common association with rare genetic disorders. There is a genetic component in about 70 percent of the cases of patients with hearing loss, according to the U.S. National Institute on Deafness and Other Communication Disorders. Hearing loss is associated with autosomal dominant, autosomal recessive, and X-linked genetic conditions.

As more genetic conditions are identified and the associations with hearing loss are realized, we must work to ensure that all audiologists are provided with the information about these conditions. This knowledge is essential in providing assessments and treatment plans for all patients, including referrals to other appropriate health-care providers.

Our Duty to Our Patients

A patient seeks audiological services to benefit from an audiologist's experience and knowledge. It is our responsibility to treat the whole patient, even when audiological recommendations are not the solution.

The role of an audiologist goes beyond assessment and treatment. We must advocate for hearing health for the well-being of our patients.

Professional relationships and partnerships throughout health care are what is best for all health-care professionals and, most importantly, what is best for our patients. Developing partnerships and educating other health-care professionals—as well as educating patients and providers in our community—advances the profession of audiology and improves the level of care all patients receive.

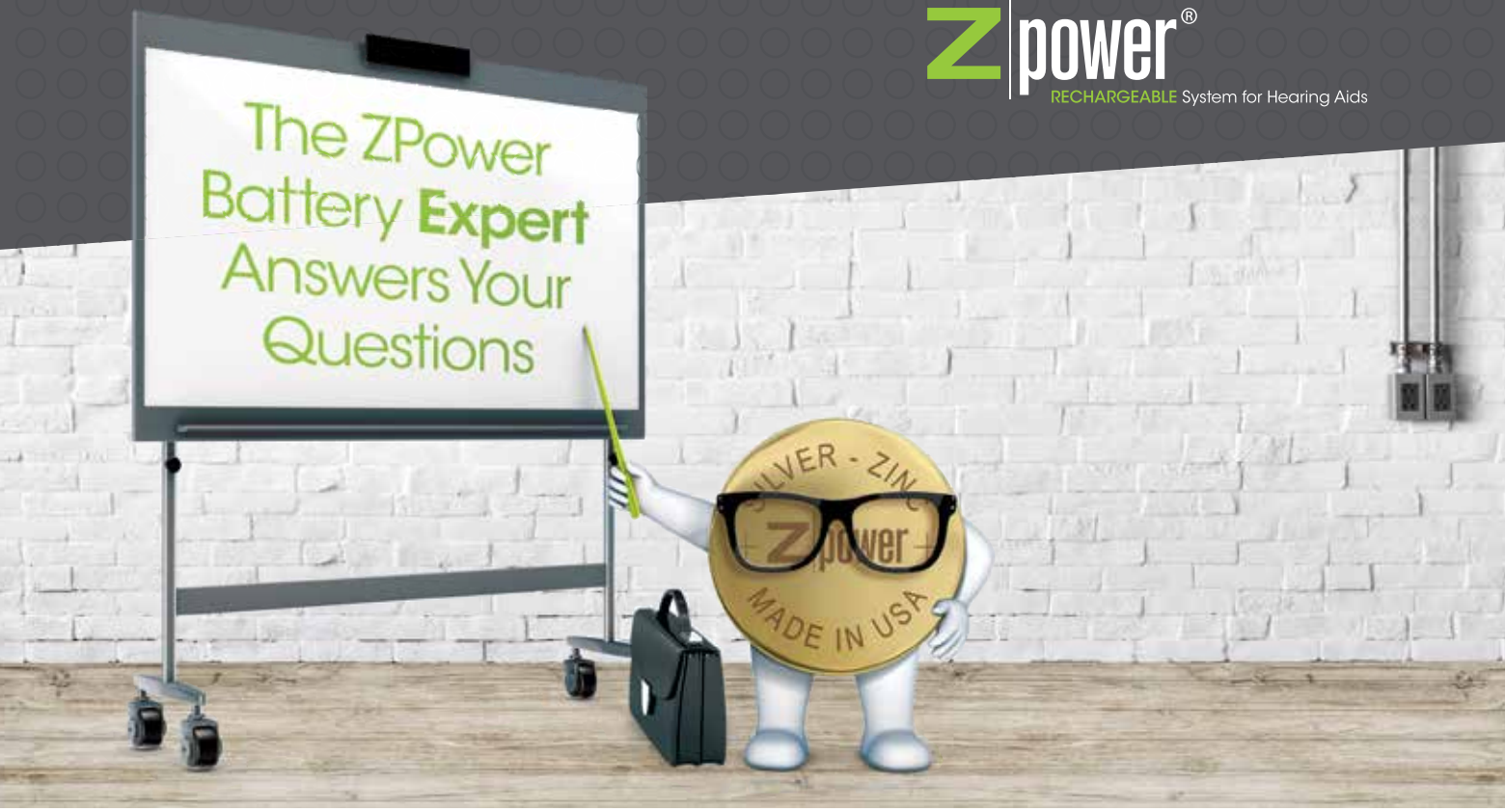
Maggie Kettler, AuD, is a clinical manager and audiologist with Cincinnati Children's Medical Center. She is also a member of the Academy's Business Enhancement, Strategies, and Techniques (BEST) Committee.

References

The Audiology Project, www.theaudiologyproject.com (accessed June 25, 2018).

U.S. National Institute on Deafness and Other Communication Disorders, www.nidcd.nih.gov/health/statistics (accessed June 28, 2018).

ZPower®
RECHARGEABLE System for Hearing Aids



ZPower silver-zinc rechargeable batteries are a new technology now available for select products from almost every major hearing aid manufacturer. With new technology comes many questions, so we have introduced an "Ask the Expert" program to answer your questions about silver-zinc battery technology.

How often should the batteries be charged?

The batteries should be fully charged every night. Once the hearing aids are finished charging, the indicator lights turn from blinking green to solid green. A full charge may take up to 7 hours — the charge time varies based on how much the battery was depleted during the day.

What happens when the silver-zinc rechargeable battery is getting low on power?

The hearing aid wearer will hear the low battery warning. Once the low battery warning occurs or once a hearing aid shuts off due to a low battery condition, do not open the battery door to reboot the hearing aid. Rebooting after the low battery warning can over-discharge the battery. If a low battery warning from the hearing aids is received, place the hearing aids in the charging base for charging or replace with non-rechargeable batteries. Store your rechargeable batteries in a safe place away from metal objects like coins or keys.

Should a patient open the battery door to turn off the hearing aids when not in use?

If a patient removes their hearing aids during the day, the hearing aids should be put back on the charger. Rule of thumb — if the hearing aids are not on the ears they should be in the charger. The batteries will not overcharge, and this will not decrease the overall life of the battery. If the charger is not available, it's ok to open the battery door for a few hours until they are worn or can be put on the charger. If the hearing aids are not going to be worn for an extended period, the batteries should be removed.

Have more questions? Please visit www.ZPowerhearing.com/ask-the-expert to enter your question.

September 13–14
Meeting
Missouri Academy of Audiology Scope of Practice Convention
St. Louis, Missouri
https://maaaudiology.org

September 14–15
Meeting
California Academy of Audiology Annual Conference
Anaheim, California
www.caaud.org

September 20–22
Meeting
Louisiana Academy of Audiology Professional Conference
New Orleans, Louisiana
https://louisianaaudiology.org

September 25
eAudiology
Advocacy for Audiology Management of Diabetes
www.eaudiology.org

September 27–28
Meeting
Alabama Academy of Audiology Convention
Miramar Beach, Florida
http://alaudiology.org/

September 27–28
Meeting
Nebraska Speech–Language–Hearing Association Convention
Kearney, Nebraska
www.nslha.org

September 28
Meeting
Massachusetts Academy of Audiology Convention
Natick, Massachusetts
http://audiology-mass.org

September 28–29
Meeting
Oregon Academy of Audiology Conference
Vancouver, Washington
https:/oregonacademyofaudiology.wildapricot.org

October 3–5
Meeting
Pennsylvania Academy of Audiology Convention
Lancaster, Pennsylvania
https://paaudiology.org

October 4–5
Meeting
North Carolina Audiology Association Conference
Raleigh, North Carolina
www.ncaudiologists.org

October 4–5
Meeting
South Dakota Speech–Language–Hearing Association Convention
Sioux Falls, South Dakota
www.sdslha.org

October 4–6
Meeting
Kansas Speech–Language–Hearing Association Conference
Wichita, Kansas
www.ksha.org

October 4–6
Meeting
Colorado Academy of Audiology Convention
Breckenridge, Colorado
www.coaudiology.org

October 12
Meeting
New Jersey Academy of Audiology Conference
Upper Montclair, New Jersey
www.njaudiology.org

October 12–13
Meeting
Oklahoma Speech–Language–Hearing Association Conference
Midwest City, Oklahoma
www.oslha.org

October 18–19
Meeting
Tennessee Academy of Audiology Conference
Murfreesboro, Tennessee
https://taaslp.org

October 19–20
Meeting
New Mexico Speech–Language–Hearing Association Convention
Albuquerque, New Mexico
http://nmsha.net/convention

October 18–20
Meeting
Montana Speech–Language–Hearing Association Convention
Helena, Montana
http://mshaonline.org

October 18–20
Meeting
Texas Academy of Audiology Conference
The Woodlands, Texas
https://texasaudiology.org

October 19–20
Meeting
Alaska Speech–Language–Hearing Association Convention
Anchorage, Alaska
www.aksha.org

October 25–26
Meeting
Iowa Speech–Language–Hearing Convention
Iowa City, Iowa
www.isha.org

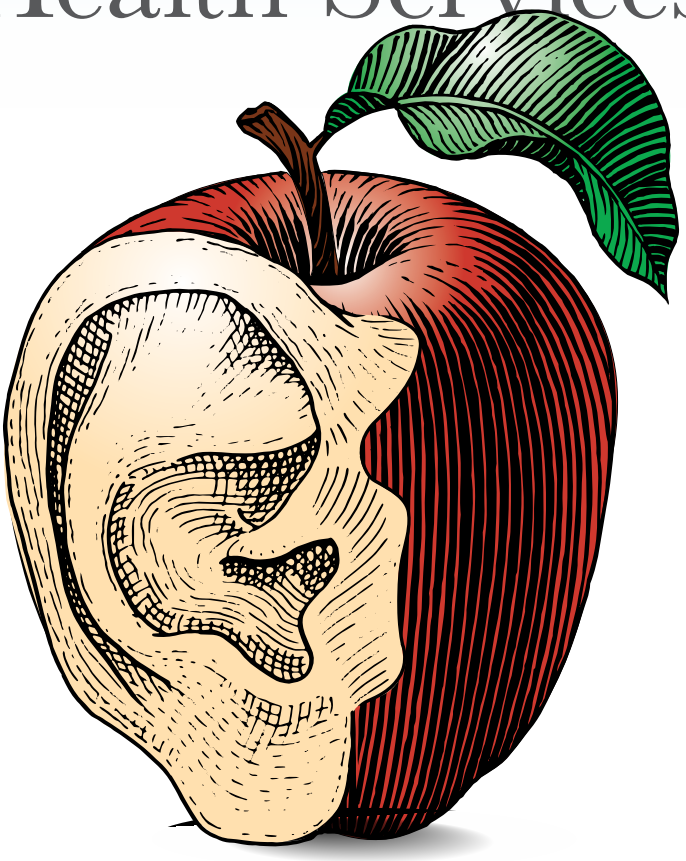
October 25–26
Meeting
Michigan Audiology Coalition Conference
Lansing, Michigan
https://michiganaudiologycoalition.org

October 26–27
Meeting
Ohio Academy of Audiology Conference
Cleveland, Ohio
http://ohioacademyofaudiology.com

October 27–31
Meeting
XXXIV World Congress of Audiology 2018
Cape Town, Africa
https://easternsun.eventsair.com

November 1–2
Meeting
Maryland Academy of Audiology Convention
Baltimore, Maryland
www.maaudiology.org

Audiology, Interprofessional Collaboration, & School Health Services



BY ANNE HEASSLER

The increased call for interprofessional collaborative practice across educational and health profession models provides an opportunity for audiologists to increase public awareness of the role of educational audiology services.

The Centers for Disease Control and Prevention (CDC) encourages the use of the Whole School, Whole Community, Whole Child (WSCC) model for integrating health practices in the school setting (Lewallen et al, 2015). The WSCC model emphasizes a collaborative approach to improve student health and academic outcomes. The Whole Child element of the model maintains the child as the focal point through five tenets: (1) being healthy, (2) being safe, (3) being engaged, (4) being supported, and (5) being challenged. There are 10 school health services or programs for which the Whole School model focuses. These include health education, physical education, school health services, healthy and safe school environment, counseling, psychological, social services, family and community involvement, health promotion for staff, and nutrition services.

The WSCC model calls for collaborating with a variety of professionals and programs across the school setting to improve student physical, cognitive, social, and emotional development (Hunt et al, 2015). The call of the WSCC to work in collaborative teams for improved student outcomes supports the increasing demand for health professionals to work in interprofessional teams to improve patient outcomes (WHO, 2010).

Audiologists working in the school-based environment are called to participate in interprofessional collaborative practice by way of academic foundation and memberships to professional organizations. The Educational Audiology Association (EAA) *Recommended Professional Practice for Educational Audiology* (2009) outlines the

minimum professional practice competencies for audiologists working in the school setting. In addition, the EAA also states that professional management, such as training and supervision of support personnel, and leadership include activities around raising public awareness and fostering collaboration between community-based audiologists and the school system.

Interprofessional education occurs when two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes.

The American Speech–Language–Hearing Association (ASHA) *2016 Schools Survey Summary Report: Numbers and Types of Responses, Educational Audiologists* indicates specific challenges for providing educational audiology services. These challenges include budget constraints, large caseloads, paperwork, and limited understanding regarding the role of an educational audiologist. The current trends in educational audiology, specifically the barrier of the lack of understanding of the role of an educational audiologist, may be addressed by increasing collaborative practice in school health services programs.

INTERPROFESSIONAL COLLABORATION PRACTICE: WHAT IS IT?

The World Health Organization (WHO) published a *Framework for Action on Interprofessional Education and Collaborative Practice* (2010). In this framework, WHO issued a call to action for health and education systems to infuse interprofessional education and collaboration in all aspects of health service in an effort to strengthen health systems, improve health outcomes, and increase workforce satisfaction and well-being. Interprofessional education occurs when two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes.

Interprofessional practice occurs when multiple health workers from different professional backgrounds provide comprehensive services by working with parents, families, care givers, and communities to deliver the highest quality of care across settings.

In 2009, the Interprofessional Education Collaborative (IPEC) was formed by six national associations of health professions in an effort to promote interprofessional learning experiences in the academic environment among professions providing patient-centered care. These member organizations developed the *Core Competencies for Interprofessional Collaborative Practice* (2011) that outline the foundation for developing, implementing, and assessing interprofessional curriculum. IPEC is composed of 20 different national organizations that represent a broad base of health professions such as nursing, physician assistants, audiology, speech–language pathology, social work, and public health. The four core competencies were updated in 2016 (see IPEC reference) and are defined as the following:

1. **Values and Ethics of Interprofessional Practice**
   Work with individuals of other professions to maintain a climate of mutual respect and shared values.

2. **Roles and Responsibilities**
   Use the knowledge of one's own role and those of other professions to assess and address appropriately

THOMPSON STREET
CAPITAL PARTNERS

alpaca

Thompson Street Capital Partners (TSCP) is a private equity firm based in St. Louis, Missouri that has managed more than $2.6B in equity

In partnership with Alpaca Audiology we are pleased to announce we have invested in and partnered with:

TAYLOR
HEARING CENTERS

"Our Professional Staff of Clinical Audiologists, Audioprosthologists, Hearing Health Care Practitioners (HHP) and Hearing Instrument Dispensers are dedicated to providing access to quality hearing instruments, diagnostic hearing testing and hearing health care services in Arkansas. All patient treatments are individually designed." - Matthew A.Taylor, Doctor of Audiology, Owner

For more information contact: **Ray Wagner** • Vice President • (314) 446-3315 • rwagner@tscp.com

120 South Central Ave., Suite 600 • St. Louis, MO 63105

Visit tscp.com

the health-care needs of patients and promote and advance the health of populations.

3. **Interprofessional Communication**
   Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease.

4. **Teams and Teamwork**
   Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable.

These core competencies can be directly applied to interprofessional team building in the school setting to increase efficiencies in health services programs to ensure improved student outcomes.

INTERPROFESSIONAL COLLABORATIVE TEAMS IN SCHOOL HEALTH PROGRAMS

School health services, one of the 10 programs included in the WSCC model, are defined by the School Health Policies and Program Study (SHPPS) as a "coordinated system that ensures a continuum of care from school to home to community health-care provider and back" (Nicholson et al, 1997).

The seven goals of school health programs are to

1. Ensure access to primary health care.
2. Deal with crisis medical situations.
3. Provide mandated screening and immunization monitoring.
4. Provide systems for the identification and solution of students' health and educational issues.
5. Provide comprehensive and appropriate health education.
6. Provide a healthful and safe school environment that facilitates learning.
7. Provide a system of evaluation of the effectiveness of the school health program.

These seven goals are key to defining the roles and responsibilities of individual members of a school-based interprofessional team. Interprofessional teams practicing

in the school settings will be made up of individual members with different knowledge and skill sets. These differences can be both a strength and a challenge for the effectiveness of a team.

Effective teams must foster a culture of equality among the members. The ability for each member of a team to share knowledge and skills as a way to facilitate creative solutions for school health programs is the foundation of success. Essential skills are required to be an effective team member (Hall, 2005).

These skills include the following:

- Cooperation: Acknowledging and respecting others' viewpoints and reflecting on personal perspective
- Assertiveness: Supporting one's viewpoint with confidence
- Responsibility: Accepting and sharing responsibility and participating in group decision-making
- Communication: Effective sharing of information and ideas
- Autonomy: Ability to work independently
- Coordination: Efficient organization of group tasks

Individual team member ability to apply these essential skills creates the foundation for an effective team dynamic.

Interprofessional practice occurs when multiple health workers from different professional backgrounds provide comprehensive services by working with parents, families, caregivers, and communities to deliver the highest quality of care across settings.

INTERPROFESSIONAL TEAM MEMBERS IN SCHOOL-BASED SETTING

Defining the roles and responsibilities of individual team members is dependent on the goals of the team and the individual professions represented. Audiologists often work on teams with speech–language pathologists and nurses in school health programs (Richburg, 2011, Hendershot et al, 2011). Each of these professions have their own values, skills, professional culture, and language. Successful interprofessional practice requires well-developed team processes that include a team facilitator, shared goals, defined roles and responsibilities, continuous

Company creates innovative audiology business model

Alpaca Audiology, a leading buying group for audiology practices, has developed a highly effective method of providing and promoting hearing care solutions for its members: owning audiology clinics.

Based in Springfield, Missouri, Alpaca provides negotiated pricing on hearing aids, consumables for hearing specialists, and practice management solutions for its members – formed with the belief that clinics and their respective patients would benefit from collective purchasing power. Through Alpaca, each member's business contributes to the overall collective, increasing the group's purchasing power, driving down future pricing, and benefiting the bottom line of all members.

To help accelerate the growth of the platform, Alpaca has partnered with Thompson Street Capital Partners* (TSCP), a St. Louis-based private equity firm with significant experience in growing healthcare services companies. In partnership with TSCP, Alpaca has acquired several audiology practices, including Taylor Hearing Centers, Mid America Audiology Group, and Hear Michigan, significantly adding to the volume of hearing aids flowing through Alpaca's network. By owning both clinics and a buying group, Alpaca has created a virtuous relationship between its business units that is unique in the industry: acquiring clinics increases the hearing aid volume of the network, and provides greater purchasing power and cost savings for all of Alpaca's members.

> *"Many manufacturers or buying groups require that a clinic sign unit commitments and/or exclusivity agreements. From the start, we've believed our prospective members shouldn't have to compromise their ethical standards to get discounted pricing, so we've made membership in Alpaca free of charge. There are no dues, unit commitments, or contractual obligations."*
>
> **Brian Vesely, CEO**
> **Alpaca Audiology**

With the support of TSCP, Alpaca has also enhanced the breadth of practice management solutions available to its members. As part of membership, practices receive access to expert guidance and help with business development plans, marketing campaigns, and strategic planning. In addition, Alpaca has acquired Resolution Hearing Group, a specialist in working with audiologists to formulate strategies for the improvement of practice infrastructure, operations, growth and profitability.

In addition to the significant cost savings and practice management solutions that Alpaca members enjoy, audiologists also appreciate the independence they have to customize solutions to meet each patient's unique needs. Alpaca maintains close relationships with the industry's leading hearing aid manufacturers, including Phonak, ReSound, Signia, Starkey and Widex, and members are encouraged to utilize any or all of Alpaca's manufacturing and audiology partners – meaning audiologists have the freedom to design hearing treatment plans that work best for each patient.

alpaca

www.alpacaaudiology.com

*Thompson Street Capital Partners is a St. Louis-based private equity firm focused on investing in founder-led middle market businesses. TSCP has acquired more than 100 companies in the Healthcare & Life Science Services, Software & Technology Services and Business Services & Engineered Products sectors and has managed more than $2.6 billion since being founded in 2000. More information at www.tscp.com.

Alpaca continues to seek both clinic and buying group acquisition opportunities to fuel the growth of the network to the benefit of all members. Owners who are considering a sale of their practice and are interested in speaking with Alpaca are encouraged to contact Ray Wagner of TSCP at (314) 727-2112 or rwagner@tscp.com.

communication, mutual trust and respect, team decision-making, and reflective practice (Hall, 2005).

EDUCATIONAL AUDIOLOGY

Educational audiology services provide the foundation for determining if students have access to effective communication in the classroom (Anderson, 2015). Access to communication in the classroom is required to ensure academic success for students that supports social and emotional development as outlined in the WSCC model (Crandell and Smaldino, 2000).

The EAA (2009) outlines the minimum professional practice competencies for audiologists working in the school setting using the Individuals with Disabilities Education Act (IDEA, 2011) as a framework. These practice competencies are identification and prevention programs, audiological assessments, referrals, educational management, and direct educational services. Responsibilities can include activities such as hearing-screening programs; audiological assessments and referrals; provision of in-service training; hearing-conservation curriculum; and assessment, evaluation, and monitoring assistive listening devices.

These roles and responsibilities support the seven goals of school health programs in many facets including providing hearing screenings, identifying solutions for students with hearing loss, providing education in prevention and conservation, and creating a healthy and safe environment for students, families, and teachers managing hearing loss.

SCHOOL NURSING

The National Association of School Nurses *Framework for 21st Century School Nursing Practice* (Maughan, 2016) is based on student-centered care principles. Student-centered care includes working in collaboration with families and caregivers to ensure students' needs are addressed. The role of nurses is focused on five key principles: (1) standards of practice (knowledge and skills), (2) care coordination, (3) leadership, (4) quality improvement, and (5) community and public health.

Responsibilities for school nurses include nurse-led care coordination, chronic disease management, collaborative communication, direct patient care, counseling, policy development and implementation, program data collection, health education, prevention programs, screenings, and increasing access to care. The American Academy of Pediatrics identifies the school nurse as the on-site, health-care representative for students and should be considered the leader in coordinating health services teams (AAP, 2008).

SPEECH-LANGUAGE PATHOLOGY IN SCHOOLS

ASHA's *Roles and Responsibilities of Speech-Language Pathologists in Schools: Professional Issues Statement* (2010) provides an overview of the roles and responsibilities of speech–language pathology in schools. Speech–language pathologists provide speech–language services from pre-K through high school ages. They serve individuals with communication disorders (language, articulation, fluency, and swallowing), determine educational impact of disorders served, contribute to curriculum for students with disabilities, highlight language and literacy, and provide these all in a culturally competent manner.

Responsibilities within this role include prevention of academic failure, assessment in collaboration with others to identify students with communication disorders, intervention appropriate to learning needs, data collection and analysis of student outcomes, and maintenance of compliance with federal and state mandates while performing their duties. Speech–language pathologists are partners in integrating intervention for hearing loss into the classroom setting (Richburg and Knickelbein, 2011).

Each of these professions has specific expertise outlined in their scope of practice and also demonstrate overlapping roles and responsibilities in the school setting. These redundancies may lead to inefficient practices

Team Facilitator	▸ School Nurse
Team Members	▸ Audiologist ▸ Speech–Language Pathologist

GOALS/VALUES
*defined by team members

IMPLEMENT THE FOLLOWING:

1. Effective two-tier hearing-screening program
2. Individualized student referral and intervention plans
3. Streamlined communication from school to home to health-care provider
4. Effective monitoring of outcomes of individual students
5. Effective monitoring of hearing-screening program outcomes

ROLES AND RESPONSIBILITIES

School Nurse

ACT AS FACILITATOR FOR TEAM AND PROGRAM.
- Coordinate schedule for team meetings.
- Schedule screening day in coordination with school administrators and teachers.
- Document student screening outcomes in school data-management system.

DRIVE COMMUNICATION BETWEEN SCHOOL AND PARENTS/CAREGIVERS.
- Obtain parental/caregiver consent.
- Relay student hearing-screening outcomes to parents/caregivers.
- Provide resources for referral needs.

MONITOR INDIVIDUAL STUDENT OUTCOMES.
- Document outcome of referral.
- Initiate further recommendations based on outcomes of follow-up.

Audiologist

TRAIN HEARING-SCREENING PERSONNEL.
- Develop training materials based on best practice protocol.

DRIVE APPROPRIATE REFERRALS.
- Direct service delivery for rescreens.
- Provide recommendations for follow-up plan based on rescreen outcomes.
- Document recommendations.

MONITOR SCREENING-PROGRAM OUTCOMES.
- Monitor overall effectiveness of program by recording:
  - Noise levels in test environment
  - Refer rates of initial screening
  - Overall referral rate of screening program
  - Percentage of students who received appropriate follow-up

MANAGE EQUIPMENT.
- Determine appropriate equipment for hearing-screening program.
- Review annual calibration of equipment.
- Troubleshoot equipment.
- Ensure adequate and appropriate supplies.
- Manage and monitor infection-control procedures.

Speech–Language Pathologist

COMPLETE POST-INTERVENTION HEARING SCREENINGS.

- Provide rescreens of students' post-intervention to ensure adequate hearing for effective communication in the classroom.

PROVIDE IN-SERVICE TRAINING FOR STAFF/TEACHERS ON EFFECT ON COMMUNICATION IN THE CLASSROOM.

- Provide resources and training for classroom teachers on the effect of hearing loss on listening in the classroom.

INTERPROFESSIONAL COMMUNICATION

INITIAL PLANNING MEETING TO DISCUSS SCHEDULING AND TRAINING NEEDS

- Schedule training of screening personnel.
- Schedule date of hearing screening.
- Schedule date of rescreen.

DAY OF HEARING SCREENING

- Work with school staff/administration to determine appropriate testing environment.
- Coordinate with teachers on student flow throughout the day.

DOCUMENTATION AND FOLLOW-UP

- Audiologist documents referral recommendations and notifies nurse on day obtained.
- Nurse provides referral recommendations to parents/caregivers within 48 hours of receiving outcomes.
- Nurse ensures follow-up of referral recommendation within two weeks of communicating to parents/caregivers.
  - May require secondary follow-up driven by nurse
  - Referral to speech–language pathologist for rescreen implemented once follow-up has been completed or referral to audiologist for full audiologic assessment as needed.

IMMEDIATE TEAM COMMUNICATIONS AS NEEDED

WRAP-UP MEETINGS TO DISCUSS FINAL OUTCOMES AND SUGGESTED IMPROVEMENT OF HEARING SCREENING PROGRAM

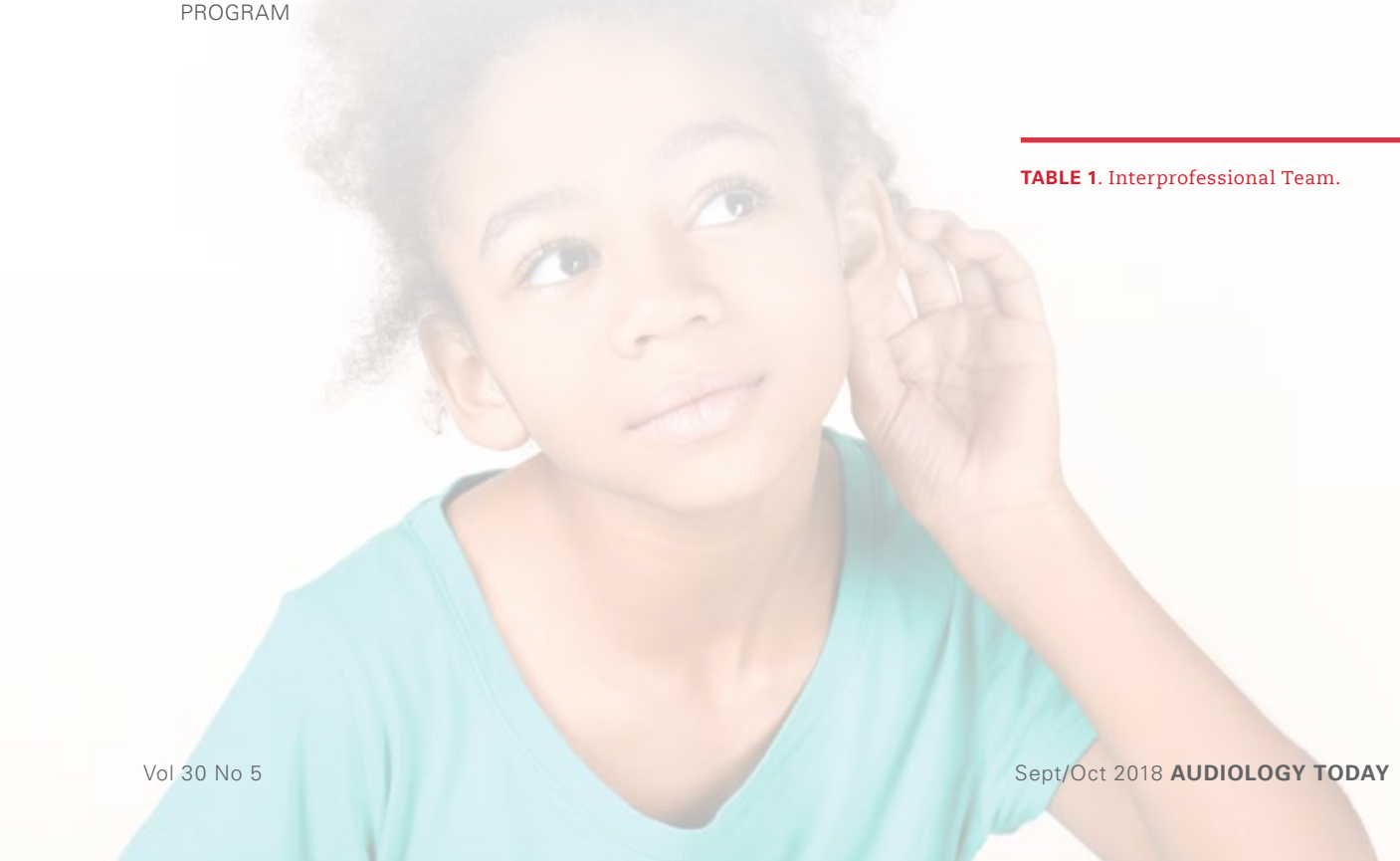


TABLE 1. Interprofessional Team.

in the development, implementation, and monitoring of health-service programs.

SCHOOL-BASED HEARING-SCREENING PROGRAMS

The Institute of Medicine's Committee on Comprehensive School Health Programs in Grades K-12 indicates that screening programs are considered a key provision of school health services, with 86.8 percent of schools providing vision and hearing screenings (Nicholson et al, 1997). The prevalence of hearing loss for ages 6–19 years increases to 14.9 percent from 1.4 out of 1,000 (or 0.14 percent) at birth (Niskar et al, 1998). The increased prevalence of hearing loss in the school-aged population indicates that effective hearing screening and hearing conservation programs in this population play a critical role in ensuring that children have adequate access to the auditory signal in the school setting.

School-based hearing-screening programs vary significantly and are guided largely by local policy and statewide regulations and mandates (Sekhar et al, 2013). Variability exists among the states and within local education agencies (LEA) at the state level. This variability exists in terms of mandating hearing screening, screening personnel, training of personnel, and protocol. These inconsistencies present many challenges for local districts to implement these programs effectively. These challenges may be addressed using interprofessional teams as a way to create consistencies in protocol, streamline coordination and follow-up, and increase overall satisfaction with the hearing-screening program.

SCHOOL-BASED HEARING-SCREENING PROGRAM: AN EXAMPLE

The roles and responsibilities described for the professions of audiology, nursing, and speech–language pathology in the schools have multiple areas for collaboration. TABLE 1 is an example of how an interprofessional team in the schools may be structured to implement an effective hearing-screening program.

In this model, the school-based nurse is the primary facilitator of the hearing-screening program. Current practices reveal that school nurses nationally average working in three buildings with an average of 924 to 1,072 students (Mangena, 2015). ASHA recommends a 1:10,000 ratio of educational audiologist per student. This indicates that the school nurse will have a significantly deeper understanding and knowledge of the school community including students, their families, faculty, and administrators.

The article "School Nurses' Role in Identifying Children at Risk of Noise-Induced Hearing Loss" (Hendershot et al, 2011) states that 81 percent of nurses say they had mandates for screening student hearing. Speech–language pathologists indicate that hearing screenings are the most common service they provide in the schools (95.7 percent)

and they receive the most benefit from working with audiologists for those screenings (Richburg and Knickelbein, 2011).

Audiologists can provide significant support to these professionals in hearing screenings including training screening personnel, educating professionals regarding the impact of hearing loss on effective communication in the classroom, and ensuring appropriate referrals for follow-up. The American Academy of Audiology *Childhood Hearing Screening Guidelines* (2011) recommends tympanometry and otoacoustic emission testing for those students whose pure-tone screenings are not developmentally appropriate for the rescreen process. This screening protocol supports the need for audiologists to provide direct service provision in these programs to correctly identify results and make recommendations based on outcomes of these tests.

Teams for school-based hearing-screening programs that include individual members who use the essential skills of effective teamwork and follow the interprofessional practice competencies will improve outcomes for students and highlight the roles and responsibilities of each team member.

CONCLUSION

The increased call for interprofessional collaborative practice across educational and health-profession models provides opportunity for audiologists to increase public awareness of the role of educational audiology services, how those services support the WSCC model, and improve existing health-service programs.

Understanding the unique and shared roles and responsibilities of other health professions in the school setting will support the development of effective interprofessional teams.

Using the core competencies of interprofessional collaborative practice as a foundation for creating teams can lead to improved health-services programs in schools, increase workforce satisfaction, and improve overall health outcomes for students.

Anne Heassler, AuD, CCC-A, CH-AP, is an assistant professor and practicum coordinator at Pacific University School of Audiology in Hillsboro, Oregon. She is an instructor for the College of Health Professions' Interprofessional Competency course.

References

American Academy of Audiology (Academy). (2011) *Childhood Hearing Screening Guidelines.* Accessed at www.cdc.gov/ncbddd/hearingloss/recommendations.html.

American Academy of Pediatrics (AAP). (2008) Role of the school nurse in providing school health services (Policy Statement). *Peds* 121(5):52–56.

American Speech–Language–Hearing Association. (2010) *Roles and Responsibilities of Speech–Language Pathologists in Schools* [Professional Issues Statement]. Accessed at www.asha.org/policy.

American Speech-Language-Hearing Association. (2016). *Schools survey report: Trends in educational audiology,* 2010–2016. Available from www.asha.org.

American Speech-Language-Hearing Association. (2016). *Schools Survey. Survey summary Report: Numbers and Types of Responses, Educational Audiologists.* Accessed at www.asha.org.

Anderson KL. (2015) Access is the issue, not hearing loss: new policy clarification requires schools to ensure effective communication access. *ASHA Perspectives on Hearing and Hearing Disorders in Childhood* (25):24–36.

Crandell C, Smaldino J. (2000) Classroom acoustics for children with normal hearing and with hearing impairment. *Lang Speech Hear Serv Schools* 31(4):362–370.

Educational Audiology Association (2009). *Recommended Professional Practices for Educational Audiology.* Westminster CO.

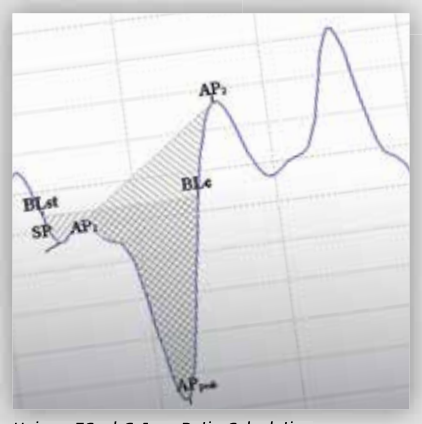
Hall P. (2005) *Interprofessional teamwork: Professional cultures as barriers. Journal of Interprofessional Care,* 19 Suppl 1:188–196.

Hendershot C, Pakulski L, Thompson A, Dowling J, Price J. (2011) School nurses' role in identifying and referring children at risk of noise-induced hearing loss. *J School Nursing* 27(5):380–389.

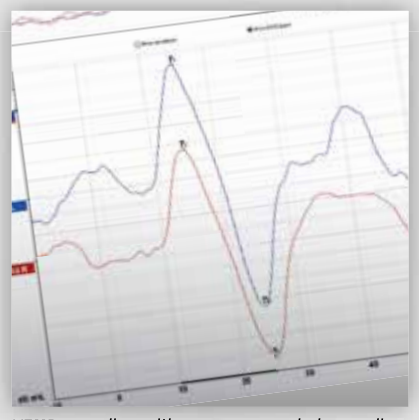
Hunt P, Barrios L, Telljohann S, Mazyck D. (2015). A whole school approach: collaborative development of school health policies, processes, and practices. *J School Health* 85(11):802–809.

Individuals with Disabilities Education Act (IDEA). (2011). Individuals with Disabilities Education Improvement Act of 2004. Accessed at http://idea.ed.gov.

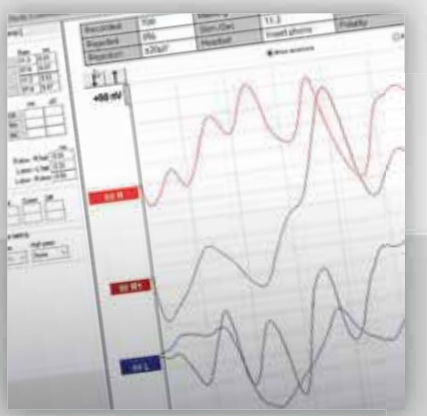
Eclipse Vestibular Solution



Unique ECochG Area Ratio Calculation implementation



VEMP recording with responses scaled according to muscle tonus during recording



Auditory evoked neurological recording

- **Vestibular Evoked Myogenic Potentials (cVEMP and oVEMP)**
- **Electrocochleography (ECochG)**
- **Neuro Rate Study**

Ideal for:

- Neurological balance centers
- Rehab balance centers
- ENT practices

The VEMP monitor assists the patient in maintaining adequate muscle contraction during testing

Interacoustics

ABR/OAE | **Balance Assessment** | Fitting Systems | Middle Ear Analyzers | Audiometers

Interacoustics is a world leading diagnostic solutions provider in the fields of hearing and balance assessment. Since 1967 we have designed and manufactured our innovative diagnostic solutions for the world of audiology with a constant focus on providing our customers with quality, dependable products.

Interacoustics USA 10393 West 70th Street Eden Prairie, MN 55344 T +1-800 947 6334 info@interacoustics-us.com

Interprofessional Education Collaborative Expert Panel. (2011) *Core competencies for Interprofessional Collaborative Practice: Report of an Expert Panel*. Washington, DC: Interprofessional Education Collaborative.

Interprofessional Education Collaborative. (2016) *Core competencies for interprofessional collaborative practice: 2016 update*. Washington, DC: Interprofessional Education Collaborative.

Lewallen T, Hunt H, Potts-Datema W, Zaza S, Giles W. (2015) The whole school, whole community, whole child model: a new approach for improving educational attainment and healthy development for students. *J School Health* 85(11):729–739.

Mangena A, Maughan E. (2015) The 2015 NASN school nurse survey: developing and providing leadership to advance school nursing practice. *NASN School Nurse* 30(6):328–335.

Maughan E, Bobo N, Butler S, Schantz S, Schoessler S. (2015) Framework for 21st century school nursing practice: an overview. *NASN School Nurse* 30(4):218–231.

Nicholson L, Allensworth D. (1997) *Schools and Health: Our National Investment*. Washington, DC: National Academy Press.

Niskar A, Kieszak S, Holmes A, Esteban E, Rubin C, Brody D. (1998) Prevalence of hearing loss among children 6 to 19 years of age: The third national health and nutrition examination survey. *JAMA* 279(14)1071–1075.

Richburg C, Knickelbein B. (2011) Educational audiologists: their access, benefit, and collaborative assistance to speech–language pathologists in schools. *Lang Speech Hear Serv Schools* 42(4):444–460.

Seaton JB, Johnson CD. (2010) Educational policy influences on educational audiology: a review of the past decade. *J Ed Audiol* 16.

Sekhar D, Zalewski L, Paul T. (2013) Variability of state school-based hearing screening protocols in the United States. *J Comm Health* 38(3):569–574.

World Health Organization (WHO). (2010) Framework for Action on Interprofessional Education and Collaborative Practice. Geneva, WHO. Accessed at www.who.int/hrh/resources/framework_action/en.

INTEGRATING DIAGNOSTIC AND THERAPEUTIC functions under the rubric of nanotheranostics represents a powerful and attractive paradigm that is well suited for treating tinnitus. What distinguishes this approach from other techniques is the fact that treatment can be individualized—an approach thought by some to be the future standard of care in medicine.

Background and Theory of a NANOTHERANOSTICS Approach for Treating Tinnitus

BY ANTHONY T. CACACE, STEPHANIE M. CURLEY, JAMES CASTRACANE, MAGNUS BERGKVIST, AARON K. APAWU, AVRIL-GENENE HOLT

Tinnitus—defined as the perception of sound in the absence of overt acoustic stimulation—is an enigmatic condition that challenges the treatment acumen and management resources of hearing professionals worldwide. The condition represents a theraputic conundrum for clinicians because there is no universal treatment and no known cure.

Establishing a cure or an effective treatment would be analogous to finding the Holy Grail. If discovered, a cure would have immediate impact and desirable consequences, such as permitting a sustained venture into a peaceful and quiet life, allowing the existence—or resumption—of a productive career, and most important, would contribute to improving an overall quality of life.

Of the many different treatment options available for tinnitus suppression (cognitive/behavioral and/or retraining therapies; acoustic, magnetic, and electrical neuromodulatory strategies; pharmacological interventions), we will focus on a pharmacological approach coupled with a unique drug-delivery platform. We followed this path because many pharmaceutical options available in the marketplace have a strong theoretical basis to be successful, with the main limitation being the lack of specificity in reaching targets within the brain at high enough concentrations to be efficacious. At the same time, there must be minimal or no adverse side effects on normal tissue or on cognition, and limited or no impact on other psychological, social, emotional, or biological processes that would negatively affect activities of daily living.

APPROACH AND COLLABORATIONS

Herein, we provide the background and theorectical basis for a novel drug-delivery platform that combines nanotechnology, molecular biology, molecular imaging, and pharma as a way to help solve treatment dilemmas associated with tinnitus abatement.

The nanoscience collaboration is channeled through the State University of New York (SUNY) Polytechnic Institute Colleges of Nanoscale Science and Engineering (CNSE) in Albany. Dr. James Castracane, professor and head of the

Nanobioscience Constellation, and colleagues Drs. Magnus Bergkvist and Stephanie Curley are the lead scientists and collaborators in this area. The SUNY Polytechnic Institute CNSE is the largest academic institution in the world dedicated to nanotechnology education, fundamental nanoscience research, nanoengineering, nanobioscience, and nanoeconomics and, therefore, is a logical partner in this endeavor. The state-of-the-art facilities, intellectual resources, and the ability to fabricate nanoparticle constructs facilitated the experimental protocols used herein (FIGURE 1).

Establishing a cure or an effective tinnitus treatment would be analogous to finding the Holy Grail.

Dr. Avril-Genene Holt of the Wayne State University Department of Anatomy and Cell Biology and health-research specialist at the John D. Dingell VA Medical Center in Detroit, Michigan, spearheaded the cellular and molecular biology component. (FIGURE 2). Post-doctoral fellow Dr. Aaron Apawu and other staff members of the Holt Lab contributed to this work. Drs. Cacace and Holt headed the neuroimaging and auditory neuroscience components.

APPLICATION OF NANOTHERANOSTICS

The approach we describe falls under the rubric of nanotheranostics, which represents the combination of diagnostic detection with the goal of targeted drug delivery for therapeutic intent (Funkhouser, 2002; Caldorera-Moore et al, 2001). In theory, this approach enables identification and localization of pathologic site(s) of dysregulation subserving the tinnitus perception and then releases a payload of drugs at the target of interest to abate or silence this condition.

As the prefix "nano" in the term nanotheranostics implies, nanoparticles (NPs) will be used as one of several essential elements in this paradigm. Nanoparticles can take many different forms. In this context, NPs represent very small biochemical objects, typically between 1 and 100 nanometers (nm's; 10–12 meters) in size, where each NP is surrounded by an external layer that consists of ions, inorganic or organic molecules that enable each NP to behave as a whole unit with respect to its transport and properties in the medium where it is released.

Theranostic approaches in general, and nanotheranostic platforms in particular, take advantage of incorporating several distinct capabilities into one system. Specifically, NPs are fabricated to be multifunctional carriers that are both necessary and sufficient for a drug-delivery platform to succeed. Success is contingent upon the NPs being: (1) biocompatible with the system under consideration (human body and brain); (2) the need to have colloidal stability in aqueous and biological fluids; and (3) the requisite to have minimal or no toxicity to normal tissue.

The driving force underlying this methodology centers on the fact that the exterior surface of these NPs can be functionalized. This means that NPs can be decorated

(conjugated) with ligands[1] for receptor-targeting in brain tissue. They also can be encapsulated with a contrast agent like manganese or gadolinium, such that when NPs enter the brain, those regions generating or subserving the dysregulated physiology (neuronal hyperactivity/synchrony) can be localized using magnetic resonance imaging (MRI). In addition, their hollow inner core can be loaded with a pharmacological agent so that a payload of drugs can be delivered to a region of interest (ROI) subserving the tinnitus-related neuronal hyperactivity. Thus, linking nanotechnology, molecular biology, molecular imaging, and pharma is an attractive strategy needed to treat multifaceted disorders. This approach is particularly well suited for treating tinnitus, since abatement of this condition is not likely to be a one-size-fits-all scenario.

Put in perspective, the functionalization of NPs is key to meeting the needs of a particular disease state or medical condition. Indeed, it is analogous to the magic bullet concept suggested by Nobel laureate Paul Erlich more than a century ago as a treatment modality for cancer (for a review, see Strebhardt and Ullrich, 2008). At the heart of Erlich's approach is the notion that specific chemotherapeutic drugs could target cancerous tissue, modify their biological activity to suppress the disease but, at the same time, remain harmless to healthy nonpathologic tissues in the body. We now extend the logic of the magic bullet concept to the treatment of tinnitus using a systems neuroscience approach.

FIGURE 1. Aerial photo of the SUNY Polytechnic Institute CNSE complex. Photos of researchers. The clean room at the research and development facility used for the development and testing of nanoscale devices and constructs.

Each segment allocated to this approach is described below, based on accounts, technical details, and experimental data provided by Cacace et al (2018) and Apawu et al (2018), albeit in a more abbreviated manner.

The Nanoparticle (NP) Carrier

Emerging as a premier drug-delivery vehicle, the well-studied MS2 bacteriophage (Valegard et al, 1990; Kovacs et al, 2007; Toropova et al, 2008) is an icosahedral virus (a capsid) that is ~28 nm's in diameter. A capsid is the protein shell of a virus classified according to its shape and structure. The icosahedral shape approximates a sphere comprising 20 equilateral triangular facades. A unique feature of NP capsids and a central theme of this approach relates to the fact that they

[1] Ligands are analogous to biological homing devices and, as such, serve to direct the NPs toward a specific receptor type or target in the brain.

The #1 Most Profitable Ancillary Service for Private Practice Audiologists

This system-driven, ancillary balance treatment program will help you generate more revenue from balance and dizzy patients than you can from hearing care, while ALSO increasing your hearing aid sales!

Request information now at:

www.AuDBalance.com

FYZICAL®
Balance & Dizziness Centers

can be engineered to be emptied, virus particles having a central hollow core that can carry drugs. From a technical/manufacturing standpoint, the MS2 bacteriophage is straightforward to produce and purify. Moreover, this NP construct remains structurally stable over a broad range of pH values (4.5 to 12.0) and temperatures up to 68 degrees Centigrade (Stonehouse and Stockley, 1993).

Functionalization of NPs

Targeting the Blood-Brain Barrier (BBB)

To be effective, one of the fundamental elements of this approach is the need to get drugs or other large molecules into the central nervous system (CNS) and brain from the general circulation. The BBB, however, represents a formidable road block in this endeavor. In fact, it operates as a dual-edged sword. On the one hand, the BBB prevents neurotoxins and other foreign molecules from entering the CNS, but on the other hand, this protective barrier limits/hinders relatively few diagnostic and drug treatment options necessary to alleviate the burden of those suffering from brain disorders (Partridge, 2005). And there's the rub.

Briefly, the BBB is composed of ependymal and endothelial cells that line the ventricles and vasculature of the brain. These cells form tight junctions that represent a protective mechanism, analogous to a molecular sieve that prevents the transport of foreign neurotoxic molecules from entering the CNS by passing through the intercellular space between cells. In fact, the BBB prevents approximately 100 percent of large (>400 Da)[2] and 98 percent of small molecules (<400 Da) from entering the brain (Partridge, 2005).

FIGURE 2. Dr. Avril-Genene Holt inspecting histological data in her laboratory at the Wayne State University School of Medicine in Detroit, Michigan.

One promising strategy to circumvent the BBB takes advantage of endothelial cell receptors at the blood-brain interface (Hersh et al, 2016). Specifically, contemporary research has focused on receptor-mediated transcytosis (RMT), the process by which cells bind and internalize ligands from the surrounding environment, transport the ligands through the cytosol and exocytose the ligands on the opposite side of the BBB. While receptors for transferrin, insulin, and lipoprotein have all been used as targets, because each element is highly expressed on the endothelial cells of the BBB (Jones and Shusta, 2007), recent work has concentrated on targeting the low-density lipoprotein receptor-related protein 1 (LRP1) (Hertz and Bock, 2002; Demeula et al, 2008a; b; Xin et al, 2011; Bell et al, 2007).

The LRP1 receptor is noteworthy because it has more than 30

[2] Unified atomic mass unit (dalton; Da).

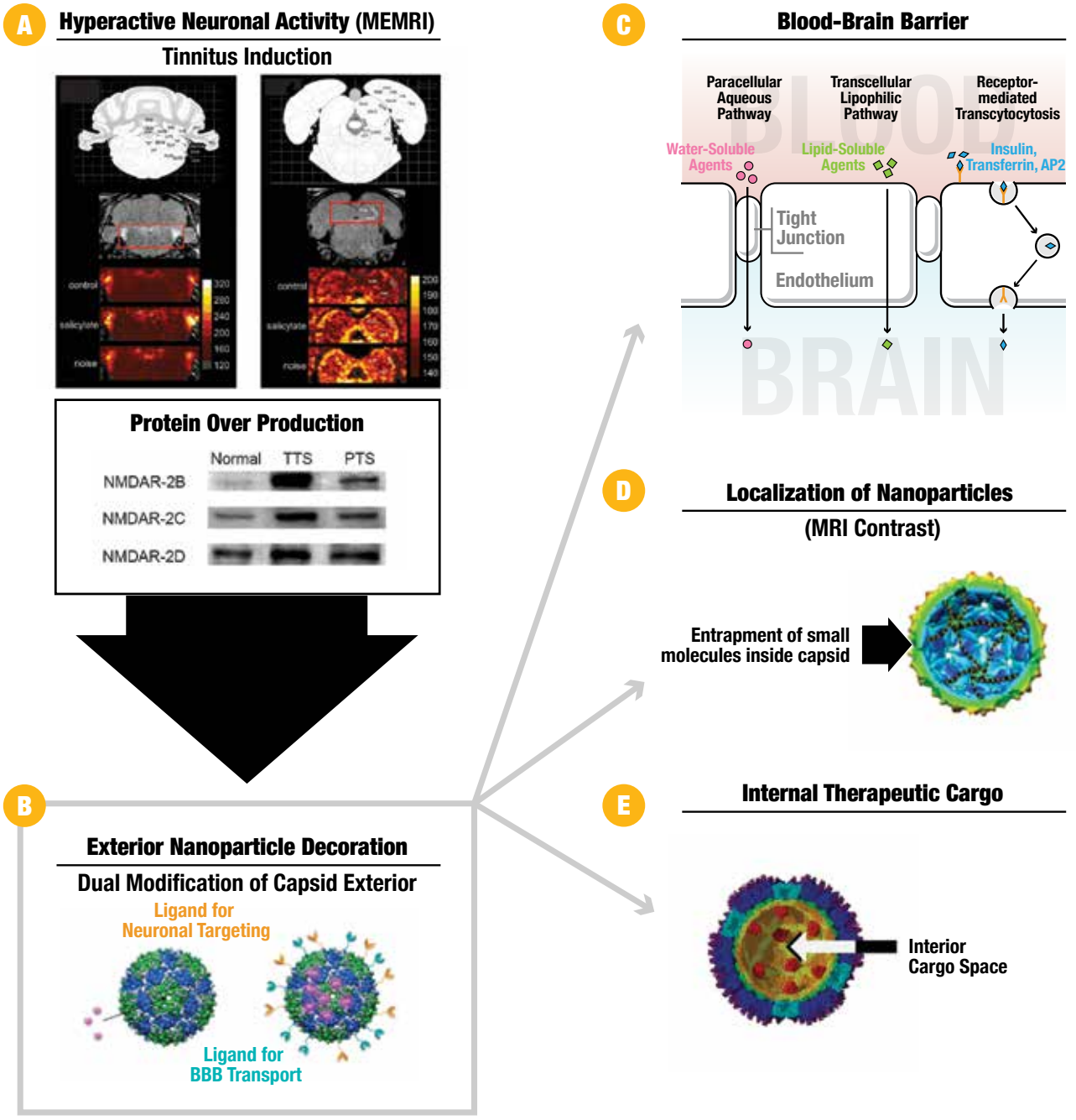


FIGURE 3. A schematic representation of the multifunctional nanotheranostic platform for treating tinnitus.

A Tinnitus, whether induced by noise or a drug such as salicylate, can result in pathologic neuronal hyperactivity across multiple brain regions, ultimately resulting in an over-expression of proteins. These over-produced proteins can be used as tools to guide delivery for NP targets, either to specific brain areas or neurons.

B Once identified, specific ligands for an over-produced protein can be conjugated to the exterior surface of the NP.

C Many of the regions resulting in altered spontaneous neuronal hyperactivity following the onset of tinnitus are located within the brain, which allows only restricted access via the blood-brain barrier (BBB).

B C To allow passage into the brain, the exterior surface of the NPs can be decorated with a ligand that would bind to receptors in the blood vessel wall and allow transcytosis across the endothelium into the brain.

D E Because the NP is encapsulated with an MRI contrast agent and the residual hollow cargo area was filled with a pharmacological agent, the NP could be tracked within the brain and potentially deliver a cargo of drugs to specific brain regions in quantities that could alleviate the symptoms of tinnitus.

distinct ligands (Lillis et al, 2005). One such ligand is the synthetic peptide, angiopep-2 (AP2) (Demeule et al, 2008a; b). Angiopep-2 has a higher transcytosis efficiency than drugs and endogenous ligands, i.e., seven-fold for aprotinin (Jones and Shusta, 2007; Demeule et al, 2008a; b) and 70-fold for transferrin (Demeule et al, 2008a, b). Indeed, the use of AP2 to direct synthetic NP carriers transporting drugs or imaging agents across the BBB has been highly successful (Xin et al, 2011; Huang et al, 2011; Xin et al, 2012a; Xin et al, 2012b; Ren et al, 2012). These AP2-conjugated NPs have been shown to be capable of transport through *in vitro* BBB models, documented to work *in vivo* in the rat brain, and have been successful in targeting glioma cells in brain tissue (Demeule et al, 2008b; Ren et al, 2012). Thus, ligands that target endothelial cells are used to decorate the exterior surface of the NP and provide one unique strategy by which NPs can cross the BBB.

To be effective, one of the fundamental elements of this approach is the need to get drugs or other large molecules into the central nervous system (CNS) and brain from the general circulation.

Gene Expression Approaches Associated with NP Functionalization and Tinnitus Localization

Another important element specific to our approach is based on gene-expression studies and their distinctive contribution to the dual-targeting delivery system. First described more than a decade ago (Holt, 2006), this approach is based on uncovering specific "over-expressed" genes that might serve as biomarker proxies for tinnitus-related neuronal hyperactivity. Initiated by work on noise-induced tinnitus, Holt and colleagues (2016) have shown that the N-methyl-D-aspartate receptor subunit 2D (NMDAR-2D) is over expressed in nuclei of the dorsal cochlear nucleus and inferior colliculus in rats with behavioral evidence of tinnitus. Therefore, this ionotropic, glutamate-receptor ion-channel protein (NMDA-2D) represents a desirable target for therapeutic intervention (Holt et al, 2016). While the utility of this discovery is very important, we do not wish to imply that other targets or mechanisms are not valuable, only that this is a good starting point to capitalize our current mitigation efforts. For example, in salicylate-induced tinnitus, experimental studies have shown that the N-methyl-D-aspartate receptor subunit 2B (NMDAR-2B) and other biomarkers are over-expressed (Hwang et al, 2011; 2013; Hu et al, 2014; 2016) and they, too, could represent signatures of spontaneous neural hyperactivity and be positioned as NP-ligand decorations. Thus, different tinnitus-induction methods (noise- or drug-based) imply different receptor-targeting mechanisms for a personalized approach to tinnitus abatement.

In order to put gene-expression studies in context, consider the notion that genes are not just passive strands of deoxyribonucleic acid (DNA), but represent tiny chemical manufacturing plants that are controlled by a dynamic

set of chemical messengers that travel within and between cells to regulate function or, when things go awry, produce dysfunction/dysregulation, as in the development of tinnitus. Thus, as this work implies, cellular-signaling processes at the molecular level are both helpful and informative as a way to guide treatment.

Nanoparticle Encapsulation with Contrast Agents

By encapsulating NPs with known contrast agents such as gadolinium or manganese, abnormal brain physiology, pathoanatomy, and associated neural pathway dysfunction can be identified and tracked with magnetic resonance imaging (MRI), providing important localizing information for researchers to advance their models and theories and drive intervention strategies forward. The idea for using manganese is based on mounting evidence that this essential metal is an activity-dependent paramagnetic contrast agent. It has already been used in experimental paradigms to study tinnitus (Brozoski et al, 2007; Holt et al, 2010) and has contributed to our understanding of many other types of auditory and non-auditory phenomena (for a review, see Cacace et al, 2014).

Loading the NP with Pharmaceuticals

In the unique NP platform we developed, the hollow inner core of the capsid NP can be loaded with a pharmaceutical agent that can be released in an ROI with the intent of attenuating or neutralizing a prominent pathophysiological substrate subserving the tinnitus percept. With these features in mind, a novel drug-delivery system is born!

An illustration of this entire functionalization, encapsulation, and drug-loading process is shown in FIGURE 3.

TOXICITY-RELATED ISSUES

There is always a concern that introducing a foreign substance into the body may produce adverse consequences and potentially accumulate in unintended body areas and organ systems. Therefore, the need to address the topic of toxicity and/or reactive changes such as an immune response cannot be ignored.

In the *in vivo* rat model described by Apawu et al (2018), after venous injection of NPs, toxicity was examined in brain tissue and in major organ systems. Using hematoxylin and eosin stained sections of liver, heart, spleen, and kidney tissue, systemically administered doses of fluorescent-labeled MS2-AP2 NPs (1:10 and 1:40), no deleterious effects on body organs were found. After two weeks, histological assessment of organs other than the brain did not show any NP accumulation. Furthermore, administration of the fluorescent-labeled MS2-AP2 NPs via the tail vein did not alter behavior, appearance, or weight of the experimental animals, even after 12 days, regardless of dose.

In summary, by applying nanotechnology and molecular biologic formulations, we show that it is possible to integrate diagnostic and therapeutic functions under the umbrella of nanotheranostics. Our initial work has shown that MS2 capsids are excellent drug-delivery vehicles capable of self-assembly, forming physically stable structures, and being easily modified with functional moieties. Based upon their small size and the ability to transcytose the BBB, this approach is extremely attractive and particularly well suited for targeting tinnitus-related neuronal hyperactivity.

AN ESSENTIAL STEP IN SCIENTIFIC EVOLUTIONS

This nanotheranostic approach is a fundamental paradigm shift from currently available methods. It serves as a new component that can be added to the treatment armament of clinicians and complements other factors included within the "Roadmap to a Cure," a strategic initiative developed by the American Tinnitus Association to inform researchers and other stakeholders about important areas needing further experimental attention in tinnitus research. The concept of nanotheranostics extends important features found within the roadmap with the ultimate vision of discovering a cure for tinnitus.

CONCLUSION

Integrating diagnostic and therapeutic functions under the rubric of nanotheranostics represents a powerful and attractive paradigm that is well suited for treating tinnitus. What distinguishes this approach from other techniques is

the fact that treatment can be individualized—an approach thought by some to be the future standard of care in medicine. A personalized approach would enable clinicians to tailor specific treatments to the biomarkers expressed, either from a single individual and/or from a group of individuals with similar histories (Jotterand and Alexander, 2011).

It is important to emphasize that the unique training and credentialing aspects of assessing hearing function in humans and in providing extensive rehabilitative guidance is the domain of clinical audiology. It has been argued that the audiologist is the likely translational interface between the basic-science laboratory and the clinic, as this individual supervises and directs applications of new technologies, techniques, and methods that ultimately will lead to successful treatment regimens of all types (Cacace, 2016).

Anthony T. Cacace, PhD, is a professor of communication sciences and disorders at Wayne State University in Detroit, Michigan. He is also a past chair of the American Tinnitus Association's (ATA) Scientific Advisory Committee, and a past ATA board member.

Stephanie M. Curley, PhD, is a postdoctoral fellow at the SUNY Polytechnic Institute Colleges of Nanoscale Science and Engineering in Albany, New York.

James Castracane, PhD, is professor and head of the Nanobioscience Constellation at the SUNY Polytechnic Institute Colleges of Nanoscale Science and Engineering in Albany, New York.

Magnus Bergkvist, PhD, is an associate professor at the SUNY Polytechnic Institute Colleges of Nanoscale Science and Engineering in Albany, New York.

Aaron K. Apawu, PhD, is a postdoctoral fellow at the Wayne State University School of Medicine Department of Anatomy and Cell Biology and at the John D. Dingell VA Medical Center in Detroit, Michigan.

Avril-Genene Holt, PhD, is an associate professor at the Wayne State University School of Medicine Department of Anatomy and Cell Biology and health-research specialist at the John D. Dingell VA Medical Center in Detroit, Michigan.

Acknowledgements

This work was supported by a grant from NIH NIDCD R21 DC013895-02 to MB. We are also grateful to Dr. Sumit Dhar for his encouragement and guidance throughout the editorial process.

References

Apawu AK, Curley SM, Dixon AR et al. (2018) MRI compatible MS2 nanoparticles designed to cross the blood-brain-barrier: Providing a path toward tinnitus treatment. *Nanomed: Nanotech Biol Med* 14:1999–2008.

Bell RD, Sagare AP, Friedman AE et al. (2007) Transport pathways for clearance of human Alzheimer's amyloid beta-peptide and apolipoproteins E and J in the mouse central nervous system. *J Cereb Blood Flow Metab* 27:909–918.

Brozoski T, Cioban L, Bauer CA. (2007) Central neural activity in rats with tinnitus evaluated with manganese enhanced magnetic resonance imaging. *Hear Res* 268:168–179.

Cacace, AT. (2016) Introduction. In: *Scientific Foundations of Audiology: Perspectives from Physics, Biology, Modeling, and Medicine*. San Diego: Plural Publishing, Inc., pp. vii–viii.

Cacace AT, Apawu AK, Curley SM et al. (2018, in press) Development of a 'Theranostic Nano-Bullet' for Tinnitus: Receptor Targeting, Molecular Imaging and Drug Delivery. In: *Frontiers in Clinical Drug Research-CNS and Neurological Disorders*. DuBai: Bentham Scientific Publishers.

Cacace AT, Brozoski T, Berkowitz B et al. (2014) Manganese enhanced MRI: A powerful new imaging method to study tinnitus. *Hear Res* 311:49–62.

Caldorera-Moore ME, Liechty WB, Peppas NA. (2011). Responsive theranostic systems: Integration of diagnostic imaging agents and responsive controlled release drug delivery carriers. *Acc Chem Res* 44:1061–1070.

Demeule M, Regina A, Che C et al. (2008a) Identification and design of peptides as a new drug delivery system for the brain. *J Pharm Exp Therapeutics* 324:1064–1072.

Demeule M, Currie JC, Bertrand Y et al. (2008b) Involvement of the low-density lipoprotein receptor-related protein in the transcytosis of the brain delivery vector Angiopep-2. *J Neurochem* 106:1534–1544.

Funkhouser J. (2002) Reintroducing pharma: Theranostic revolution. *Curr Drug Discov* 2.

GROW YOUR PRACTICE

Three out of four patients referred out for earwax removal don't return. That is **lost hearing aid sales**.

Stop referring, do the earwax removal yourself.

It is **EASY**, safe, fast and pain free with the Earigator®.

Let us show you how

Or visit our website and see our YouTube Videos

www.nupurtech.com

1576 Sweet Home Road, Buffalo, NY 14228 (716)222-2323

Nupur
TECHNOLOGIES

Hersh DS, Wadajkar AS, Roberts N et al. (2016) Evolving drug delivery strategies to overcome the blood brain barrier. *Curr Pharm Design* 22:1177–1193.

Herz J, Bock HH. (2002) Lipoprotein receptors in the nervous system. *Ann Rev Biochem* 71:405–434.

Holt AG. (2006) Gene expression: A clue to turning off tinnitus. *Tinnitus Today* 31:17–19.

Holt AG, Bissig D, Mirza N, Rajah G, Berkowitz B. (2010) Evidence of key tinnitus-related brain regions documented by a unique combination of manganese-enhanced MRI and acoustic startle reflex testing. *PLoS One* 5:e14260.

Holt AG, Martin CA, Muca A, Dixon AR, Bergkvist M. (2016) Molecular-based measures for the development of treatment for auditory system disorders: Important transformative steps toward the treatment of tinnitus. In: *Scientific Foundations of Audiology: Perspectives from Physics, Biology, Modeling, and Medicine*. San Diego: Plural Publishing, Inc., pp. 107–130.

Hu S-S, Mei L, Chen J-Y, Huang ZW, Wu H. (2014) Expression of immediate-early genes in the inferior colliculus and auditory cortex in tinnitus. *Eur J Histochem* 58:73–79.

Hu S-S, Mei L, Chen J-Y, Huang ZW, Wu H. (2016) Expression of immediate-early genes in the dorsal cochlear nucleus in salicylate-induced tinnitus. *Eur Arch Otorhinolaryngol* 273:325–332.

Huang S, Li J, Han L et al. (2011) Dual targeting effect of Angiopep-2-modified, DNA-loaded nanoparticles for glioma. *Biomaterials* 32:6832–6838.

Hwang J-H, Chen J-C, Wang M-F, Chan Y-C. (2011) Expression of tumor necrosis factor-a and interleukin-1b genes in the cochlea and inferior colliculus in salicylate-induced tinnitus. *J Neuroinflam* 8:2–6.

Hwang J-H, Chen J-C, Chan, Y-C. (2013) Effects of C-phycocyanin and Spirulina on salicylate induced tinnitus, expression of NMDA receptor and inflammatory genes. *PLoS One* 8:e58215.

Jones AR and Shusta EV. (2007) Blood-brain barrier transport of therapeutics via receptor-mediation. *Pharm Res* 24:1759–1771.

Jotterand F and Alexander AA. (2011). Managing the "known unknowns": theranostic cancer nanomedicine and informed consent. *Meth Mol Biol* 726:413–429.

Kovacs EW, Hooker JM, Romanini DW, Holder PG, Berry KE, Francis MB. (2007) Dual-surface-modified bacteriophage MS2 as an ideal scaffold for a viral capsid-based drug delivery system. *Bioconjugate Chem* 18:1140–1147.

Lillis AP, Mikhailenko I, Strickland DK. (2005) Beyond endocytosis: LRP function in cell migration, proliferation and vascular permeability. *J Thrombosis Haemostasis* 3:1884–1893.

Pardridge WM. (2005) The blood-brain barrier: Bottleneck in brain drug development. *NeuroRX* 2:3–14.

Ren J, Shen S, Wang D et al. (2012) The targeted delivery of anticancer drugs to brain glioma by PEGylated oxidized multi-walled carbon nanotubes modified with angiopep-2. *Biomaterials* 33:3324–3333.

Stonehouse NJ and Stockley PG. (1993) Effects of amino acid substitution on the thermal stability of MS2 capsids lacking genomic RNA. *FEBS Letters* 334:355–359.

Strebhardt K and Ullrich A. (2008) Paul Ehrlich's magic bullet concept: 100 years of progress. *Nature Rev Cancer* 8:473–480.

Toropova K, Basnak G, Twarock R, Stockley PG, Ranson NA. (2008) The three-dimensional structure of genomic RNA in bacteriophage MS2: implications for assembly. *J Mol Biology* 375:824–836.

Valegard K, Liljas L, Fridborg K, Unge T. (1990) The three-dimensional structure of the bacterial virus MS2. *Nature* 345:36–41.

Xin H, Jiang X, Gu J et al. (2011) Angiopep-conjugated poly(ethylene glycol)-co-poly(epsilon-caprolactone) nanoparticles as dual-targeting drug delivery system for brain glioma. *Biomaterials* 32:4293–4305.

Xin H, Sha X, Jiang X et al. (2012a) The brain targeting mechanism of Angiopep-conjugated poly(ethylene glycol)-co-poly(epsilon-caprolactone) nanoparticles. *Biomaterials* 33:1673–1681.

Xin H, Sha X, Jiang X, Zhang W, Chen L, Fang X. (2012b) Anti-glioblastoma efficacy and safety of paclitaxel-loading Angiopep-conjugated dual targeting PEG-PCL nanoparticles. *Biomaterials* 33:8167–8176.

Xin H, Jiang X, Gu J et al. (2011) Angiopep-conjugated poly(ethylene glycol)-co-poly(epsilon-caprolactone) nanoparticles as dual-targeting drug delivery system for brain glioma. *Biomaterials* 32:4293–4305.


Come Together...
PUBLIC AWARENESS WEEK
October 1-5, 2018
OCTOBER IS NATIONAL AUDIOLOGY AWARENESS MONTH

WE can make a difference:

1 Put a face to hearing loss and spread awareness in your community.

Publish our consumer videos on your website and push out on social media.

2 Connect with the press on seasonal issues and life experiences.

Customize the Academy's press release templates on hearing protection and back-to-school check-ups.

3 Create local recognition and publicity of the field.

Use our template and language to create a state, city, or local proclamation.

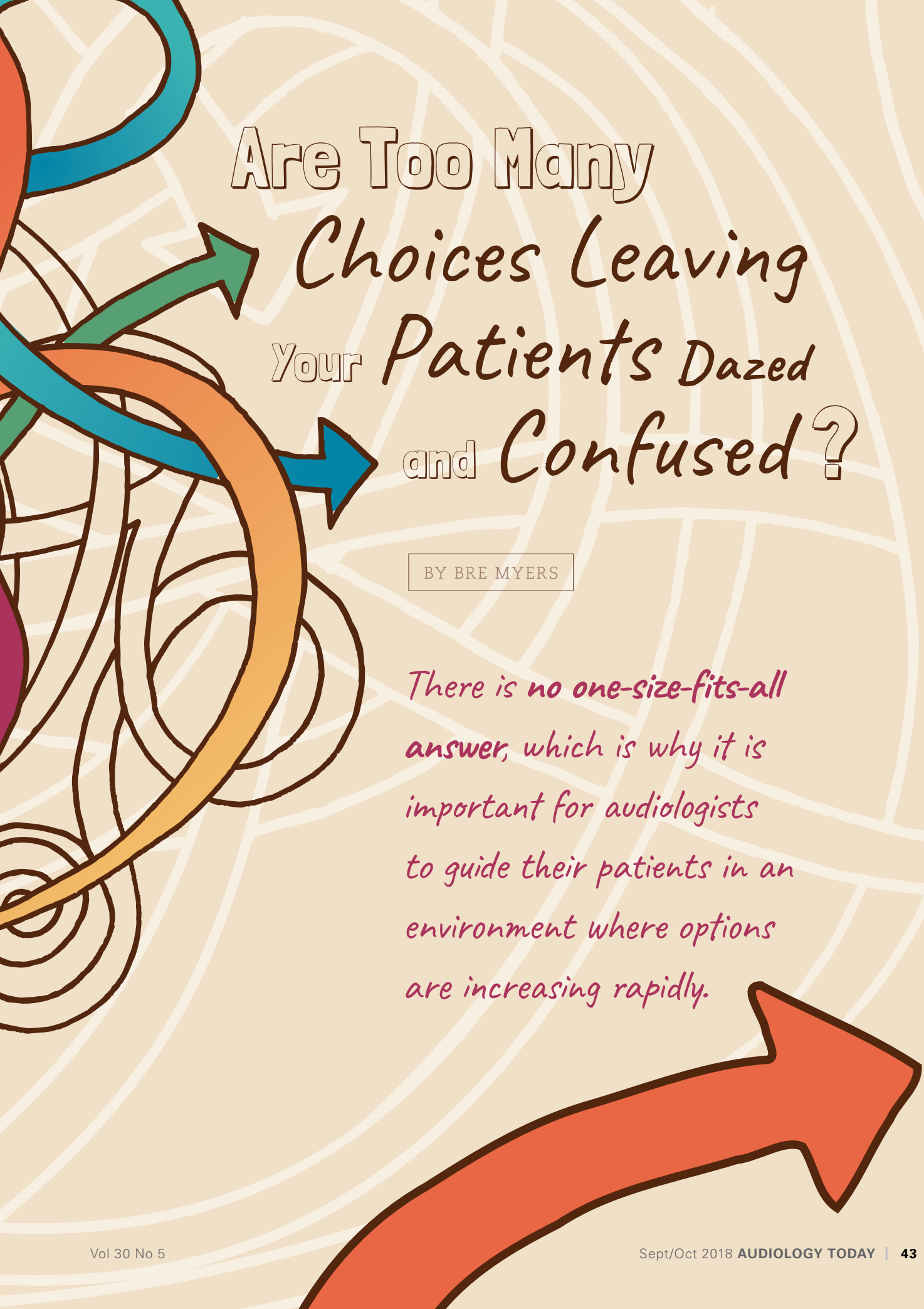
Use these practical tips and more leading up to National Audiology Awareness Month and Public Awareness Week.

www.audiology.org

AMERICAN ACADEMY OF AUDIOLOGY

Are Too Many Choices Leaving Your Patients Dazed and Confused?

BY BRE MYERS



There is **no one-size-fits-all answer**, which is why it is important for audiologists to guide their patients in an environment where options are increasing rapidly.

> *"We are drowning in information, while starving for wisdom. The world henceforth will be run by synthesizers, people able to put together the right information at the right time, think critically about it, and make important choices wisely."*
>
> —*E.O. Wilson*

Sitting across from you is a new patient whom you have just diagnosed with hearing loss. After discussing the results with your patient what do you do next? Do you gauge their level of acceptance and willingness to discuss treatment options? What are their options? How many manufacturers do you work with? How many levels of technology per manufacturer are there? How many styles of devices, per technology level are offered? What features are available? What are the accessories that work with each device? Do the hearing aids have rechargeable or traditional batteries? What color casing does your patient want? What about assistive devices like captioned phones, alarms, devices for the televisions, or pocket talkers? What services does your office offer? If they visited another office or retail store, would their options significantly change?

Feeling overwhelmed yet? Chances are your patients do. The array of treatment options a patient must consider are more numerous than the variations of drinks available at your local coffee shop—and growing every day. No wonder some choose not to decide. Does the abundance of options factor into the rates for returns, dissatisfaction, and failure to commit (i.e., purchase or use)? Are patients more content when given a limited set of choices?

The Excessive Choice Effect or Choice Overload

In the early 2000s, an influential book, *The Paradox of Choice* (Schwartz, 2004) brought these and more issues to light. Through several studies, Schwartz exposed some evidence that the more choices a person is given the less confident and the less satisfied he or she is with the ultimate choice. An example is choosing between two ice cream stores. The first offers three flavors to choose from and the second offers 30. Not surprisingly most participants initially choose the store with more flavors; however, when asked to rate their satisfaction with their choice in ice cream flavor (out of 30), participants were less satisfied than those who were only given three options. So, while we as consumers want more choices, some of us may be less satisfied, regret our decision, or simply decide not to choose when faced with too many choices. This problem is termed the "excessive choice effect" (ECE) or "choice overload."

Are your patients the type who want to maximize their choices by ensuring that they

FOR EXCESSIVE EAR WAX BUILD UP...

Debrox®

Carbamide Peroxide 6.5% Non USP*

EARWAX Removal Aid

use as directed

Safely and gently removes excessive ear wax with microfoam action

Easy for patients to use at home

MORE ***MICROFOAM ACTION!*** *coming Summer 2018*

#1 Doctor & Pharmacist RECOMMENDED

To order samples for your office, visit

Debrox.com/Professionals

*** pH differs from USP specifications***

have purchased the best they can? Or, do they simply want something that will meet their needs. "Maximizers" may be more influenced by ECE than "satisfiers" (Mittal, 2016). In fact, Schwartz found that maximizers, for all of their work, are less happy than those who were content once they found something that met their needs. A third factor that influences decision-making and outcomes is how knowledgeable a person is about a product or service. The less a person knows about a product the less likely he or she will feel confident that the choice is in his or her best interest. When faced with numerous options that one has limited exposure/knowledge to, are there strategies that can influence decision-making?

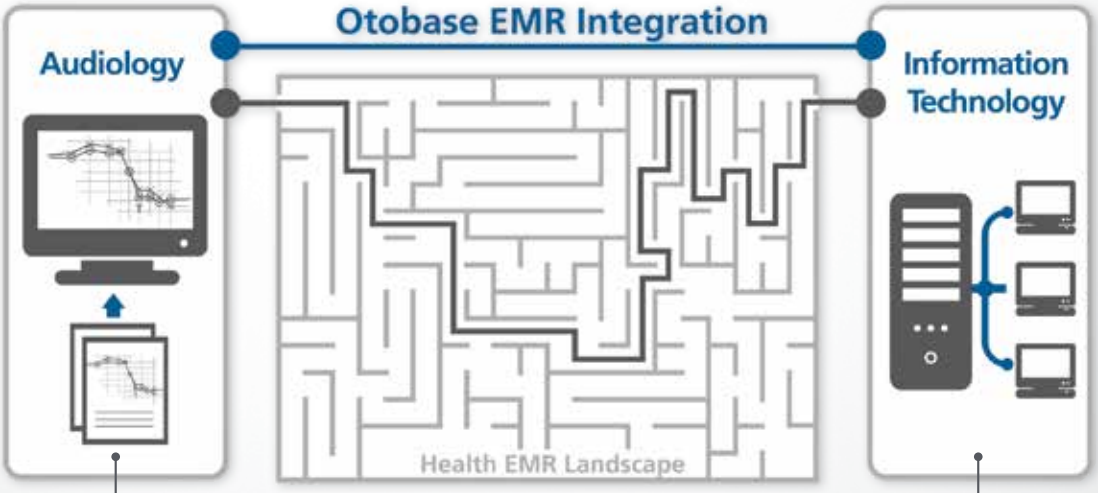
"Maximizers, for all of their work, are less happy than those who were content once they found something that met their needs."

Take a moment to think about your patients and I bet you can identify a few who fall into each category. Would you have changed your counseling style if you knew their general consumer habits? Can you sometimes identify those traits through your interview and case history? What can we do to ensure that we are meeting the needs of those who seek our expertise? While it may sound funny or a bit uncomfortable at first, our patients are also health-care consumers. Their approach to seeking treatment will most likely stem from their behaviors in other areas of consumerism.

While much of this discussion lends itself to the device, it is also important to point out that service and quality of care should also be a large part of the conversation. A new hearing aid user will likely highly value counseling and technology assistance in the beginning, more so than an experienced hearing aid user who is more comfortable and versed in care and maintenance.

But Are There Positives to Choice Overload?

Perhaps not surprisingly, some have argued that while the ECE or choice overload phenomenon might exist, its exact nature and contributing factors do vary. Chernev et al (2015) completed a conceptual review and meta-analysis of choice overload. First, in full disclosure, the authors found a disproportionate number of studies investigating the negative effects of large set choices, presumably due to its novelty and counterintuitive nature.



MEET AUDIOLOGY NEEDS

- ✓ Simple and easy to use – looks and works just like Noah
- ✓ Compatible with major EMR/EHR systems including EPIC, AllScripts and AllMeds
- ✓ Easy integration with all types of audiology equipment and all major brands
- ✓ HIPPA-compliant security features
- ✓ Improved workflow efficiency
- ✓ Saves test results across your health network

MEET IT NEEDS

- ✓ Migrate audiology workstation to IT/BioMed networks
- ✓ HIPPA-compliant – patient heath information security
- ✓ Compatible with major EMR/EHR systems including EPIC, AllScripts and AllMeds
- ✓ Works with existing hardware and software
- ✓ Supports HL7 and Noah 4 interfaces
- ✓ Familiar Noah interface – less time spent on training

EMR Connectivity: Keep it simple with Otobase

Consult with an EMR advisor who is an expert in IT and Audiology

For a limited time, we are offering a complimentary Audiology IT Consultation with a Software Integration Group specialist (a $2000 value). Contact your local Otometrics representative directly or call 855.283.7978 to accept this offer. Promo ends October 31, 2018. Mention promo code: EMR1808-AT

Transition to EMR with a dedicated partner who understands audiology-focused IT Health Systems requirements.

Otobase® is key to connecting audiology patient data to your healthcare network's EMR/EHR system—quickly, simply and securely. It works seamlessly with your existing Noah database or as a standalone database with Otosuite®. It is the only data management solution that can integrate your full audiology workflow to EMR.

Otometrics' Software Integration Group (SIG) provides dedicated Audiology IT services, including Otobase EMR connectivity. SIG was developed to address the needs of practices with integrated PC-based instrumentation and multiple locations. SIG-certified specialists will work with you and your IT department throughout the integration project to ensure that your clinical, operational and financial needs are satisfied.

Accelerate integration to your healthcare network's EMR/EHR system. Learn more at: otometrics.us/otobase

EMR1808-AT

855.283.7978
otometrics.us

otometrics
a division of natus

> The array of treatment options a patient must decide between are more numerous than the variations of drinks available at your local coffee shop—and growing every day. No wonder some chose not to decide.

While the lopsided argument supporting the existence of the negative side of too many choices, the authors do mention some positive outcomes that merit attention. In our current culture, it is difficult to imagine having no choice with regards to purchasing virtually any product, whether that "product" is in the grocery store or pharmacy, or is a health-care provider. Having options can help a person define value and creates a "freedom of choice." Having more than one option can also help someone determine that they are not missing out on a potential alternative. The more choices you have does come with the downside, however, namely the mental effort required to sift through the information.

The authors were able to generalize the antecedents as well as the consequences of choice overload across 53 studies (Chernev et al, 2015). The antecedents refer to the extrinsic (objective) factors such as choice set complexity and decision difficulty as well as the intrinsic (subjective) factors like preference uncertainty and decision goals.

In terms of hearing health care, we cannot necessarily control the extrinsic factors. Our patients are inundated with information regarding product and services outside of our office through many different channels. Are we further "muddying the waters" when they make the decision to come to our office? Or are we facilitating clear, outcomes-based discussions while acknowledging our patients' experiences?

Could your patients identify the "major" hearing aid companies? Do you think they are knowledgeable about the high-end versus basic technology products? Do you think that lack of knowledge helps decision-making or hinders it? These factors interplay to create choice overload situations for our patients.

Chernev et al (2015) further divided the consequences of choice overload into two categories; subjective state and behavioral outcome. Subjective state consequences included metrics such as satisfaction, regret, and confidence while behavioral outcomes included deferral, switching, assortment choice, and option selection. Examples of subjective effects of choice overload include reduced confidence in their choice and feelings of regret. Behavioral consequences include deferring choice or reversing their decision. How many times has a patient made

the decision to be fit with hearing aids only to come in nearing the end of their trial period with the devices in the box stating that they were just not ready? What does that "not ready" mean? Were they not ready to hear sounds better, or more likely were they not ready to make a decision?

How many different hearing aids do you allow your patient to try and how do you facilitate honoring the patients' wishes to make an informed choice? How do you structure your trials or demos? Can these provide enough information for your patient to make an appropriate choice?

One intriguing study investigated ECE and how presentation and inclusion of certain information positively influenced consumers who were given various options in an unfamiliar field (Malone and Lusk, 2017). Over the last decade, craft beer has become a thriving industry. Seemingly endless rotating lists of IPAs, porters, ales, lagers, and stouts are commonly seen in restaurants. But how does the consumer know which to choose, if any, particularly if they are unfamiliar?

Malone and Lusk (2017) implemented two strategies to see if the ECE effect was mitigated simply by modifying how information was presented. They chose to conduct their "2x3 quasi-experiment" at a wine bar, where people may not be as knowledgeable in craft beer. They varied their beer menu to have either six or 12 choices and investigated whether listing a "special" on the menu or providing Beer Advocate scores increased the sale of beer at the establishment. They found that while including specials increased beer sales with the smaller set, the Beer Advocate scores increased in both six and 12 beer lists when compared to their control list. The results suggest that adding "informational nudges" may help to mitigate ECE in this particular arena.

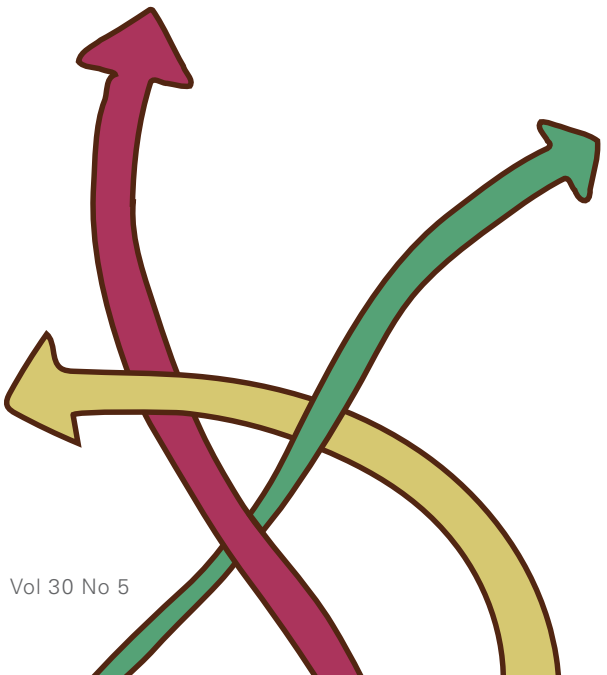
Conclusion

How do you present the information without overwhelming your patient? Are you delivering most of the information verbally or do you use a chart or brochures? Have you placed ads with "special pricing" for a limited time to invoke an immediate call to action? Do you include patient testimonials, or some sort of ranking of devices and services?

In most counseling toward amplification sessions, we speak of particular features and how they might translate to specific benefits. Often, we are the translators, simplifying and equalizing professional jargon so that patients can make somewhat informed choices based upon their lifestyle and communication needs. However, it is easy to slip into a monotonous soliloquy exalting the merits of one device/feature over another, thinking we are helping our patients make an informed decision. But, are we providing too much information? What is the right amount of information for our patients? Are our conversations being led by us or by what our patients are asking us?

In the end, these questions have no easy or "one-size-fits-all" answers. As the field of products and services continues to expand in hearing health care, it is more important than ever to assist our patients as they navigate through the quagmire of choices and make the most appropriate decisions for themselves.

Bre Myers, AuD, is a professor at Salus University in Elkins Park, Pennsylvania.She is also an associate editor for Audiology Today *and www.audiology.org.*



References

Chernev A, Böckenholt U, Goodman J. (2015) Research Review—Choice overload: A conceptual review and meta-analysis. *Jour Cons Psych* [serial online]. April 1, 25:333–358.

Malone T, Lusk J. (2017) The excessive choice effect meets the market: A field experiment on craft beer choice. *Jour Behav Exper Econ* [serial online]. April 1, 67:8–13.

Mittal B. (2016) The maximizing consumer wants even more choices: How consumers cope with the marketplace of overchoice. *Jour Retail Cons Svcs* [serial online]. July 1, 31:361–370.

Schwartz B. (2004) *The Paradox of Choice. Why More Is Less.* New York, NY: Harper & Collins.

The views and opinions expressed in this article are those of the author and do not represent the official policy, position, or opinion of the American Academy of Audiology.

BRANDING THE Lie OR BRANDING THE Truth

THE NEED TO DIFFERENTIATE AUDIOLOGISTS FROM HEARING AID DEALERS [PART 2 OF 2]

BY LARRY ENGELMANN

The audiology and medical professions should not surrender their identities and be forced into one collective group. This gives a false impression to consumers when they are trying to make important choices and informed decisions about health care.

This two-part article presents factual information and mounting evidence to explain and demonstrate why there is growing concern about the intentions of hearing aid dealers. They should come under greater scrutiny and oversight by government officials and agencies to ensure that they conform to and comply with state and federal laws. Their efforts to enter health care have been increasing both at the state and national levels. Based on how their limited occupational education, training, and licensure requirements are defined and viewed in health care, their identity could be legitimately reconstituted and branded as "hearing aid technicians."

Currently in the United States, distribution of hearing aids is facilitated primarily through audiologists, physicians, and hearing aid dealers. However, there is confusion in the marketplace over the "branding" of each group. Proper branding of the truth addresses inaccurate statements, positions, and perceptions, while differentiating between the profession of an audiologist and the occupation of a hearing aid dealer. The passage of the Over-the-Counter (OTC) Hearing Aid Act (2017) will create additional confusion through the development of a new channel for hearing aid distribution. Therefore, it is essential that audiologists properly "brand" and differentiate our role in hearing health.

Statutorily, the hierarchy, or division of labor, differentiates between occupations and professions and specifically defines and restricts what services are allowed to be provided, how they are provided, and by whom they are provided to meet the varying needs of and to protect the consumer.

Part 2 of this series continues with discussion regarding identification of health-care language; and description of "professional" language for professions vs. "occupational" language for vocations.

Health-Care Language

There is an ever-increasing demand for health-care information. The public expects us to brand the truth as they depend on receiving understandable, reliable, and truthful information about their health care. They also deserve ethical behavior from their providers, regardless of position in the health-care hierarchy. In addition, it is a common rationale that the greater amount of education required to enter an occupation or profession, the greater the work-roles (job duties and responsibilities) or broader scope of practice, respectively.

There are certain well-established work-roles and scopes of practice in the health-care hierarchy providing for a distinct, accepted, and understood "division of labor." For example, in nursing, there are nurse's aides (NA), licensed practical nurses (LPN), registered nurses (RN), nurse practitioners (NP), and doctors of nursing practice (DNP). Each has a well-defined position and specific level of education and training that prepares them for either occupational/vocational/technical work-roles for some; and for others, a professional scope of practice. It is recognized and easily understood that a nurse's aide is intentionally and purposely not prepared to perform the duties of a RN, NP, or a DNP.

Statutorily, the hierarchy, or division of labor, differentiates between occupations and professions and specifically defines and restricts what services are allowed to be provided, how they are provided, and by whom they are provided to meet the varying needs of and to protect the consumer. For example, otologic technicians and opticians are not allowed to incorporate ENT's and optometrist's scopes of practice into their respective work-roles. Similarly, neither are hearing aid dealers allowed to incorporate audiologist's scope of practice into the hearing aid dealer's work-roles. It is harmful to the public's best interest to expand any ancillary or support personnel's work-roles to include that of a healing arts doctoring profession's scope of practice. In 2016, the United States Code, Title 38, was amended to include hearing aid dealers – listed as hearing aid specialists (Veterans Health Administration, 2016). It reads in part:

> (b) Requirements—With respect to appointing hearing aid specialists under sections 7401 and 7402 of title 38, United States Code, as amended by subsection (a), and providing services furnished by such specialists, the Secretary [of Veterans Affairs] shall ensure that—
>
> 1. a hearing aid specialist may only perform hearing services consistent with the hearing aid specialist's state license related to the practice of fitting and dispensing hearing aids without excluding other qualified professionals, including audiologists, from rendering services in overlapping practice areas;

EVERYTHING
EAR CARE

Available at CVS, Amazon and Target.

Ear Itch MD™ coming soon in 2019

EOSERA

WWW.EARCAREMD.COM

Just as there are delineations in the health-care hierarchy, there are delineations between what constitutes a profession versus an occupation.

2. services provided to Veterans by hearing aid specialists shall be provided as part of the non-medical treatment plan developed by an audiologist; and

3. the medical facilities of the Department of Veterans Affairs provide to Veteran's access to the full range of professional services provided by an audiologist.

The Office of Management and Budget's (2010) Standard Occupational Classification (SOC) Code lists audiologists under the group category of Health Diagnosing and Treating Practitioners. Hearing aid dealers (or, hearing aid specialists) are listed under the group classification titled Miscellaneous health technologists and technicians.

According to the Bureau of Labor Statistics (2016) and Allied Health Schools (2016), technicians commonly are required to complete a two-year associate's degree program that stresses practical skills or a one-year certificate program. Health-care technologists, on the other hand, complete a four-year bachelor's degree in medical technology or life sciences.

The Association of VA Audiologists (2013) note that "… hearing instrument specialists can, currently be hired under Health Aide and Technician Series 0640 of Title 5. The level of education and training specified for hearing aid specialists in this bill is consistent with the knowledge, skills, and abilities of health technicians hired under job series 0640 and employed in VA audiology clinics."

The U.S. Office of Personnel Management (USOPM) (2016) explains the general schedule (GS) for health aides and technician qualifications as follows:

- GS-3: Successful completion of one year of study that included study in medical, health, or related fields.

- GS-4: Successful completion of two years of study that included at least 12 semester hours* in subjects related to the position.

- GS-5: Successful completion of a full four-year course of study leading to a bachelor's degree, with major study or at least 24 semester hours in subjects directly related to the position.

** Apprenticeships are not structured to award "semester hour" credit. This is reserved for college and university degree programs.*

The U.S. Office of Personnel Management (September 1988), classifies health aides and technicians as follows:

- Health aide is the suggested title for GS-1, GS-2, and GS-3 positions and health technician is the suggested title for positions at grades GS-4 and above. (Audiologists are GS-12 grade level or higher.)

- Specific titles indicating separate specializations are not suggested because in such a broad series the range of possibilities is too great. The general principles governing position titles apply. Titles may be descriptive of the specialized area of the work of

the position, e.g., technician work supportive to the work of the optometrist, ophthalmologist, audiologist, or speech pathologist, etc., or of the "mixed" nature of the position, e.g., a position involving work in both medical radiology technician functions and medical technician functions.

According to the USOPM's classifications, hearing aid dealers who have entry-level licensure requirements of a high school diploma, a one-year apprenticeship, or a one-year certificate program are considered "health aides." Those who have entry-level licensure requirements of a two-year course of study, such as an associate's degree, are considered "technicians." Some hearing aid dealers might argue, while again branding the lie, that they have earned degrees in other areas of study beyond the associate's degree; and, consequently, deserve greater recognition. This point is moot, because it is the education requirements for licensure that determine whether a group is identified as an occupation or a profession and, consequently, technicians or professionals.

The National Center for Educational Statistics (NCES) (2016b) uses "hearing instrument specialist"; as an illustrative example it refers to "hearing aid technician." In the health-care arena, based on their limited educational requirements and job skills for licensure, hearing aid dealers are considered a 'nonprofessional health-care occupation'; and they qualify to be labeled with the designation "technician," not "specialist."

Professional vs. Occupational Language

Just as there are delineations in the health-care hierarchy, there are delineations between what constitutes a profession versus an occupation. Education at the bachelor's, master's, or doctorate level is compulsory for a profession, but not for an occupation. Once we

MINIMUM EDUCATION REQUIRED	TOTAL	STATE/DISTRICT
High School Diploma or Equivalent	41	AL, AK, AZ, CA, CO, CT, DE, DC, FL, GA, HI, ID, IN, IA, KS, KY, ME, MA, MI, MN, MS, MT, NE, NV, NJ, NM, NY, NC, ND, OK, OR, RI, SC, SD, TX, UT, VT, VA, WV, WI, WY
Associate Degree	8	AR, IL, LA, MD, MO, NH, TN, WA
None	2	OH, PA

TABLE 1. Statutory Requirement in Hearing Aid Dealer's Laws for the Minimum Education Needed to Obtain a Hearing Aid Dealer's License.

understand the structure of education, the hierarchy becomes more apparent in health care, work-roles, identities, licensing laws and their restrictions.

The health-care industry requires systematic, sequential, and more rigorous training along with a higher educational standard in order to achieve recognition and advancement to positions having greater responsibilities and authority. Vernacular should be used that is statutorily correct, representative of, and commensurate with academic and technical/vocational understanding and recognition.

Jax (2016), in discussing "occupational versus professional education" notes, among other things, that

1. …the field of postsecondary education generally sees an occupation as unskilled work, or a skilled trade, while a profession is a job requiring advanced and broad education.

2. Career and technical colleges provide training for occupations, as do community colleges.

3. Occupational education is specific training for a particular job.

4. Training for a profession generally involves attaining a bachelor's degree and sometimes requires a graduate degree, as is the case with doctors and lawyers.

Entry requirements for skilled-worker occupations, such as a hearing aid dealer, typically are limited. TABLE 1 shows the minimum educational requirement for licensure as a hearing aid dealer statutorily is a high school diploma or equivalent in 41 of the states/District of Columbia (DC); an associate degree in eight states; and none required in two states.

Apprenticeships are a viable way to learn a trade or an occupation [Office of Disability Employment Policy (ODEP) (2016); Employment and Training Administration (ETA) (2016)]. The ODEP and ETA recognize and identify groups who have apprenticeship programs as occupations, not professions. There are more than 1,000 occupations with registered apprenticeship programs, e.g., laboratory technicians, optical technicians, and dental assistants. They note that, "once an apprenticeship training program is complete and necessary job-skills attained, the trainee/apprentice receives a Certificate of Completion of Apprenticeship."

The U.S. Department of Education (2016) and the National Center for Educational Statistics (2016a) report that the 1990 Perkins Act defines vocational education as organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree."

According to the International Hearing Society (IHS) (2016), there are five U.S. College Programs for Hearing Instrument Sciences. Two programs are degreed; two are degreed and certificate programs (fewer requirements for those not seeking a degree or needing a degree for licensure); and one certificate-only program. IHS states that "… an academic degree in hearing instrument fitting and dispensing" can be earned; however, this claim is at best misleading and, at worse, false. There

is no existing degree awarded that is called a "hearing instrument fitting and dispensing" degree.

Associate and baccalaureate degrees are recognized as undergraduate academic degrees. The College Atlas (2016) explains that associate degrees "… are primarily offered by junior or community colleges and vocational schools." It goes on to distinguish and clarify the differences between the two categories of associate degrees, i.e., transfer and occupational: For those students wanting to eventually earn a baccalaureate degree, the "associate of arts (AA) and associate of science (AS) are two-year degrees that are designed primarily as transfer degrees."

In contrast, "occupational associate degrees are designed to help students acquire specific knowledge and skills in preparation for a particular career path." The occupational "associate of applied science (AAS) degree is a two-year degree designed for people who intend to enter the workforce immediately following graduation from their program." Also, "… some AAS courses are not granted transfer equivalency credit nor will they fulfill the general education requirements of a bachelor's degree program."

TABLE 2 shows the degree granted by colleges for hearing aid dealer preparation is an associate of applied science (AAS) degree. The AAS degree is considered a two year "technical/vocational degree." This is further distinguished from degrees that prepare students for professional careers requiring a baccalaureate, graduate, professional doctorate, or research doctorate degree.

The wide variety of terminology used in the above colleges prevents a common vernacular as a basis in which

TABLE 2. U.S. College Programs for Hearing Aid Dealers

COLLEGE**	DEGREE/CERTIFICATE	PROGRAM	CAREER PREPARATION AS EMPHASIS
Bates Technical College	AAS*	Hearing Instrument Technology	Hearing Instrument Fitter/Dispenser
Rowan College at Burlington County	AAS*	Hearing Instrument Sciences	Hearing Instrument Specialist Hearing Instrument Dispenser Hearing Aid Dispenser
Ozarks Technical Community College	AAS*/Certificate	Hearing Instrument Sciences	Hearing Instrument Specialist Hearing Instrument Dispenser Hearing Aid Dispenser
Spokane Falls Community College	AAS*/Certificate	Hearing Instrument Specialist Program	Hearing Instrument Specialist Hearing Instrument Dispenser
College of DuPage	Certificate Only	Hearing Dispensary Certificate Program	Hearing Healthcare Provider Hearing Instrument Specialist

*AAS = Associate of Applied Science | **College contact information in "References" below.

Table 2 References

Bates Technical College, Tacoma, Washington. www.bates.ctc.edu (accessed March 1, 2016).

College of DuPage, Glen Ellyn, Illinois. www.cod.edu (accessed March 1, 2016).

Ozarks Technical Community College, Springfield, Missouri. www.academics.otc.edu (accessed March 1, 2016).

Rowan College at Burlington County, Pemberton, New Jersey. www.rcbe.edu (accessed March 1, 2016).

Spokane Falls Community College, Spokane, Washington. www.spokane.edu (accessed March 1, 2016).

to communicate between programs, define programs to students, convey accurate information to the public, and to be recognized for purposes of uniformity and reciprocity between state licensure boards. This is unlike the audiology profession, where there is no vernacular confusion between the 70+ doctor of audiology programs.

U.S. colleges offering AAS degrees and certificate programs for hearing aid dealers would assist in branding the truth if they revised their program terminology to conform to statutory and occupational/technical/vocational vernacular. Examples are

1. Program emphasis would best be identified as "hearing aid technology."

2. Career preparation should be for the occupation of "hearing aid dealer" or "hearing aid technician" rather than for a profession or field.

3. Those in occupations have "work-roles (i.e., job duties and responsibilities)" rather than "scopes of practice."

4. Hearing aid dealers/technicians provide "hearing aid services" rather than "hearing health-care services."

5. Use "on-the-job training" or "supervised work experiences" rather than "clinical practicum."

6. Use "laboratory skills" rather than "clinical skills" since hearing aid dealers are not trained or licensed to enter clinical practice.

Engelmann (2008a) notes that the International Institute for Hearing Instruments Studies (IIHIS) accredits educational programs for IHS. The IIHIS established the American Conference of

Audioprosthology (ACA) in 1976. Engelmann (2008b) emphasizes that "… the IIHIS and the ACA are NOT academic institutions, are NOT accredited by any accrediting agency recognized by the U.S. Department of Education, and CANNOT award academic credit for any of their educational material." Also, "… it is very confusing and misleading when IHS, IIHIS, and ACA weave the vernacular of universities, colleges, and the academic community into their literature, leaving consumers with the false impression that ACA is some type of accredited academic institution."

For example, IHS's literature notes that "ACA is a baccalaureate-level course specifically designed for hearing instrument dispensers with two or more years of experience." "The ACA program contains five courses structured to conform to a semester-hour format common to universities." "Students that successfully complete the ACA program earn 15 semester hours or credit toward baccalaureate degree category that can be applied to a variety of undergraduate programs." The use of terms such as "baccalaureate level," "semester-hour format," and "earn credit toward baccalaureate degree" creates the impression that the ACA is a university-based program, when this is not the case.

ACA also number their courses in the 300s and 400s as if to appear synonymous with upper division undergraduate courses at a college or university intended for juniors and seniors working on a bachelor's degree. Coursework during the first two years at a college or university is commonly numbered at the 100 and 200 levels to denote freshman and sophomore courses. Upper division courses are typically not available for freshmen and sophomores let alone for individuals who have only a high school diploma and have never been enrolled in a college or university. Again, this numbering system, common in colleges and universities, appears to indicate that the ACA is a university-based program.

One of ACA's course offerings is "Practicum (403)." ACA's use of professional and university-based terminology like "practicum" is associated with a graduate school-level course that provides students "supervised practical application of a previously or concurrently studied theory." Practicum is neither a term associated with continuing education courses nor correct vernacular to use for preparing someone for a vocational/technical job. An appropriate example of the correct and proper use of "practicum" is when referring to clinical teaching with master's degree students in speech-language pathology. The experiential aspect to dealer's training would be better expressed by using the designation "supervised work experience" or "on-the-job training."

Conclusion

Professions and occupations have every right to take the necessary and appropriate steps to advance themselves and improve their qualifications. However, the efforts to do so should not be accomplished by branding through merely inflating titles and promoting false identities or by using misleading terminology.

For some time, hearing aid dealers have worked on shedding their image as retail salespeople and establishing themselves as hearing health-care professionals and members of the hearing health-care profession when they are neither. If their goal is to be recognized in health care, they must be held accountable and required to use the proper language of statutes, academia, and health care. They should also recognize their place in health care's hierarchy that is based largely on education and training requirements for licensure. For that, they are identified as belonging to a skilled-worker's occupation and are recognized as technicians.

Hearing aid dealers should rise to no higher level than other health-care employees who have jobs requiring a minimum of a high school diploma, on-the-job training, an apprenticeship, or a vocational/technical two-year associate of applied science degree. They are legislatively and statutorily mandated to be restricted deliberately and confined to narrowly defined work-roles.

If hearing aid dealers change their educational directives for the entire occupation/trade/vocation along with all licensing laws to mandate an associate of applied science technical/vocational degree as the entry-level degree, then they should be able to advance in health care to the level of other health-care employees who have jobs that require a minimum level of an AAS degree; the same would apply for bachelor's, master's, and doctorate degreed professions. Allowing hearing aid dealers and their membership organizations to deceive the public by using false and deceptive language, by developing programs that foster and promote hearing aid dealers to expand their occupational work-roles and activities

Grow Your Practice with Digital Marketing

5 Reasons Why Every Hearing Practice Needs an Online Strategy

Your practice deserves to thrive. And your future patients deserve to find you. But with more people heading online to research local services, getting found today requires a complete digital marketing strategy. The truth is, a website is not enough, no matter how sleek and attractive. Digital marketing involves everything you need–from search optimization to social media–to reach your target customers in a crowded marketplace. Consider these factors that make online marketing the most efficient way to use your marketing dollars:

1. More Affordable

No materials, printing, or stamps needed. Digital marketing requires little overhead. Changes to messaging are fast and easy, allowing you to dial-in on what your target customers are responding to on-demand. Dollar for dollar, you'll get more leads via digital.

2. More Precise

Track and evaluate the performance of your efforts quickly and easily. Data-driven decisions take the guesswork out of your marketing.

3. More Reliable

Test different approaches to find what works while only paying for ad clicks and engagements. The result? Cost-effective ads tailored to your market's demonstrated preferences, creating more reliable conversions over time.

4. More Exposure

The Internet is an unlimited terrain for building your brand. From social media profiles and business listings to retargeting ads, generate more leads by strategically placing your brand where it counts.

5. More Connections

Connect with potential patients online and display your knowledge and approachability. You're sending a message to the person you're engaging—and everyone else who reads the exchange. Personalize your brand with the ease of digital communications.

Your future patients are online. They're on social media, searching with Google®, and reading Yelp® reviews. Digital marketing lets you reach them everywhere they are. Invest your marketing dollars in trackable successes and harness the precision and reliability that only online marketing can offer.

After all, your patients are already looking for your services. But will they find you?

Sonic is partnering with AudiologyPlus, a team of digital marketing experts with over 20 years of experience in the hearing and digital marketing fields to help you reach more customers online.

If you're ready to STEP up your online game, call 1-877-329-2385 or visit step.sonicenchant.com to learn more.

SONIC
Everyday Sounds Better

SONIC

STEP

THE SONIC TECHNOLOGY ENGAGEMENT PROGRAM

In partnership with audiology plus

STEP up your online game and stand out.

Sonic offers the customized digital marketing resources you need to succeed:

- Tailored website design services that will get you noticed and remembered
- World-class Search Engine Optimization (SEO) on the local level
- Customer-engagement tools that drive both leads and loyalty
- Curated blog content that will keep you top-of-mind with your patients

"We are very happy to see a consistent increase in new patient referrals for over a year now."

–Pam B., CA

Whether you are upgrading or starting over, call us at **1- 877-329-2385** to discuss your specific challenges or visit **step.sonicenchant.com** to learn more.

www.sonici.com

SONIC
Everyday Sounds Better

into the scopes of practice of audiologists and physicians, and by exceeding their qualifications, is not in the best interest of the public health and safety. They have not earned the requisite academic degree nor do they possess the advanced training that goes along with the expanded scopes of practice responsibilities of allied health-care professionals or doctors.

Branding the lie serves no one other than those doing the branding. Audiologists, and others, should resist the temptation of falling into the trap of branding the lie by rejecting bogus, improper, and illegal terminology; and demand that branding the truth becomes the gold standard of care and best practices for those of us in health care that are bound by and adhere to state and federal laws and ethics. Branding the truth is our obligation and responsibility to society. Consequently, we can ask our organizations to petition federal and state agencies and colleges to use vernacular that is statutorily correct, commensurate with academic understanding and recognition, and is representative of technical/vocational occupations. For example, petition the Office of Management and Budget Standard Occupational Classification (SOC) Code, the Veteran's Health Administration, the USDOL's Office of Apprenticeship, and the National Center for Educational Statistics and others to change the descriptors from "hearing aid specialist" or "hearing instrument specialist" to the more appropriate descriptor "hearing aid technician."

Attempts to popularize hearing health-care profession, hearing health-care provider, hearing health-care professional, or hearing health-care practitioner (HHCP), or any similar titles, should be avoided and discouraged. They serve only to ignore the important differences between physicians, hearing aid dealers, and audiologists. The truth is that the audiology and medical professions should not surrender their identities and be forced into one collective group. Conveying this false impression is branding the lie and is especially dire for consumers when they are trying to make important choices and informed decisions about health care and determining which providers are best suited for their needs.

Branding the truth requires avoiding occupational fraud, academic misrepresentation, and vernacular confusion and by not using terms like HHCP in written correspondence such as journals and patient literature or in oral communications like meeting presentations. Identification and recognition of separate occupations and professions are essential for consumer understanding and transparency. Organizations representing audiologists should be role-models and pursue branding the truth by notifying all stakeholders to stop branding the lie and increase our directed efforts at branding "audiologist" and "audiology" as household names.

Larry Engelmann, MS, AuD, is an audiologist and private practice owner at the Audiology Clinic, Inc., Oklahoma City, Oklahoma.

DISCLAIMER

The views and opinions expressed in this article are those of the author and do not necessarily represent the official policy, position, or opinion of the American Academy of Audiology; further, the Academy does not endorse any products or services mentioned in this article.

References

Allied Health Schools. (2016) Health care technician vs. health care technologist: What's the difference?, www.allalliedhealthschools.com/health-careers/medical-technicans/health-care-technician-vs-technologist/ (accessed May 24, 2016).

Association of VA Audiologists. (2013) Association of VA Audiologists (AVAA) opposes H.R. 353 (December 16, 2013). www.audiology-web.s3.amazonaws.com (accessed January 19, 2018).

Bureau of Labor of Labor Statistics. (2016) *Occupational Outlook Handbook, 2016-17 Edition, Medical and Clinical Laboratory Technologists and Technicians*, www.bls.gov/ooh/healthcare/medical-and-clinical-laboratory-technologists-and-technicians.htm (accessed May 24, 2016).

College Atlas. (2016) Associate Degrees. www.collegeatlas.org (accessed March 1, 2016).

Employment and Training Administration. (2016) U.S. Department of Labor's Employment and Training Administration, Apprentices. www.doleta.gov/apprentices (accessed April 17, 2016).

Engelmann L. (2008a) Audioprosthologist—A Report to the Consumer Health Services, Occupational Licensing Division of the Oklahoma State Department of Health's Oklahoma Hearing Aid Dealers and Fitters Advisory Council, February 18, 2008.

Engelmann L. (2008b)Audioprosthologist— Illegal Use of the Title in Oklahoma—A Report to the Consumer Health Services, Occupational Licensing Division of the Oklahoma State Department of Health's Oklahoma Hearing Aid Dealers and Fitters Advisory Council, March 12, 2008.

International Hearing Society. (2016) College Programs for Hearing Instrument Sciences. www.ihsinfo.org/ihsv2/education/collegeprograms.cfm (accessed March 1, 2016).

Jax C. (2016) Occupational vs. Professional Education, www.classroom.synonym.com/occupational-vs-professional-education-4998.html (accessed March 1, 2016).

National Center for Educational Statistics. (2016a) Carl D. Perkins Vocational and Technical Education Act, Public Law 105-32, www.nces.ed.gov (accessed May 24, 2016).

National Center for Educational Statistics. (2016b) Classification of Instructional Programs (CIP), CIP Code 51.0918, www.nces.ed.gov (accessed May 24, 2016).

Office of Disability Employment Policy, U.S. Department of Labor. (2016) Youth with Disabilities Entering the Workplace through Apprenticeship—Looking to Future Opportunities in Apprenticeship, www.dol.gov/odep (accessed April 17, 2016).

Office of Management and Budget. (2010) 2010 Standard Occupational Classification (SOC)— OMB's Final Decisions, *Fed Reg*, 74:12.

U.S. Department of Education. (2016) Carl D. Perkins Vocational and Technical Education Act, Public Law 105-32. www.ed.gov (accessed May 24, 2016).

U.S. Office of Personnel Management. (1988) Position Classification Flysheet for Health Aid and Technician Series, GS-0640. www.opm.gov/policy-data-oversight/classification-qualifications/classifying-general-schedule-positions/standards/0600/gs0640.pdf (accessed May 23, 2016).

U.S. Office of Personnel Management. (2016) Classification & Qualifications General Schedule Qualification Standards, Health Aid and Technician Series, 0640, Individual Occupational Requirements, www.opm.gov/policy-data-oversight/classification-qualifications/general-schedule-qualification-standards/0600/health-aid-and-technician-series-0640/ (accessed May 24, 2016).

Veterans Health Administration. (2016) Title 38—Veteran's Benefits, Chapter 74—Veterans Health Administration—Personnel, uscode.house.gov/view.xhtml?path=/prelim@title38/part5/chapter74&edition=prelim (accessed January 18, 2018).

AMERICAN ACADEMY OF AUDIOLOGY

The Best of Audiology

SAVE THE DATE

Member Registration Opens **November 5**

AAA 2019

Columbus, OH

March **27–30**

www.**AAAConference**.org

#AAAConf**19**

The Speech Banana

Helping Patients Understand the Impacts of Their Hearing Loss

By Emma Colette and Renée Lefrançois

As many hearing health-care professionals know, the speech banana is an audiogram overlay that can be an effective counseling and interpretation tool. This diagram takes complex phonemic information and plots it on an audiogram graph. As each phoneme comprises various formants, the specific frequency and intensity information for each sound is compiled and analyzed, and one point on the audiogram is selected to represent it. By superimposing the speech banana diagram over a particular patient's audiogram, professionals can easily highlight which speech sounds are outside that patient's current hearing abilities. In essence, the area above the hearing loss is audible, and the area below is inaudible.

Some would argue that 10 dB HL should be added to the hearing loss to more appropriately illustrate impact as a speech sound at 0dB SL will likely not be detected. With hearing loss often being ignored, or patients thinking they can just "deal with it," tools that help detail the daily impact of what is being missed should lead to a higher level of adoption of both communication strategies and amplification options. Audiometers that integrate this type of information can make treating patients with hearing loss that much more effective. Learn more about SHOEBOX Audiometry at www.shoebox.md.

CONTENT PROVIDED BY SHOEBOX AUDIOMETRY, A DIVISION OF CLEARWATER CLINICAL.

Emma Colette, BSc candidate, Queen's University, is an intern, and Renée Lefrançois, MHSc, Reg. CASLPO, is the director of audiology with SHOEBOX Audiometry in Ottawa, Ontario, Canada.

The Rise of the Hearing Bud

By David Cannington

Hearing aids fitted by a qualified audiologist serve a valuable purpose in helping people with severe hearing loss. But a majority of people fit into the mild-to-moderate hearing category, estimated to be 45 million people by 2020.

People are now turning to hearing buds to augment their hearing. More commonly known as "hearables," hearing buds are now starting to incorporate capabilities that were once the domain of hearing aids.

The most recently launched IQbuds™ BOOST with Ear ID incorporates a clinically validated hearing assessment coupled with the industry recognized prescription formula NL2 to allow automatic configuration to the user's hearing profile. IQbuds™ BOOST is the first hearable product to incorporate the NL2 prescription formula and is paving the way for other products to deliver a professional functionality set in a consumer ready product.

Hearing buds take earbuds to another level of hearing sophistication by allowing the consumer to control how they hear the world around them in different environments with features such as dynamic noise control, speech to noise controls, EQ frequency that is all customizable.

For audiologists, this opens up a new market opportunity by offering a contemporary hearing solution to those consumers who are not quite ready for a hearing aid. By offering a great situational hearing experience with a product like IQbuds™ BOOST, there is a high probability that the consumer will return to an audiologist when he or she is ready for a hearing aid. For more information about Nuheara, visit www.nuheara.com.

CONTENT PROVIDED BY NUHEARA.

David Cannington is the co-founder and executive SVP sales and marketing with Nuheara, in San Rafael, California.

WELCOME BACK to an ongoing series, Case Study Investigation (CSI), 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.

Influence of Provider Remarks on Efforts to Maximize Residual Hearing in a Deaf Client

By Linda G. Gottermeier

The case report described here draws attention to a powerful variable, namely offhanded provider remarks, which can negatively influence rehabilitation outcomes, specifically for prelingually deaf adults. This group is known to be highly variable in their audiologic/hearing characteristics (Neuman et al, 2017) such that blanket statements are not likely to apply to a given individual. Those in a position to counsel in rehabilitation fields have a special obligation to recognize the weight that their statements can carry in influencing decision-making by such clients (British Society of Audiology, 2012). When treatment options are presented with conflicting messages, a dilemma is created for the client, working against adoption of potentially valuable rehabilitation recommendations (Gagné, 2011; Laplante-Lévesque et al, 2012).

In the case presented here, the issue was a bimodal fit for a young woman (we will call "CC") with early-onset deafness and one cochlear implant (CI). Increasing numbers of individuals with prelingual, severe-profound hearing loss have been seeking greater access to sound in their late teens and adulthood (Sarant, 2012). For many in this group, one-sided CI use and listening training are usually the only recommendations, especially when previous listening experience or response to electric stimuli is inadequate or questionable (Boisvert et al, 2015).

A hearing aid (HA) in the nonimplanted ear would be an alternative

consideration to a second CI, but also has been rarely considered for this population, perhaps due to auditory deprivation of long duration, reports of unpleasant sensations during previous HA trials, and/or lack of objective test gains with a HA (Boisvert et al, 2015). Evidence now, however, supports use of a HA on the ear opposite the CI, known as a bimodal fit, as the standard of care for prelingually deaf adults with one CI (Berrettini et al, 2010; Gottermeier et al, 2016; Neuman et al, 2017).

The protocol for a bimodal fit is key to its success. In the case described later, the individual had volunteered to participate in a three-week study of a bimodal fitting approach that employed frequent audiologist contact, repeated HA adjustments, and client journals as critical components, each found to be valuable in promoting favorable outcomes with bimodal hearing (adaptation, acceptance, and benefit) in this population (Berrettini et al, 2010; Gottermeier et al, 2016).

Despite successes in producing remarkable changes with this protocol, the individual in this case study later abandoned her new HA because of beliefs planted earlier by a hearing health-care provider.

Background

Bilateral profound sensorineural hearing loss due to unknown etiology was diagnosed in the patient we are calling "CC" shortly after birth. She was provided with binaural HAs at age two, which were discontinued at age four. CC obtained an Advanced Bionics Auria CI at age four. CC's most comfortable mode of communication with hearing persons was sign-supported speech. With acoustic pattern information from her CI, plus lip reading cues, CC achieved limited success in informal spoken-language conversations with hearing persons in social settings. She reported that her CI helped her monitor her speech such that her family could understand some words when she wore the device.

At age 20, after 16 years of unilateral CI use, CC volunteered to participate in a university clinic study of a bimodal fitting protocol. CC reported that her motivation was to enhance interactions in the college classroom and possibly improve communication in any future job situation with persons who have normal hearing. At intake, CC informed the project leaders that her worse ear would not be able to benefit from a HA beyond obtaining minimal cues to the presence of sound. She explained that she learned about her hearing limitations from her mother who had passed along a statement from the home audiologist that CC probably "had no hair cells in her left ear." Thus, CC began the study convinced that the new intervention would be useless for her.

Despite her early prediction of failure, CC returned to the clinic for gradual increases in HA power (used in conjunction with her Advanced Bionics Harmony CI) and her journal showed increased HA usage, from five hours to eight hours a day. CC wrote at the end of the first week: "Able to recognized [recognize] where noise is coming from in the direction. Also hear more deeply on sounds of words—s, f, ch, sh. More improvement of the pitch of my voice." CC's speech-language therapist confirmed these impressions and noticed an immediate lowering of vocal pitch to a more appropriate range in the bimodal condition. These changes suggested integration of the newer acoustic signal with the familiar electric signal.

At the end of the three-week intervention, CC's responses on a questionnaire of speech, spatial, and qualities of hearing (SSQ) (Gatehouse and Noble, 2004; Noble et al, 2013) showed a favorable change in perceived ease of listening in the bimodal condition for localization of speech, localization of right/left environmental sounds, and ability to tell how far away a bus or truck was. Consonant-nucleus-consonant (Peterson and Lehiste, 1962) phoneme perception scores indicated that the HA provided some benefit, showing 17 percent with CI alone, versus 25 percent bimodally.

Still, CC wrote, "The hearing aid helps in speech therapy but my mom says I have no hair cells." CC continued using the HA voluntarily during speech-language therapy for four months, but left it off in all other situations, again explaining that she had "no hair cells in her left ear." Although she recognized benefit in the therapy sessions, she was unable to ignore the influence of her audiologist's impressions of her hearing capabilities.

Resistance to Audiological Rehabilitation

This case study speaks to the risk that professionals face of unduly influencing decision-making by what they say during interactions with clients and parents. In the case of CC, an audiologist's remarks, repeated by the mother, exerted a strong negative impact on the ability of the deaf client to adopt a potentially valuable intervention. In this instance, the intervention was to add amplification on the ear opposite a CI, the standard of care for deaf individuals to enhance auditory input through binaural hearing. CC showed clear signs of benefit that she, herself, recognized, as well as the study audiologist and speech-language clinician, even within the short timespan of the study. Yet, the advantage gained was inadequate to outweigh the perceived authority of the home audiologist's words.

Barriers to accessing health care are known to exist for people with disabilities, including those who are deaf (Kuenburg et al, 2016; Smith and Samar, 2016). Knowledge gaps have been attributed to inattention to clients' prior educational opportunities, their print literacy, and their communication preferences (e.g., sign language versus spoken language), as well as lack of cultural awareness among health-care providers. Smith and Samar (2016) have highlighted the special need for health-care providers to improve the accessibility of information by deaf individuals. As an issue of bioethics and disability rights, health-care access cannot be denied or limited, despite the presence of a disability. That is, a health-care system cannot disallow available treatment from which an individual could benefit purely because of the presence of the disability (Asch, 2001). The opinion of CC's audiologist might have been prejudiced by a misconception of the degree of "disability" at the ear opposite her CI, automatically disqualifying her for rehabilitation intervention on that ear.

Inasmuch as accurate, factual counseling could facilitate acceptance of bimodal listening by individuals with early-onset deafness, others like CC similarly might be dissuaded by a professional's personal interpretation of the likelihood of success with any of the several interventions available to these individuals, including HA trials, consideration of one or two CIs, speechreading instruction and practice, online listening practice, and speech-production training (Gagné, 2011; Hull, 2013; Laplante-Lévesque et al, 2012).

The Professional Practice Committee of the British Audiology Society (2012), in their compilation of principles of rehabilitation of adults in routine audiology services, emphasized trust and "congruence" as two of the critical elements of the relationship between client and professional when discussing rehabilitation options. Informed decisions are to result from shared understanding of the effect of the hearing loss and the probable effectiveness of strategies to achieve a client's goals. CC in this case study had clearly articulated her goal to improve communication with persons who had normal hearing, but that objective did not seem to be considered by the home audiologist.

Decision-making that leans toward greater decision power on the part of the clinician than on the part of the client is deemed "paternalistic" rather than truly "informed" (Gagné, 2011; Professional Practice Committee of the British Audiology Society, 2012). Client-centered counseling approaches also have been shown to achieve better adherence to treatment recommendations. Similarly, value has been documented in taking time to consider a client's general health-care preferences; specifically, how active the client wishes to be as a "decision actor" (Gagné, 2011; Laplante-Lévesque et al, 2012).

Unfortunately, it has not been verified precisely what effectual information sharing comprises, despite the known power of psychosocial influences on one's thinking (as in group rehabilitation programs; Preminger, 2007). Moreover, the adequacy of the training and qualifications of those who offer rehabilitation counselling to deaf individuals has been questioned (Preminger, 2007). New findings

AMERICAN ACADEMY OF AUDIOLOGY

YOU ARE AUDIOLOGY

WE ARE AUDIOLOGY

Renewals Are Open

Avoid the hassle and renew with us today.

Visit **www.audiology.org** KEYWORD: *renew*, or call us at 800-222-2336.

We're here to help **YOU** get the most out of your membership.

continue to be published that can inform counseling programs while interest in rehabilitation options increases for adults with prelingual deafness. For example, research recently dispelled the notion that asymmetry in duration of sound deprivation does not predict speech recognition outcomes (Boisvert et al, 2015). This notion would have been relevant to decision-making for CC.

In the present case, the client benefitted from bimodal hearing, as evidenced by clinical data, but eventually rejected a HA contralateral to a cochlear implant due to comments made by an early service provider. Health-care providers are cautioned regarding language used when engaging in assessments and other educational interactions with parents and their clients or patients who are deaf. When treatment options are presented with conflicting messages, a dilemma is created for the individual seeking solutions, working against adoption of potentially valuable rehabilitation recommendations. As an active participant, the adult client must be involved in assessing all potential outcomes and benefits, based on best current knowledge in the field.

Linda G. Gottermeier, AuD, is a professor in the Department of Communication Studies and Services at the National Technical Institute for the Deaf. She provides audiological services including aural rehabilitation and classroom instruction.

References

Asch A. (2001) Disability, Bioethics, and Human Rights. In Albrecht G, Seelman K, Bury M. (Eds.), *Handbook of Disability Studies* (pp. 297–326). Thousands Oak, CA: Sage Publications.

Berrettini S, Passetti S, Giannarelli M, Forli F. (2010) Benefit from bimodal hearing in a group of prelingually deafened adult cochlear implant users. *Amer J Otolaryngol—Head Neck Med Surg* 31:332–338.

Boisvert I, McMahon C, Dowell R, Lyxell B. (2015) Long-term asymmetric hearing affects cochlear implantation outcomes differently in adults with pre- and post-lingual hearing loss. *PLoS ONE* 10(6):e0129167.

British Society of Audiology. (2012) *Practice Guidance: Common Principles of Rehabilitation for Adults with Hearing- or Balance-Related Problems in Routine Audiology Services.*

Gagné J. (2011) Incorporating the ICF: A person-centered approach to audiologic rehabilitation. ASHA Online Conference, October 12–24, 2011.

Gatehouse S, Noble W. (2004) The Speech, Spatial and Qualities of Hearing Scale (SSQ). *Intl J Audiol* 43:85–99.

Gottermeier L, De Filippo C, Clark C. (2016) Trials of a contralateral hearing aid after long-term unilateral CI use in early-onset deafness. *Amer J Audiol* 25:85–99.

Hull R. (2013) *Introduction to Aural Rehabilitation* (2nd Edition). San Diego, CA. Plural Publishing.

Kuenburg A, Fellinger P, Fellinger J. (2016) Health care access among deaf people. *J Deaf Stud Deaf Ed* 2:1-10.

Laplante-Lévesque A, Hickson L, Worrall L. (2012) What makes adults with hearing impairment take up hearing aids or communication programs and achieve successful outcomes? *Ear Hear* 33(1):79–93.

Neuman A, Waltzman S, Shapiro W, Neukam J, Zeman A, Svirsky M. (2017) Self-reported usage, functional benefit, and audiologic characteristics of cochlear implant patients who use a contralateral hearing aid. *Trends Hear* 21:1–14.

Noble W, Jensen N, Naylor G, Bhullar N, Akeroyd M. (2013) A short form of the speech, spatial and qualities of hearing scale suitable for clinical use: The SSQ12. *Intl J Audiol* 52:409–412.

Peterson G, Lehiste L. (1962) Revised CNC lists for auditory tests. *J Speech Hear Dis* 27:62–70.

Preminger J. (2007) Issues associated with the measurement of psychosocial benefits of group audiologic rehabilitation programs. *Trends Amp* 11(2): 113–123.

Sarant J. (2012) Cochlear implants in children: A review. In S. Naz (Ed.), *Hearing Loss*. Retrieved December 1, 2015, from www.intechopen.com/books/hearing-loss/cochlear-implants-in-children-a-review.

Smith S, Samar V. (2016) Dimensions of deaf/hard-of-hearing and hearing adolescents' health literacy and health knowledge. *J Health Comm* 21 (Suppl 2):141–154.

What Is "Medical Necessity"?

Insurance companies provide coverage for care, items and services that they deem to be "medically necessary." Medicare defines medical necessity as "health-care services or supplies needed to diagnose or treat an illness or injury, condition, disease, or its symptoms and that meet accepted standards of medicine."

According to the American Medical Association (AMA), medical necessity mandates the provision of health-care services that a physician or other health-care provider, exercising prudent clinical judgment, would provide to a patient for the purpose of preventing, evaluating, diagnosing, or treating an illness, injury, disease, or its symptoms, and that are

- In accordance with generally accepted standards of medical practice (based on credible scientific evidence published in peer-reviewed literature)
- Clinically appropriate, in terms of type, frequency, extent, site and duration, and considered effective for the patient's illness, injury or disease
- Not primarily for the convenience of the patient, physician or other health-care provider, and not more costly than an alternative service or sequence of services that are at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient's illness, injury, or disease

In all cases, documentation in the patient's medical record must be consistent with and support the reason that the procedures were performed.

How Does Medical Necessity Factor into My Billing Practices?

Beyond the earlier-mentioned principles, many payers including Medicaid and private insurance have specific guidelines for what is considered medically necessary for certain items, procedures and/or services. These policies will be found in the payers' payment policies or clinical guidelines.

For example, the Medicare Benefit Policy Manual, Chapter 15, section 80.3 sections (A-I), outlines when coverage for audiology services is considered medically necessary, and therefore a covered Medicare benefit. Medicare Administrative Contractors may also publish Local Coverage Determinations (LCDs) to more specifically define coverage guidelines for specific procedures.

What If There Is a Service that I Feel Is in the Patient's Best Interest that the Insurance Company Does Not Consider to Be Medically Necessary?

It is important to keep in mind that insurance does not always pay for everything that a provider may believe is necessary. An example would be routine annual hearing testing to monitor hearing (and hearing aid) status for Medicare beneficiaries. Medicare does not prevent a provider from billing a patient directly for this service. Please make sure that any specific notice of non-coverage guidelines for the patient's insurance are followed (including use of appropriate CPT modifiers).

This information on medical necessity was compiled in collaboration with the Academy of Doctors of Audiology, the American Academy of Audiology, and the American Speech–Language–Hearing Association.

Is Social Media Really Worth the Effort for My Business?

By Vicki Bendure

Often clients ask how much time they should be committing to social media for their business. The answer is that it depends. It depends on your existing demographic audience, as well as your potential target audience.

The four best social media platforms for building a business (Facebook, Instagram, Twitter, and LinkedIn) vary in their users' ages. According to 2014 statistics on the blog Jetscram, the majority of Facebook users are 33 to 54 years old. Twitter and Instagram attract younger audiences, with the majority of users from 18 to 29 years old. LinkedIn, known primarily as a business platform, has a broader demographic reach, with 27 percent of all LinkedIn users ages 30 to 49 and 24 percent of users aged 50 to 64.

We haven't listed YouTube here as a primary platform, but it is essential in getting larger open rates for other platforms. The more video, the greater chance someone will watch and share your content. So, if you're going to engage in Facebook, Instagram, Twitter, or LinkedIn, it's a good idea to set up a YouTube channel. You don't have to be as rigorous about regular posting to YouTube. Instead, you can use it as a mechanism to post video that you'll pull into your other social media platforms as you have it.

Social media is about content and time. If you don't have the time to commit to creating and pulling good content, don't do it. Ideally, you should post at least three times a week. Getting the greatest engagement is dictated by content and timing. What day and time of the week you post makes a difference for each social platform. Since LinkedIn is primarily a business platform, weekday posting provides the opportunity for the greatest engagement. There have been multiple studies as to best timing.

Have a Plan

As is critical with public relations planning, you should have a strategic social media plan. Look at the ages of the majority of your patients and determine whether they're on social media. Decide if your goal is to grow your practice or company with more of the same demographic. If your goal is to grow a different demographic, look at the majority of the ages using the various social media platforms. Your goal with social media will help to determine where you should be. For instance, if your goal is to grow your practice with older patients, but you want to recruit younger talent for employment, you will have two different strategic focuses on

your social media platforms. You may have information on hearing health for aging populations on your Facebook posts and information on the audiology profession and what it's like to be an audiologist on your Instagram account.

Content does not all have to be original. Your patients are going to have an interest in your specialty areas. While you may write some original articles and post them about specific conditions such as tinnitus, you can also set up website alerts that flag content on tinnitus studies and recommended treatments around the world. In other words, you can share content from other social media sites. Just make sure they're not competitor sites. A Google alert set for "hearing health" will deliver regular reports and studies that may be of interest to your patients. You can post these reports and studies (assuming you agree with them) with attribution and comment on these within your post. New technology and new products may also be of interest to your patients.

Mapping out a monthly content calendar will help you plan out when and what to post. Once you decide to engage in social media for your business, be sure to put all of your social media handles on your e-mail signature. Send an e-mail to patients and ask them to follow you on your social media sites and share your content. Follow your patients on these sites.

Create Meaningful Content

LinkedIn is an excellent platform for business-to-business communication, as well as acquiring patients and referrals. It provides an opportunity for you to write your own news articles and post them. You can also pull in good video. Have someone in your office assist in demonstrating a hearing check-up. Walk viewers through your office and talk about audiology, your areas of expertise, and how you became an audiologist. Again, make a calendar and figure out one LinkedIn article post per week. If you have a particular time of year that's slow, you can write all of your content then and just schedule the posts.

Make your content relevant. Because many LinkedIn members are business people, write about hearing-health hazards in the workplace and how to protect hearing health. You may also want to cover ways in which someone in an office setting may realize they're having difficulty with their hearing. Write about how loss of hearing affects job productivity.

It's important to remember that social media works if you keep the public's interest in mind. It is not a platform for a hard sell (or followers will unfollow you). It's a mechanism to maintain top-of-mind awareness and continue to position you as an expert and thought leader around hearing health.

Conclusion

Don't just jump in. Give it careful thought and planning. If you decide to proceed, allot a considerable amount of time. Those who do social media well see a payoff in maintaining existing customers, as well as in increasing business. Often, businesses take on social media halfheartedly, find themselves committing time (but not enough and without proper planning), and then, when they receive very mediocre results, stop posting and declare that social media just didn't work for them. It takes a while to build up a social media following and it can be slow. You should set aside a budget to boost some of your original content and that will help you build followers. As long as you're consistent, have great content and are patient, your social media channels will grow and will pay off.

By growing followers, you may be able to reach more people on social media than you can through traditional media.

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

You also can 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).

Give Back to the Foundation

By Mindy Brudereck

When people think of giving to the American Academy of Audiology Foundation, most expect to donate money. While we are always eager to accept monetary donations, the Foundation will also accept the donation of your time. This may be especially appealing to audiologists, students, and other supporters who might not have the financial flexibility to offer personal donations.

The easiest way to get involved is to volunteer your time throughout the year at your convenience. Our biggest appeal for donations centers around the AAA Annual Conference and planning begins at least a year in advance and we could use your help. This past year, the Foundation Board of Trustees reached out to local businesses in Nashville, Tennessee, to gather donations for a special pre-auction. Members bid on gift certificates during the pre-auction to use while at the AAA 2018 (see FIGURE 1).

The Foundation previously accepted Auction 4 Audiology items for attendees to consider while on-site and place a bid online.

The Foundation is exploring new and exciting ideas for Academy members to participate in Foundation activities. Stay tuned for details regarding opportunities at AAA 2019 in Columbus, Ohio.

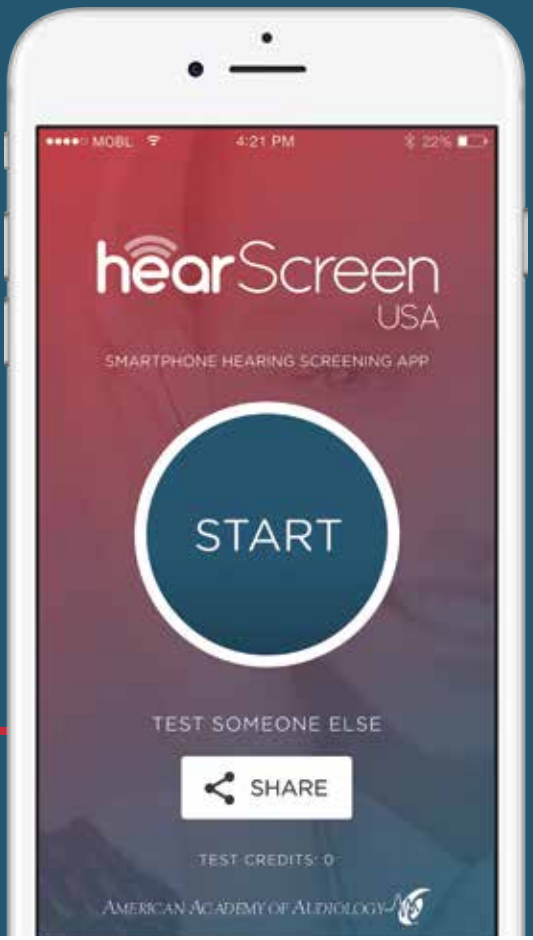
At the conference, the Foundation hosts several fundraising events such as the Foundation Happy Hour (see FIGURE 2) and Coffee for a Cause

FIGURE 1. A self-guided tour of the Ryman Auditorium, the original home of the Grand Ole Opry in Nashville, Tennessee, was one of the pre-auction items in 2018.

hearScreen USA

SMARTPHONE HEARING SCREENING APP

IN COLLABORATION WITH
AMERICAN ACADEMY OF AUDIOLOGY



LAUNCHING FALL 2018

WHAT IS HEARSCREEN USA?

- Clinically valid, digits-in-noise, smartphone hearing screening in under 3 minutes
- FREE for end users via both the iOS and Android app stores
- Referrals to closest audiologist using geolocation

GET YOUR PRACTICE AHEAD BY SIGNING UP AS A REFERRAL AUDIOLOGIST

Sign up as a pre-launch referral partner for hearScreen USA and receive $200 off your premium subscription (Academy members only pay $299)

- Get referrals to your practice
- Manage referrals on secure cloud portal
- Academy Members can sign up for a FREE basic subscription

Be part of this revolutionary hearing health application

To sign up as a referral audiologist, visit **www.hearScreenUSA.com.**

info@hearScreenUSA.com |
+1 415 212 5500 |
@hearScreenUSA
@hearScreenUSA

AMERICAN ACADEMY OF AUDIOLOGY

YOU ARE AUDIOLOGY

WE ARE AUDIOLOGY

Get the Most Out of YOUR Membership

Being a member is more than being part of a professional organization. It's about:

» **CREATING CHANGE** – Volunteer, Mentor, Advocate

» **CONTRIBUTING KNOWLEDGE** – Research, Compose, Discuss

» **LEADING BY EXAMPLE** – Educate, Nominate, Donate

Join the Academy today and invest in your commitment to your profession.

We are here to support YOU!

For more information, visit:
www.audiology.org
KEYWORDS: *member benefits*

FIGURE 2. Designer handbags auctioned off at the AAA 2018 Happy Hour and a Half.

FIGURE 3. Supporters like Meghan Abraham can get a tax-deductible cup of coffee (or two) by making a donation to the Foundation during Coffee for a Cause.

(see FIGURE 3). Each of these events is reliant on volunteer support. Any time an Academy member can spare to help organize an event or answer questions at the booth is greatly appreciated.

This year, the Foundation developed the first *Voices of Hearing Wellness* book. This book was designed to publicize the audiology profession through the stories of the patients that we help. Although this was the first time this book was published, hopefully it will not be the last. The Foundation will be looking for volunteers in the near future to help with additional projects.

Another way to give back to the Foundation is through the Amazon Smile program. The American Academy of Audiology Foundation is an organization you can designate to receive donations when making your purchases through Amazon. Simply go to smile.amazon.com and search "American Academy of Audiology Foundation" to start donating. Remember that you must make your purchases through the Amazon Smile website, as there is not an Amazon Smile app available. It may take a few seconds longer to order this way, but your regular purchases will earn an easy donation for the Foundation.

The American Academy of Audiology Foundation needs you. Whether through a financial contribution or dedication of volunteer time, donors help the Foundation disperse scholarships and grants, fund new research, support audiologists experiencing financial hardship, promote the profession, and educate the public.

Consider giving back to the Foundation and lending a hand to help raise funds, generate excitement about the Foundation's programs and initiatives, and enhance our opportunities to drive the profession forward. We can't do this without you.

Mindy K. Brudereck, AuD, is the owner of Berks Hearing Professionals, with offices in Wyomissing and Birdsboro, Pennsylvania. She is also a member of the Foundation Board of Trustees.

Students and Their State Voice

By Hanna Sawher

The third annual National Day at Your State Capital Day (NDAYSCD) brought audiology doctoral students together from across the country to advocate for the profession of audiology and for the patients they serve. NDAYSCD takes place each spring to encourage and support students to be advocates in their states and to improve their professional skills of decision making, leadership, self-motivation, and the ability to work under pressure. Another goal of NDAYSCD is to increase public awareness of audiology and to increase the awareness of our elected officials on important audiology issues, specifically at the state level.

Students are encouraged to contact their state elected officials to meet with them or their staff members personally to educate them on the importance of audiology and on audiology-related issues within their state borders. Advocating allows students to increase public awareness of audiology as a doctoral profession, enhance their personal skills in public speaking, access professional networking, and explore new opportunities for interdisciplinary collaboration.

Advocating in one's state can be daunting, but "once you realize that the biggest part of advocacy is education, the whole process becomes a lot less scary," said Nicole Greewalt, an AuD student at Ohio State University. "It is actually much easier than you think to let your passion drive a productive conversation with a state legislator and effectively foster lasting relationships for the profession. The offices we met with were extremely receptive to our message of establishing quality hearing and balance health care for all Ohioans and I am excited to witness how these relationships grow as our state SAA base becomes stronger and more active."

NDAYSCD brings states and graduate students together to make regulatory changes and to form professional relationships (see FIGURE 1). Deema Rasul, an AuD student at the University of Cincinnati called the event "a major highlight in my

FIGURE 1. Ohio's National Day at Your State Capital Day.

New Members *of the* Student Academy *of* Audiology

Jaron Thomas

Andrew Slawinski

Millicent Quevedo

Gabriel Sudaj

Theresa Allen

Kayla Murphy

Sarah Pouliot

Aleksandra Luba

Kyndall Vise

Caylin McCallick

Andrew Burleson

William Stoll

Melanie Dietrich

Brittany Biondo

Moriah Steele

Mona Atashigolestan

Faith Bell

Amy Mondani

FIGURE 2. Vanderbilt University students (left to right) Sarah Alfieri, Liz Agboola, Steven Carter, and Maureen Virts.

graduate career so far. It was a very humbling experience to meet with a variety of Ohio House representatives and senators and be the first to inform them about what audiology is, what is within our scope of practice, and issues that are important to our profession as a whole. I loved answering all their pressing questions about the field and how they can help on issues important to us.

"One of my favorite events that day was when the entire NDAYSCD group of graduate students from the University of Cincinnati, the Ohio State University, and the Northeast Ohio AuD Consortium got to meet with a representative for [United States] Sen. Sherrod Brown. Being able to advocate for our future profession with other graduate students who all had the same passion as I did about our field and to represent the Student Academy of Audiology together on this day was incredible. Seeing everyone speak about their experiences in audiology and why these issues are important to them and the patients that we see was really inspiring to me and made me feel proud to be in this field with my future colleagues," Rasul said.

This event, which brings so many together, unites our field and is important for continuing the strong traditions already established within the profession. Kayla Cyphert, an AuD student at the University of Cincinnati, said, "It was great to have the opportunity to meet with legislators and staffers to raise awareness of audiology. I felt that I made a difference by advocating for our profession and our patients." Making a difference is as simple as a visit to discuss and educate others who make our laws, affect our profession, and affect the care we provide.

Through SAA channels, students in other states teamed up with their state professional organizations to make an impact. Steven Carter, an AuD student at Vanderbilt University, describes their collaboration: "Audiology students from Vanderbilt teamed up with the Tennessee Association of Audiologists and Speech–Language Pathologists (TAASLP) to meet individually with representatives about legislation to repeal the Professional Privilege Tax (PPT), a $400 fee paid yearly by some, but not all, professionals in the state of Tennessee. Students paired up with audiologists and SLPs to speak with individual legislators at the Tennessee state capitol and give testimony about how the PPT is an unfair barrier for practicing audiologists and SLPs. Although a repeal is unlikely to be approved within this year, I feel we were able to better inform representatives about the profession of audiology and give them some compassionate testimony and factual evidence on how the PPT could be seen as a hindrance to practicing professionals." (See FIGURE 2.)

FIGURE 3. University of Texas at Dallas students.

Advocacy is a necessity in our profession. We are the experts and it is our responsibility to represent ourselves in our communities, states, and nationally. Decisions are made without our expertise and they can directly affect the patient care we provide. It is imperative that we have a seat at the table when it comes time to decide on our fate. NDAYSCD allows for students to advocate and perhaps continue advocating for their careers. Alexander Morris, an AuD student at the University of Texas at Dallas, took his NDAYSCD even further with a trip to Washington, D.C.

"Our recent DC trip provided students with a career-changing perspective on audiology advocacy and the Academy's daily efforts to keep the profession moving forward. This was the first exposure to in-person advocacy for many of the students and, after the trip, all of them said they felt more confident in their advocacy abilities and were fired up to continue making a difference," Morris said (see FIGURE 3).

Many students who were unable to make a trip to their state capitals participated in a virtual way. The AuD students at the University of Wisconsin discussed the importance of advocacy, both for professionals and for patient populations, within Wisconsin. Emily Wilson and Julia Gajewski contacted their Wisconsin elected officials via e-mail and letters to express their stance on current state legislation. They also educated each other and their peers on how to schedule, plan, and conduct a successful legislative visit.

For more information, contact the SAA Public Outreach Committee. To check the Student Academy's resources, and the Academy's resources go to the website and look under Advocacy and the Legislative Action Center.

We all are advocates. It is up to us to educate, advocate, and be the voice of audiology.

Hanna Sawher, AuD, graduated from the University of Wisconsin and is an audiologist at the Children's Hospital of Wisconsin. She served on the 2017–2018 SAA Board of Directors, she was the American Academy of Audiology Advocacy Council SAA Liaison for 2017-2018, and was chair of the SAA Public Outreach Committee from 2017 to 2018.

Tinnitus Help Is Here: Take the CH-TM Today!

By Jenne Tunnell

Part 2 of the Certificate Holder–Tinnitus Management (CH-TM) program began in July 2018, providing the final step for audiologists wishing to earn a credential that reflects the requisite knowledge necessary for the management of tinnitus patients. The CH-TM is an assessment-based certificate program that uses evidence-based instructional design principles to ensure efficient learning and retention of the information presented in the course. This online self-study course offers a learning program supplemented with a toolbox of resources.

The American Board of Audiology (ABA) conceptualized the CH-TM to (1) bridge the gap between formal audiology education and tinnitus-focused training, (2) create a comprehensive and unbiased tinnitus-management program, and (3) develop a greater pool of audiologists trained to treat the significant number of individuals who suffer from tinnitus.

This program reflects current scientific research, along with the combined years of practice and diverse experiences of a group of renowned experts in the specialty.

Part 1 of the CH-TM provides the foundational knowledge needed to assess and manage patients with tinnitus and/or decreased sound tolerance (DST). Part 2 expands on this knowledge base to provide advanced intervention and management techniques for audiologists who treat patients with tinnitus and/or decreased tolerance to sound.

Tinnitus in America

Tinnitus affects a significant percentage of the U.S. population. One in 10 adults in the United States are affected by tinnitus, according to research by Bhatt et al (2016). A total of 14.6 percent of the respondents to the 2011–2012 National Health and Nutrition Examination Survey from the National Center for Health Statistics reported suffering from tinnitus. In 2007, 9.8 percent of adults 18 years of age and older responding to the National Health Interview Survey by the U.S. Census Bureau and the Centers for Disease Control and Prevention said they had been "bothered by ringing, roaring, or buzzing in your ears or head that lasts for five minutes or more" within the 12 months preceding the survey.

Research indicates that 85 percent of tinnitus sufferers never received any form of treatment (Bhatt J et al, 2016). Approximately one in 12 young people experience significant challenges from tinnitus and tinnitus increases with age, according to the Hearing Health Foundation (2017). A growing area of research investigates the relationship between noise exposure and tinnitus among youth (Mahboubi et al, 2013; Park et al, 2014). This is of particular concern, given the use of personal music devices, earbuds, and exposure to loud music among members of the millennial generation.

The CH-TM Program

The clinical practice guideline for tinnitus published by the American Academy of Otolaryngology Head and Neck Surgery Foundation (Tunkel et al, 2014) is considered the essential and overarching reference for tinnitus treatment. This is the only tinnitus-management guideline that exists in the literature today. It is based on a systematic review of the literature, and is the foundational document on which the CH-TM program is built. The CH-TM program takes this foundation to the next level by presenting a standardized approach to assessment and reviewing the current evidence supporting

the use of various management and therapy options available to today's tinnitus specialist.

The program includes two parts, each containing multiple modules of web-based content developed by the subject matter expert (SME) work group and validation panel. The SME work group and validation panel included distinguished researchers and clinicians whose collective experience in tinnitus management is represented in the comprehensiveness of the program. Unlike other programs on the market, the CH-TM offers a diversity of perspectives in the content and is an affordable option for audiologists seeking additional training in tinnitus management. Each module in the program is worth 0.2 AAA/Tier 1 CEUs.

Part 1: Foundations of Tinnitus Management

Module 1, Tinnitus Definitions and Theoretical Foundations: Identifies the different types and characteristics of tinnitus, the prevalence of the condition in the United States and globally, and different theories of the etiology of tinnitus.

Module 2, Management of the Patient with Tinnitus: Provides a snapshot of the experience of tinnitus, along with a broad synopsis of assessment approaches, intervention techniques, and practice management considerations.

Module 3, Business Management Considerations: Discusses the unique demands and business factors associated with integrating tinnitus and decreased sound tolerance services into an audiology practice.

Part 2: Tinnitus Management Principles in Practice

Module 4, Audiological Evaluation of the Patient with Tinnitus: Teaches how to assess the results of a comprehensive audiological evaluation as a basis for clinical decision-making for a patient with tinnitus.

Module 5, Tinnitus Intervention Techniques: Reviews varied approaches that may be used as interventions for patients with tinnitus, including indications for use, benefits, and limitations of each technique.

Module 6, Management Plan for the Patient with Tinnitus: Teaches how to educate and collaborate with patients and other providers to develop a management plan for a patient with tinnitus

Module 7, Management of the Patient with Decreased Sound

Tolerance: Summarizes the characteristics and prevalence of DST, along with assessment approaches, treatment techniques, and practice-management considerations for these patients.

Unique Program Features

The format of CH-TM allows for full engagement of the learner throughout the modules and beyond the program. As learners move through the modules, they find additional tips and tools that augment and enhance the instructional content.

Case Studies: The modules include case studies that illustrate applications of presented content. The interactive component of the program enables the learner to engage in the diagnosis and management of the patients.

Words to the Wise: Practical tips are provided from audiologists who have experience working with patients with tinnitus.

Terminology Alerts: Terms are clarified that have nuances or may vary from one audiology program to another.

Think About It icon: The program offers questions that challenge learners to stop and reflect about what they are learning.

Check Your Knowledge: Questions help learners self-assess as they progress through the program.

Toolbox: The toolbox links to additional information, resources, tools, and other practical aids to expand knowledge or support work with patients with tinnitus. The toolbox also contains a full reference list related to the citations seen throughout the modules.

Participant Response

Within days of the release of Part 2 of the CH-TM, many of those who had completed Part 1 were already well underway in Part 2. The completion of Part 2 will earn these individuals the CH-TM designation.

In Part 1 postcompletion evaluations, many learners identified strengths of the program, including the following:

- The review of the basics of tinnitus and the general rehabilitative techniques.
- Great knowledge base. Unbiased.
- Excellent visual diagrams—excellent content.
- This is the only tinnitus specialist training available.
- Delivery format, additional resources, easy-to-understand explanations.
- Helping to move audiology forward to accept tinnitus care as viable in practice.

Acknowledgments

The American Board of Audiology recognizes that the CH-TM program would not have been possible without the exceptional volunteers who devoted their time as SMEs or members of the validation panel. In addition, the instructional designer, Laurie Posey, EdD, of George Washington University, brought her expertise to the translation of the learning objectives into fully-developed, evidence-based storyboards for each module. Katy Sidwell provided outstanding project management at the staff level to sustain volunteer engagement and uphold the quality of the program from conception through production.

Jenne Tunnell, AuD, PASC, is manager of the Mayo Clinic Health System Audiology Department in Minnesota. She is the American Board of Audiology chair for 2018 and a past American Academy of Audiology State Leaders Network Subcommittee chair.

References

Bhatt J, Lin H, Bhattacharyya N. (2016) Prevalence, severity, exposures, and treatment patterns of tinnitus in the United States. *JAMA Otolaryngol Head Neck Surg* 142(10):959–965.

Hearing Health Foundation. (2017) Tinnitus in childhood. http://hearinghealthfoundation.org/childhood_tinnitus (accessed April 7, 2017).

Mahboubi H, Oliaei S, Kiumehr S, Dwabe S, Djalilian H. (2013) The prevalence and characteristics of tinnitus in the youth population of the United States. *Laryng* 123(8):2001–2008.

Park B, Choi H, Kim H et al. (2014) Analysis of the prevalence of and risk factors for tinnitus in a young population. *Otol Neurotol* 35(7):1218–1222.

Tunkel DE, Bauer CA, Sun GH, Rosenfeld RM et al. (2014) Clinical practice guideline: tinnitus. *Otolaryngol Head Neck Surg* 151(2 Suppl):S1–40. www.ncbi.nlm.nih.gov/pubmed/25273878.

U.S. Centers for Disease Control. (2012) National Health and Nutrition Examination Survey. wwwn.cdc.gov/nchs/nhanes/ContinuousNhanes/Overview.aspx?BeginYear=2011 (accessed July 2018).

U.S. Centers for Disease Control. (2007) National Health Interview Survey. www.cdc.gov/nchs/nhis/index.htm (accessed July 2018).

eAudiology
Your Online CEU Source

EARN UNLIMITED CEUs

PURCHASE the **CEU PACKAGE** *for* **$99**

WITH YOUR **2019 ACADEMY MEMBERSHIP RENEWAL**

MOST POPULAR WEB SEMINARS OF 2018	CEUs
Hyperacusis: Underlying Pathologies and Current State of Our Knowledge	0.1
Factors to Consider: Bundling and/or Unbundling in an Audiology Practice	0.2
Ethical Practices: Still Important, Relevant, and Necessary *(Tier 1)*	0.3
Measuring and Understanding Listening Effort	0.2
Strategies to Improve Parental Engagement	0.1

UPCOMING LIVE WEB SEMINAR

TUESDAY, SEPTEMBER 25 AT 12:30 PM ET

Federal, State, and Local Advocacy for Audiology Management of Diabetes

PRESENTER:
Kathryn Dowd, AuD

.....

0.1 CEUs

VISIT eAUDIOLOGY.ORG TO VIEW THE COMPLETE LIBRARY OF LIVE AND ON-DEMAND SEMINARS.

AMERICAN ACADEMY OF AUDIOLOGY

The Importance of Accreditation "Of, By, and For Audiology"

By James W. Hall III

The American Academy of Audiology was founded on the assumption that audiology needed an independent professional organization or, as Academy founder and first Academy president James Jerger famously stated: an organization "of, by, and for audiology."

Creating a Professional Organization

Soon after the Academy was formed in 1988, early leaders established a variety of organizational entities essential for any independent health profession. The creation of the publication *Audiology Today* fulfilled the need for a forum for regular communication among members. Later, a website (audiology.org) augmented communication and offered easy access for members and the public to important and timely audiology information, including a membership directory and clinical practice guidelines.

Like other health professionals, audiologists and hearing scientists require a vehicle for the publication of peer-reviewed papers and the dissemination of original research findings. The *Journal of the American Academy of Audiology* (JAAA) was created in 1989 to meet that vital professional need. The new organization even opened an "audiology store" with a diverse inventory of items, from colorful diagrams of the ear and audiograms of familiar sounds to educational brochures and Academy clothing, coffee cups, and water bottles.

Within two years after the Academy began, the Board of Directors founded the independent nonprofit American Academy of Audiology Foundation (AAAF) to "promote philanthropy in support of public awareness, research, and education in audiology and hearing and balance sciences."

The autonomous American Board of Audiology (ABA) was created in 1998, a decade after the beginning of the Academy. The ABA "...creates, administers, and promotes rigorous credentialing programs that elevate professional practice and advance patient care. ABA credentials are earned by all leading audiologists, respected by other health-care providers, and trusted by patients." As part of its work, the ABA conducted a formal and rigorous analysis of clinical practice and launched specialty certification programs in cochlear implants and pediatric audiology, as well as an audiology preceptor and a tinnitus management certificate program.

Academic Program Accreditation

You've probably noticed a trend in this summary of important steps in the development and maturation of the Academy—independence, autonomy, and audiology owning the essential elements of the profession. Now we'll turn our attention to the

TABLE 1. Key features of accreditation organizations and policies for health-care professions.

FIELD OF STUDY	ACCREDITATION ORGANIZATION(S)	ACADEMIC DEGREE(S)	ACCREDITATION PROGRAM EXCLUSIVE TO PROFESSION
Medicine*	The Liaison Committee on Medical Education (LCME) sponsored by the Association of American Medical Colleges and American Medical Association Commission on Osteopathic College Accreditation (COCA)	Doctor of medicine (MD) or doctor of osteopathic medicine (DO)	Yes. Only LCME accredits medical schools granting the MD and only COCA accredits medical schools granting the DO degree.
Dentistry	Commission on Dental Accreditation (CODA)	Doctor of dental surgery (DDS) or doctor of dental medicine (DDM)	Yes. Accreditation is only for dental academic programs.
Optometry	Accreditation Commission on Optometric Education (ACOE)	Doctor of optometry (OD)	Yes. Accreditation is only for doctor of optometry programs.
Physical Therapy	Commission on Accreditation in Physical Therapy Education (CAPTE)	Doctor of physical therapy (DPT)	Yes. Accreditation is only for doctor of physical therapy programs.
Occupational Therapy	Accreditation Council for Occupational Therapy Education (ACOTE)	Master's degree in occupational therapy	Yes. Accreditation is only for master's degree programs in occupational therapy.

* Goal of Accreditation: Professional competence and proficient medical care.

accreditation of academic programs responsible for educating health-care professionals.

TABLE 1 summarizes some key features of accreditation of the academic programs for several health professions. Information in the table leads to three general conclusions:

1. For each of the presented health professions, a single accreditation body is responsible for assuring academic standards for the students enrolled in education leading to the degree required for clinical practice.

2. None of the professions presented share an accreditation body. For example, a separate and independent commission is responsible for the accreditation of academic programs for physical therapy and for occupational therapy.

With one exception, the listed accreditation bodies define standards for doctoral-level academic programs.

The single exception, the Accreditation Council for Occupational Therapy Education, defines standards for master's degree programs for occupational therapists.

No accreditation body is responsible both for the accreditation of health professionals who practice with a master's degree and those who practice with a doctoral-level degree.

This brief review highlights the importance of audiologists "owning" all of the essential components of the profession of audiology, including the accreditation of academic programs with rigorous standards that reflect the knowledge and skills necessary for the practice of audiology today and in the years to come.

The accreditation of doctor of audiology programs must assure that "recipients of the degree in audiology (AuD)...have sound knowledge, diagnostic, treatment, communication, and professional skills, including management and business acumen in order to function as autonomous direct care providers" (ACAE Standards, page 3). The Accreditation Commission for Audiology Education (ACAE) meets these rigorous requirements.

James W. Hall III, PhD, Board Certified in Audiology, is a professor in the Osborne College of Audiology at Salus University and a professor in the Department of Communication Sciences and Disorders at the University of Hawaii. He is also the chair of the ACAE Board of Directors.

AuD ADVOCATE

A Personal Journey Toward Advocacy

By Vivianne C. Wersel

I met my husband when I was finishing graduate school at San Diego State University. It was a storybook romance—he was the general's aide-de camp and I was the colonel's daughter. Lt. Col. Rich Wersel was an outstanding Marine, accepting every position and assignment with the utmost dedication and sense of honor. He was a part of the initial invasion in Baghdad during Operation Iraqi Freedom in 2003. He even volunteered to go back to Iraq in 2005, taking the place of a fellow Marine who was experiencing a personal hardship. Seven days after he returned home from his second tour, he died suddenly of cardiac arrest. It was a regular day that had begun as innocuously as any other, and there I stood at the end of it with my life's plan entirely changed. Suddenly I could see time splitting into two separate pieces, categorizing everything into "before" and "after" this devastating event.

Despite feeling frozen in grief, I worked harder than I ever had upon realizing that I would now be caring for myself and for our two kids alone. I decided to stay in the Camp Lejeune area and maintain the familiarity and lifestyle that my children needed while continuing to work as an audiologist with Onslow County Schools in North Carolina.

> "As a result of this injustice, I became an advocate with zero knowledge of the legislative system."

When the time came to work out the logistics of Rich's military death benefit, I had unknowingly stumbled into the political arena. Shortly after my husband's death in May 2005, Congress enacted a two-tier death benefit, and increased the military death benefits for active duty service members, however, the criteria did not include all deaths, and the increase of financial benefit depended on the circumstances and location of the death. Unfortunately, this excluded many families, including mine, from receiving this benefit.

On paper, this two-tier system seemed to be an attempt to allot a service member more financial honor for dying in combat or training. What it created, however, was a terrible sense of disparity for any surviving family who supported their service member through the same deployments, only to be told they deserve less should their family member die within a week of their return. I quickly realized there was a pattern, a distinction between types of deaths and how families were cared for or how deaths were valued—whether it had monetary or sentimental. It was time for me to speak up! As a result of this injustice, I became an advocate with zero knowledge of the legislative system. I was successful and instrumental in changing a law that affected thousands of military surviving families. I lobbied at the U.S. Capitol to change the two-tier death benefit. Using my husband's case, an amendment was passed in

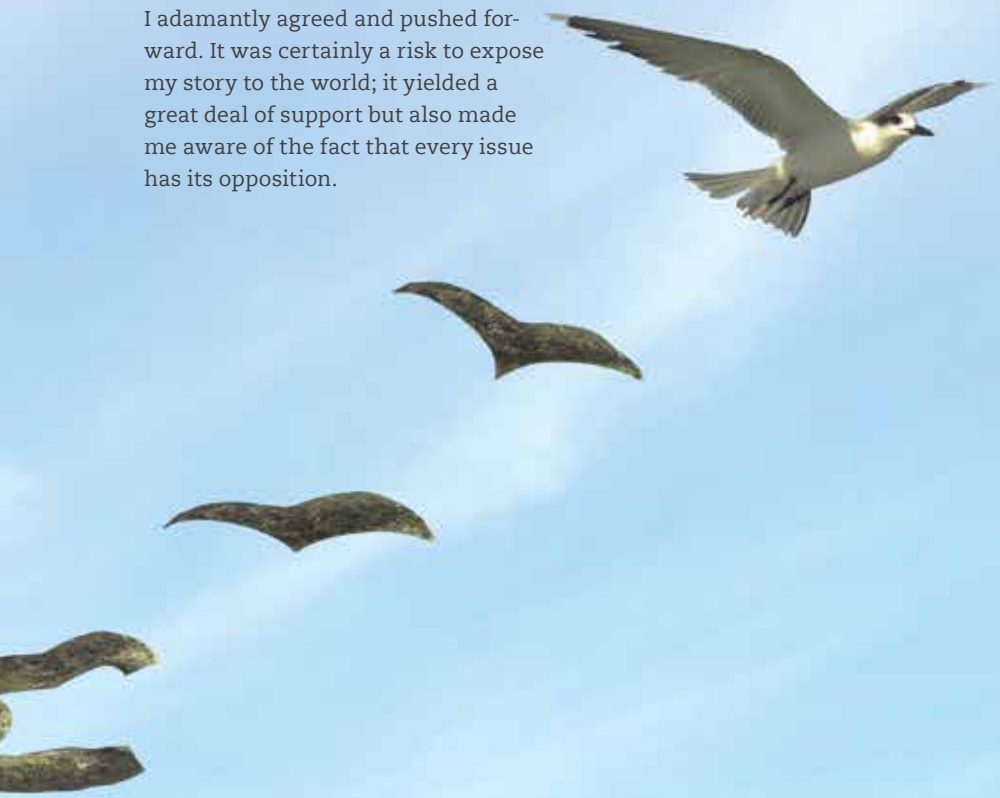
the National Defense Authorization Act (NDAA) 2006.

Not knowing where to start, I began my journey with advocacy by sending emails. I sent my story to the president of the United States, my members of Congress, and to a syndicated journalist named Tom Philpott. I had no prior experience with writing to my elected officials but made my message personal, including attaching a picture of our last family photo. I received a response from Mr. Philpott the next day who wanted to help me and other widows by spreading the word. I agreed to go public and in two weeks he published a feature story on my case.

On July 7, 2005, my story went out all over the world and, as a result, I received a call from a staffer in Sen. John Kerry's (D-MA) congressional office. I was overwhelmed and surprised. He stated that there were some members of Congress who wanted to fix this issue but would need my help. I had no idea what it meant, but this felt like a victory, so I adamantly agreed and pushed forward. It was certainly a risk to expose my story to the world; it yielded a great deal of support but also made me aware of the fact that every issue has its opposition.

July 21, 2005, my case was heard on the Senate floor in discussing an amendment to the Defense bill, the NDAA. I received an e-mail from Mr. Philpott attached with notes from the Senate floor and my amendment, S. 1376 to the NDAA. This was a proposal to remove the two-tier death benefit so that all deaths would be paid equal enhanced benefits, backdated to October 7, 2001. After this critical step, it was up to me to keep traction on this amendment: now it was time for me to go to Washington.

I was not familiar with the inner and outer workings of Capitol Hill, but I do recall I was not afraid. I had a passion for righting wrongs and possessed a tenacious energy to go forth. I arrived at my hotel, unfamiliar with the Metro subway system, feeling slightly like a country mouse in the big city. I asked the concierge how to get to the Hill, he proceeded to tell me to "get on the yellow and change to the blue line, get off at Capitol South." I remember walking out of the Metro and there it was, the Cannon House Office Building. I was pleased that, in my fog of grief, I was able to find my way. I met up with two elderly Gold Star Wives who came with me to meet my Congress member's staff. After our meeting, I took off and started walking the halls, going door to door.



I made many copies of notes from the Senate floor, aggressively taking in any helpful information or contacts on which I could get my hands. During these early visits to the Hill, I had no idea what the big picture looked like or what the end product of fixing this issue would mean for me. My amendment would eventually go on to become the foundation for working on a much bigger bill to change the law. But at that time, all I knew was that I had an amendment.

In this initial journey into advocacy, I had no strategies. I did not know about committees or even the process of how a bill becomes a Law. It was only a few years later that I stumbled upon the Schoolhouse Rock song, "I'm only a bill, and I'm sitting here on Capitol Hill." Elementary as it might sound, I still recommend it. My only constant was that I was enthusiastic and aggressive. I flooded congressional offices like a journalist with a breaking story, passing out my handouts door to door with no appointments, and yet, I was seen. Once I had my elevator speech down it became easy, getting my point across quickly was key. My beginner's luck landed me in the right place and the right time. By the end of my visit, I had the Senate support, I needed the House support and that is exactly where I was, thanks to the concierge.

I continued this effort running up to Washington, DC, from North Carolina many times, even meeting with the members of Congress. The Defense bill was in conference for a decision on what would be included.

THANK YOU TO OUR CORPORATE PARTNERS

PLATINUM

oticon
PEOPLE FIRST

GOLD

AUDIGY

PHONAK
life is on

signia
Life sounds brilliant.

Sprint
CapTel

SILVER

amplifon

CaptionCall
Life is Calling

Debrox
Earwax Removal Aid

HAMILTON CAPTEL

ReSound GN

SONIC
Everyday Sounds Better

Zpower

AMERICAN ACADEMY OF AUDIOLOGY

At this juncture, all I could do was hope that my issue would make the cut and stay in the Defense bill. On December 20, 2005, I received calls from many veteran service organizations stating, "You did it!"

The bill passed and I had won. The two-tier death benefit was fixed and all families were taken care of in the same way, regardless of circumstance or location of death. The bill was signed into law on January 6, 2006, and all families affected were paid $238,000, dated back to October 7, 2001.

The long road to advocacy was not necessarily an easy one. There were days I wanted to stay home, but quitting my job and forgoing my passion was not an option. I had the civic courage to speak up and educate others on what I believed was wrong and needed to be fixed.

That day may have started out as seemingly innocuous as any other, but life has changed drastically since the day my husband died. I hope to look back and know that I did my best, for my children and myself, in all aspects of life because I spoke up with no fear of failing.

Ever since this first victory in advocacy, I have testified 20 times before Congress, and even joined the American Academy of Audiology of Government Relations Committee. I have continued to fight for support for our surviving military families, and will continue to raise awareness for the betterment of their lives.

Vivianne C. Wersel, AuD, is a clinical audiologist at Walter Reed National Military Medical Center in Bethesda, Maryland.

The opinion and assertions presented are the private views of the author and are not to be construed as official or as necessarily reflecting the views of the Department of the Army, Department of the Navy, Department of the Air Force, the Department of Defense, or the U.S. government.

New Members *of the* American Academy *of* Audiology

Shannon Blake

Chelsea Carter

Aline Da Cruz

Matan Eldar

Rowan Lang, AuD

Stéphane Maison, AuD, PhD

Brittany Myers, AuD

Ariella Naim, AuD

Lee Ofir Talmon, MA

Sara Otte

Holly Ralston, AuD

Alexandra Smith, AuD

ACADEMY PARTICIPANTS SUPPORT OUR PROFESSION

The Academy's Loyalty Media Programs offer organizations the opportunity to connect with Academy members and the audiology community.

You can find participants featured here in *Audiology Today* magazine, on our Web site (www.audiology.org), and at Academy events. Consider supporting the companies that support your association.

Current Loyalty Media Program companies include:

alpaca

AUDITEC

CaptionCall Life is Calling

Debrox Earwax Removal Aid

EOSERA

FYZICAL Balance & Dizziness Centers

HAMILTON CAPTEL

oticon PEOPLE FIRST

otometrics a division of natus | audiology systems

signia Life sounds brilliant.

SHOEBOX AUDIOMETRY

SONIC Everyday Sounds Better

Sprint CapTel

U.S. ARMY

Zpower

For more information about the program, contact Samantha Leland at samantha.leland@mci-group.com.

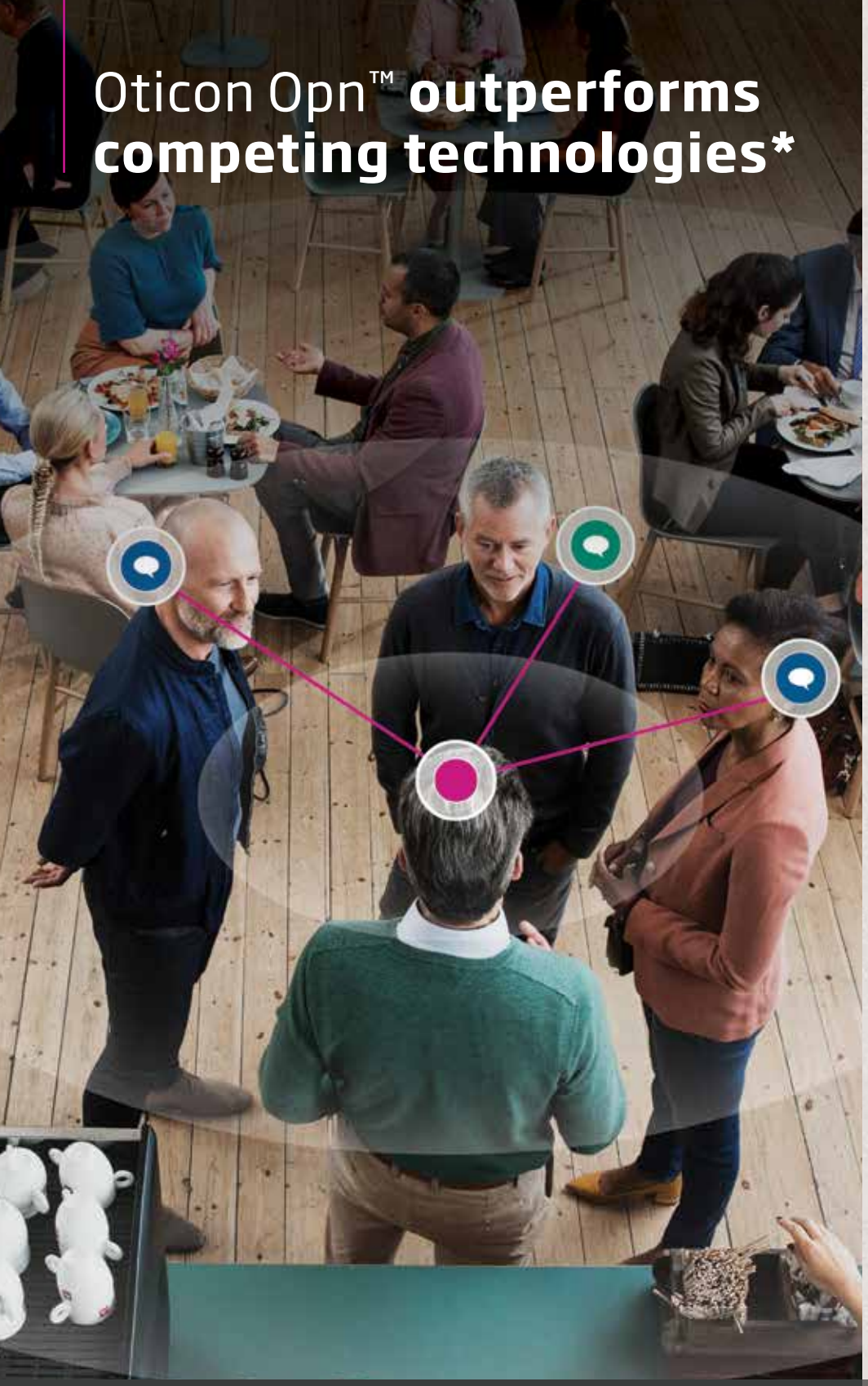
Advertiser Index

Alpaca Audiology www.alpacaaudiology.com	17, 20
Army USAAC Healthcare.goarmy.com/mc36	5
Auditec, Inc. www.auditec.com	18
CaptionCall, LLC www.captioncall.com/provider	C2, 1
Clearwater Clinical-Shoebox Audiometry www.shoebox.md/going-mobile	55
Eosera Inc./Earwax M.D. www.earcaremd.com	53
FrontRow Calypso LLC gofrontrow.com/at-juno	58
FYZICAL Balance and Dizziness Centers www.AuDBalance.com	32
Hamilton CapTel HamiltonCapTel.com/Noah	7
Interacoustics US www.interacoustics-us.com	26
Nupur Technologies www.nupurtech.com	38
On-Trend: Clearwater Clinical-Shoebox Audiometry/Nuheara www.shoebox.md, www.nuheara.com	65
Oticon, Inc. Oticon.com/Opensound	C3
Otometrics, a division of Natus Otometrics.us/otobase	47
Prestige Brands, Inc. Debrox.com/Professionals	45
ReSound Resoundpro.com	9
Signia Signiausa.com/insionxpro	C4
Sonic Step.sonicenchant.com	60, 61
Sprint CapTel Professionals.sprintcaptel.com	2
ZPower, LLC www.ZPowerhearing.com/ask-the-expert	12

Academy Products and Services

AAA 2019 Call for Abstracts www.AAAconference.org	87
AAA 2019 Registration www.AAAConference.org	64
Call for Board Nominations www.audiology.org	27
Certificate Holder–Tinnitus Management Program www.eAudiology.org	82
Corporate Partners www.audiology.org	90
eAudiology www.eAudiology.org	84
HearScreen USA www.hearScreenUSA.com	75
Membership Benefits www.audiology.org	76
Membership Renewals www.audiology.org	69
Public Awareness Week www.audiology.org	40, 41
Research Grants www.audiology.org	80

Oticon Opn™ **outperforms competing technologies***



It's time for people with hearing loss to **reclaim conversations lost**

In a study that represented a real-life conversation among four friends in a noisy restaurant, we compared the performance of Oticon Opn against two other manufacturers' top-of-the-line hearing aids that use traditional and narrow directionality. The results were clear:

- Best-in-class speech understanding from the center, without closing down surrounding sounds
- Vastly outperforms competing technologies for speech understanding from the sides

OTICON | **Opn**

Not being able to understand speech in noisy situations is a common frustration for people with hearing loss. We addressed this common dissatisfaction using a breakthrough approach for handling multiple speakers in noisy environments.

Opn enables you to deliver a benefit your patients will truly appreciate.

To learn more about the proven results, visit **Oticon.com/Opensound.**

*Beck DL, Le Goff N. *Hearing Review.* September 2017.

oticon
PEOPLE FIRST

signia

Life sounds brilliant.

Replicating nature.

A natural hearing experience with full connectivity.

Insio™ Nx: *Bluetooth*®-equipped ITEs with superior speech understanding in noise.

Many wearers who prefer a custom hearing solution usually sacrifice other valuable features like direct connectivity to mobile devices.

With our new Insio ITC and ITE models, wearers can now benefit from a natural hearing experience with direct *Bluetooth* connectivity, in a custom hearing device.

The new Insio ITC and ITE offers:

- Best-in-class direct streaming sound quality thanks to the world's first, tiny *Bluetooth* antenna fully integrated into the faceplate
- Best speech understanding in difficult situations* via Ultra HD e2e, the most advanced, full and continuous ear-to-ear link in the hearing industry, and
- A superior listening experience in all hearing situations thanks to our advanced Soundscape Processing powered by Signia Nx.

To find out more about the new Insio ITC and ITE models, contact your Signia Sales Representative at **(800) 766-4500** or visit signiausa.com/insionxpro.

*Two clinical studies have shown that binax provides better than normal hearing in certain demanding environments (University of Northern Colorado, 2014; Oldenburg Hörzentrum, 2013): Speech Reception Thresholds (SRT) in cocktail-party situations improved up to 2.9 dB for wearers with mild to moderate hearing loss using Carat binax or Pure binax hearing aids with narrow directionality, compared to people with normal hearing.