



Academy of Rehabilitative Audiology  
Institute 2018  
Pittsburgh, PA



Greetings ARA members!

On behalf of the program committee, welcome to the 2018 ARA Institute. This is an exciting year as hearing healthcare reaches new milestones with audiology rehabilitation at the forefront. Advances in technology, changing distribution models, and emerging evidence of the impact of hearing on health and cognition have created an expanded demand for AR services.

Please find enclosed a full program for the Institute events, including guest speakers, presentations, association honors and more. The ARA Institute offers an environment rich with education, discussion and debate all centered on the provision of the highest quality services for persons with hearing loss and their families. A few notes:

- A special **welcome to students!** Whether you are in SLP or Audiology, we are glad you are here and want your continued involvement in ARA!
- **A VERY special thanks to Nancy Rubenstein** at Weill Cornell Medical for all of her support in obtaining CEUs for this conference.

Sincerely,

Gabrielle Saunders and Kathy Cienkowski (ARA Program Co-Chairs) and 2018 ARA Program Committee (Claire Bernstein, Peg Palmiere, Joe Montano and Sherri Smith).

**September 23-25<sup>th</sup>**  
**Pittsburgh, PA**

## Our Sponsors



We want to thank our generous sponsors for making this event possible and for showing their commitment to ARA and to the importance of audiologic rehabilitation and research.



## Fall 2018 Institute

Monday, September 13, 2018	Activity/Session	Presenter(s)
5:00 – 07:30 PM	Registration and Opening Reception	N/A
	Welcome and Introductions	Claire Bernstein, ARA Past President, Gallaudet University
	ARA Honors of the Association Presentation	Gabrielle Saunders, Eriksolm Research Center

Monday, September 24, 2018	Activity/Session	Presenter(s)
7:30 – 08:00 AM	Registration and Coffee	N/A
8:00 – 08:15 AM	Welcome	Claire Bernstein, ARA Past President, Gallaudet University
8:15 – 09:15 AM	Keynote Presentation The economic case for auditory rehabilitation	Catherine Palmer, University of Pittsburgh
9:15 – 09:40 AM	Behaviour change but not as you know it: Using the behaviour change wheel to develop a person-centred care intervention to change audiologists' communication behaviours	Gerard William, University of Melbourne

<b>9:40 – 10:05 AM</b>	The development of an internet-based program for adults with unaddressed hearing impairment	Jill Preminger, University of Louisville
<b>10:05 – 10:30 AM</b>	Coffee break	
<b>10:30 – 10:55 AM</b>	Preliminary findings from the SENSE-Cog project	Harvey Abrams, University of South Florida
<b>10:55 – 11:20 AM</b>	Ten proven tools to take the sting out of stigma	Nancy Williams and Holly Cohen, Auditory Insight
<b>11:20 – 11:45 AM</b>	Preliminary data on the self-identified hearing goals (SIHG) questionnaire in hearing-aid users	Sherri Smith, Mountain Home VA
<b>11:45 – 12:10 PM</b>	Influence of traumatic exposures on audiologic management	Marc Fagelson, East Tennessee University
<b>12:10 – 01:30 PM</b>	Lunch break and auction set up	N/A
<b>01:30 – 01:55 PM</b>	Exploring senior management perspectives to improve person-centered care implementation in hearing rehabilitation organizations  Herbert J. Oyer Award 2017-2018 Recipient	Gerard William, University of Melbourne
<b>01:55 – 02:20 PM</b>	An audiology-centered trial protocol to postpone or reduce age-related hearing loss, Alzheimer's, cancer and other age-related illnesses	Rolf Martin, MMT Corporation
<b>02:20 – 02:45 PM</b>	EEG measurements in effortful listening conditions	David Ryan, Mountain Home VA
<b>02:45 – 03:10 PM</b>	Targeted re-instruction for hearing aid use and care skills	Carly Alicea, Syracuse University

<b>3:10 – 03:35 PM</b>	Photovoice as a tool for audiologists and audiology researchers	Gabrielle Saunders, VA RR&D National Center for Rehabilitative Auditory Research
<b>3:35 – 04:00 PM</b>	Efficacy of self-stigma treatment programs: Insights based on a review of qualitative studies	Jean Pierre Gagné, Centre de recherche de l'Institut universitaire de gériatrie de Montréal, Université de Montréal
<b>4:00 – 04:10 PM</b>	Telehealth Delivery of Aural Rehabilitation: A Clinical Trial for Adult Cochlear Implant Users	Claire Bernstein, Gallaudet University
<b>4:10 – 04:20 PM</b>	Disposable hearing aid battery life	Torri Ann Woodruff, UCONN
<b>4:20 – 04:40 PM</b>	Test-Retest reliability of the word auditory recognition and recall measure in older individuals with hearing loss	Shannon McKinney, East Tennessee University
<b>4:40 – 04:50 PM</b>	Self-efficacy profiles of a large population of tele-rehabilitation users	Jennifer Henderson Sabes, University of the Pacific
<b>4:50 – 05:00 PM</b>	Assistive text captioning offsets the effects of background noise on speech memory and pupillometry	Sarah Hargus Ferguson, University of Utah
<b>5:00 – 05:10 PM</b>	Pilot program: A holistic and interprofessional approach to group AR and student training	Laura Gaeta, California State University
<b>5:10 – 05:20 PM</b>	HHIE performance in older veterans with hearing loss	Shelia Pratt, University of Pittsburgh
<b>5:20 – 05:40 PM</b>	Readability and comprehensibility of an adult audiology report	Kathleen Cienkowski, UCONN
<b>5:40 – 05:50 PM</b>	The effect of clear speech on listener perception of nonnative speech	Sarah Hargus Ferguson, University of Utah

<b>5:50 – 06:00 PM</b>	Reaching from afar: The beckoning promise of online rehabilitation (withdrawn)	Valeriy Shafiro, Rush University
<b>5:10 – 06:20 PM</b>	Efficacy of a coupler-based hearing-aid fitting approach for experienced users	Sherri Smith, Mountain Home VA
<b>4:00 – 05:30 PM</b>	Auction	
<b>5:30 PM</b>	Auction drawings	

<b>uesday, September 25, 2018</b>	<b>Activity/Session</b>	<b>Presenter(s)</b>
<b>7:30 – 08:00 AM</b>	Registration and Coffee	N/A
<b>8:00 – 09:00 AM</b>	Keynote Presentation Family matters: Enhancing patient outcomes with help from loved ones	Kris English, University of Akron
<b>9:00 – 09:25 AM</b>	An economic analysis of hearing aid affordability in the United States using big data  Herbert J. Oyer Award 2017-2018 Recipient	Anna Marie Jilla, University of Oklahoma Health Sciences Center
<b>9:25 – 09:50 AM</b>	Speech tracking auditory training in the presence of noise in normal listeners	Michael Kurth, UCONN
<b>9:50 – 10:10 AM</b>	Coffee break	
<b>10:10 – 10:35 AM</b>	Providing AR support for older adults with hearing loss	Geoff Plant, Hearing Rehabilitation Foundation
<b>10:35 – 11:35 AM</b>	Panel discussion: Trends in AR	Joe Montano (moderator), Harvey Abrams, Jean Pierre Gagné, Kris English, Catherine Palmer

2:00 – 01:30 PM	Business meeting	
1:30 PM	Meeting adjourns	



Weill Cornell Medical College Department of Otorhinolaryngology is approved by the Continuing Education Board of the American Speech-Language-Hearing Association (ASHA) to provide continuing education activities in speech-language pathology and audiology. **See course information for number of ASHA CEUs, instructional level and content area.** ASHA CE Provider approval does not imply endorsement of course content, specific products or clinical procedures.

This course is offered for up to 1. ASHA CEUs (Professional area, Intermediate Level)





## **Honors of the Association**

This year we are thrilled to be awarding Dr. Jill Preminger with the ARA Honors of the Association 2018. Jill has Masters' and PhD degrees in Audiology, and currently is a full professor at the University of Louisville, where she is the Program Director for Audiology and Division Chief of Communicative Disorders. She also has ties with the IDA Institute in Denmark for which she has been on the training faculty and a member of various working groups. She has also been Chaired and been a member of the planning committees for the biennial series of Internet and Audiology conferences.

Both academically and as a scientist, Jill has devoted her work to the welfare of older adults with hearing loss and auditory rehabilitation (AR). She has an active clinical research program that has examined the role of communication partners in the rehabilitation process, she is in the process of developing an internet-based self-management program for adults with unaddressed hearing impairment, she has looked into ways to create and maintain trust in hearing healthcare services, and she has worked with an international team of researchers to better understand the typical journey from hearing loss to hearing aid use.

Jill has also been a dedicated member of the ARA community - she has been a member of the association since 2001, was President of the ARA in 2005, and as tradition dictates, she then Chaired a highly successful ARA Institute in 2006.

Congratulations Jill.

# Keynote Speaker: Catherine Palmer, Ph.D.

## The Economic Case for Auditory Rehabilitation



Dr. Palmer is an Associate Professor in the Department of Communication Science and Disorders at the University of Pittsburgh and serves as the Director of Audiology and Hearing Aids at the University of Pittsburgh Medical Center including the UPMC Children's Hospital. Dr. Palmer conducts research in the areas of auditory learning post hearing aid fitting, the relationship between hearing, cognitive health and health outcomes, and matching technology to individual needs. She has published over 90 articles and book chapters

in these topic areas as well as provided over 150 national and international presentations. Dr. Palmer serves as Editor-in-Chief of Seminars in Hearing.

**Abstract:** In the past five years, researchers inside and outside of the field of audiology have provided the data to make the economic case for auditory rehabilitation. Untreated hearing loss is clearly linked to a variety of poor health outcomes that cost billions of dollars. Our field started by providing data that treating hearing loss made you hear better and no one cared. Then our auditory rehabilitation colleagues provided compelling data that treating hearing loss improves quality of life, but once again nobody cared. When you can demonstrate that treating hearing loss saves health care dollars, policy makers listen. We'll review what this means in the context of auditory rehabilitation, perhaps expand our definition of auditory rehabilitation, and focus on needed data to move our efforts forward.

### Learning objectives:

- Participants will be able to discuss recent studies focused on the cost of untreated hearing loss.
- Participants will be able to describe needed data to provide a compelling argument that auditory rehabilitation saves health care systems money.

**Presenter:** Gerard William

**Author(s):** Caitlin Barr, Ennur Erbası, Carly Meyer, Monique Waite, Katie Ekberg, Nerina Scarinci, Robert Cowan, Louise Hickson

**Title:** Behaviour change but not as you know it: Using the behaviour change wheel to develop a person-centred care intervention to change audiologists' communication behaviours

**Abstract:** Person-centred care (PCC) has demonstrated improved patient, practitioner and organisational outcomes in several health disciplines; yet, evidence suggests that it has not been widely implemented into adult audiologic rehabilitation practice. One key aspect of PCC, which requires optimisation, is psychosocial communication. That is, a program in which the clinician obtains a full understanding of a client and their family member's beliefs, feelings and concerns; acknowledges and addresses emotions; and develops a psychosocially appropriate management of the client. An Implementation Science approach to clinician behaviour change was used in this study to develop an intervention aimed at optimising the practice of psychosocial communication in adult audiologic consultations. The Behaviour Change Wheel (BCW) process was used to design a complex behaviour change intervention focused on audiologists' psychosocial communication in initial audiologic consultations with adult clients. This study followed the eight-step BCW process to: a) understand the behaviour; b) identify intervention options; and c) identify content and implementation options. This research involved working in partnership with a national clinical organisation and resulted in the development of the HEARhelp A.U.D. toolkit, a three-armed intervention delivered to new graduate audiologists and their supervising audiologists, using a quasi-train-the-trainer model. HEARhelp A.U.D.'s three arms (education, coaching and support) are based on key context-specific behaviour change techniques (BCTs) to optimally change audiologist communication behaviour. This paper summarises the development of this novel intervention and early results of the HEARhelp A.U.D. trial.

**Learner outcomes:**

- To describe how the Behaviour Change Wheel Process applies to an audiology, clinician behaviour change context
- To describe the barriers and facilitators to audiologists' communication behaviour change
- To provide a detailed understanding of the HEARhelp A.U.D. toolkit and its possible benefits and applications

**Author(s):** Jill Preminger, Ann Rothpletz, Laura Galloway, Rebecca J. Smith ,Keira Glasheen

**Title:** The development of an internet-based program for adults with unaddressed hearing impairment

**Abstract:** Hearing screenings are used as a method to address the low uptake of hearing aids in adults with hearing impairment (HI). However, few who fail a hearing screening visit an audiologist. The purpose of our research is to develop an internet-based intervention to motivate individuals who fail a hearing screening to visit an audiologist. In the conceptual phase of this project, the initial design of the program was based on principles of the Health Belief Model as well as principles of self-management. We incorporated a participatory design (PD) approach to design and mock-up the program. PD uses an iterative design in which a broad range of “stakeholders” give input in the entire design process. We will present the results of the PD phase of this project in which we have developed the iManage (my hearing loss) program. Stakeholders included an expert panel of auditory rehabilitation experts; adults with HI; audiologists; e-learning experts; and hearing aid marketing experts. The results of the participant and audiologist focus groups revealed deterring and compelling factors to visiting an audiologist. The overarching theme of the qualitative description of the focus groups was the need for adults to visit an audiologist to “Take control of my hearing loss” by learning about their hearing and management options. As a result of these findings, the program was modified to serve as a decision coaching guide, in which the user is given information in order to decide whether or not to visit an audiologist.

**Learner Outcomes:**

- Describe the participatory design approach to program development
- List barriers and facilitators to hearing aid uptake
- Explain the value of shared decision making in audiology care

**Author(s):** Harvey Abrams

**Title:** Preliminary findings from the SENSE-Cog project

**Abstract:** Mental, cognitive, vision and hearing health problems in elderly people are among the top 10 public health challenges in Europe. The European Commission, as part its Horizon 2020 program, funded the 'SENSE-Cog Project' to better understand the interrelationship between sensory impairments and cognitive and mental health functioning. The project is designed to identify novel screening and detection methods for diagnostic and therapeutic purposes and to translate this knowledge into clinical applications.

This presentation will describe the overall administrative structure of this multifaceted, interdisciplinary and multinational project as defined by its 6 work packages (WPs): exploration, assessment, intervention, participation, valuation, and management/governance/ethics with a focus on the intervention WP; specifically, the randomized controlled trial (RCT) design as informed by a recently completed field trial - a single-arm, open-label field study across 3 clinical sites designed to assess the feasibility, acceptability and tolerability of a new sensory support intervention (SSI) program for people with dementia (PwD) and concurrent hearing and/or vision impairment. The SSI is designed to offer PwDs with sensory impairment a period of sustained support delivered by sensory support therapists (SSTs) in the expectation of achieving positive, long-term changes in communication performance, cognition and quality of life. Data from the field trial and preliminary findings from the recently initiated RCT will be presented and discussed.

**Learner Outcomes:**

- Describe 3 overall objectives of the SENSE-Cog project;
- List the 6 work packages (WPs) that constitute the overall project;
- Describe the responsibilities of the Sensory Support Therapist (SST);
- Identify two audiology-specific outcome measures

**Author(s):** Nancy Williams and Holly Cohen

**Title:** Ten proven tools to take the sting out of stigma

**Abstract:** Although invisible, elusive, and often discounted, stigma continues to loom large for those who live with hearing loss. People experience stigma across the lifecycle of living with hearing loss, from acknowledging their hearing loss to incorporating hearing aids into their lives. Understanding stigma as an audiologist and rehabilitative specialist supports your efforts to provide patient-centered care, by fostering empathetic relationships with your patients and improving your patients' ability to live with hearing loss. Hearing health advocates Nancy M. Williams and Holly Cohen understand stigma firsthand, both professionally and personally. They have experienced stigma differently because of the age of diagnosis: Nancy when she was six, Holly in her 20's. They felt compelled to research and create this workshop, which they have presented nationally for the past three years, to make stigma less secretive and to offer tools to lessen its impact. In this session, you will learn the types of stigma and will be introduced to ten proven tools for addressing stigma. You will learn how to select from the tools on a patient-by-patient basis to encourage your patients to make sustainable and meaningful change. Finally, you will have the opportunity to participate in an interactive exercise, deepening your understanding of stigma. As a result, you will have new resources to expand your practice, both to attract new patients and deepen your relationships with existing ones.

**Learner Outcomes:**

- Gain an understanding of internal and external stigma
- Learn tools to lessen the impact of stigma
- Discover how to select from the tools to empower each individual patient

**Author(s):** Sherri Smith

**Title:** Preliminary data on the self-identified hearing goals (SIHG) questionnaire in hearing-aid users

**Abstract:** There are a limited number of clinical tools that clinicians can use to assess specific listening goals of the patient and how patients function in the listening situations that are most important to them. The Self-Identified Hearing Goals Questionnaire (SIHG) is a newly-developed self-report measure that was designed to assess patient-specific listening goals and assess self-perceptions in six outcome domains regarding each listening goal to facilitate a tailored rehabilitative approach. The purpose of this study was to evaluate initial responses on the SIHG. A sample of 50 new and experienced hearing-aid users completed the SIHG. Participants also received updated hearing evaluation, had their hearing instruments verified to a prescriptive targets, and completed a battery of standardized hearing-aid outcome measures. Results indicated that participant scored within norms on the standardized questionnaires, but their SIHG responses demonstrated the possible need for additional intervention to meet their individually-nominated goals. These results emphasize the importance of follow-up visits to ensure patient-specific outcomes are maximized.

**Learner Outcomes:**

- Describe the role of self-report measures in the rehabilitative process
- Describe the Self-Identified Hearing Goals Questionnaire (SIHG) in terms of purpose, administration and interpretation
- Describe preliminary results of the SIHG on in hearing-aid users

**Author(s):** Marc Fagelson

**Title:** Influence of traumatic exposures on audiologic management

**Abstract:** This presentation will focus upon elements of counseling and intervention employed in the trauma literature that may be employed by audiologists to address the unusual challenges facing patients and providers when tinnitus onset and severity are linked to traumatic exposures. Interactions between neural mechanisms associated with tinnitus, post-traumatic stress-disorder (PTSD), and traumatic memory consolidation will be reviewed with particular attention to the way and degree to which such interactions affect tinnitus salience. Trauma's effects on a patient's emotional state and reaction to the tinnitus signal are durable; patients report that environmental sounds can exacerbate tinnitus as they trigger unwelcome memories years after the event and related tinnitus onset. The putative benefits of collaborative and educational counseling will be presented in the context of trauma interventions that support self-efficacy and resilience as elements of patient-centered care. Audiologists can offer a safe environment and opportunity for dialogue that allows the patient to convey reasonably an understanding of their situation and perceptions; the ultimate goal is to target interventions and self-assessment instruments that can be used to evaluate patient needs and progress in cases of trauma-related tinnitus. The value of educating patients regarding tinnitus features, mechanisms, and effects is well established and with precedent in studies focused upon improving coping strategies of trauma survivors.  
Screen reader support enabled.

**Learner Outcomes:**

- Identify consequences of trauma manifested as disorders of sound tolerance
- Identify standardized assessment instruments relevant for trauma-induced tinnitus
- Analyze patient observations to support adjusting acoustic characteristics over time for hearing aid fittings



**Author(s):** Gerard William (Oyer Award Recipient)

**Title:** Exploring senior management perspectives to improve person-centered care implementation in hearing rehabilitation organizations

Person-centered care (PCC), an approach associated with improved outcomes in healthcare, has not been widely adopted within adult audiologic rehabilitation. Studies outside audiology demonstrate that senior management direction can facilitate PCC implementation. This research aimed to understand the perspectives of senior managers of hearing rehabilitation organizations (HROs) in defining and evaluating success; how PCC is evaluated in current practice; and the facilitators and barriers to PCC evaluation in the context of behavior change theory.

**Methods:** Qualitative interviews were conducted with 16 senior managers of 12 HROs.

**Results:** Senior managers identified three primary components of success: client happiness, financial profitability, and staff happiness. Results revealed a mismatch between definitions of success and evaluation processes (e.g. client and staff happiness were not measured as objectively as financial profitability). Senior managers did not routinely evaluate PCC comprehensively. Facilitators to PCC evaluation related to motivation (i.e. PCC evaluation perceived as part of manager's role) and opportunity (i.e. available time, resources and clinician support). A major barrier related to managers' capability (i.e. insufficient knowledge of tools).

**Conclusion:** Manager's perspectives on organizational success and their evaluation of PCC were found to be important facilitators/barriers to achieving more widespread PCC implementation in adult audiologic rehabilitation.

**Learner Outcomes:**

- Describe person centered care
- Identify facilitators and barriers to person centered care

**Author(s):** Rolf Martin and Harold Raphelson

**Title:** An audiology-centered trial protocol to postpone or reduce age-related hearing loss, Alzheimer's, cancer and other age-related illnesses

**Abstract:** Age-adjusted, hearing-related and also Alzheimer's mortality rates rose according to 2012-2016 U.S. Centers for Disease Control multiple-cause-of-death data, compared to 2007-2011. Lower rates among Hispanic-Americans and Asian-Americans were consistently maintained. To reverse these mortality trends, the following protocol was developed. The primary endpoint for each participant will be a score derived from online measurements of hearing, number recall, word recall, decision-speed and self-reported energy, mood, sleep-quality, aches-and-pains and overall health. Participants will select their own measurements and schedules following the 2002-2019 IRB-approved Wild Blueberry Health Study protocol, always remaining within nutrient limits set by their physicians, audiologists and other health professionals. This protocol requires participants to follow physician guidance at all times, changing medicines and supplements as each physician (and audiologist) decides is best. Individuals displeased with their results will be referred to audiologists and/or neurologists for more accurate measurements. Our complete protocol is posted at [BlueberryStudy.com](http://BlueberryStudy.com). Limitations: Allowing participants to select measurements and nutrient-combinations, reduces the validity of our results for others. We have found that participants prefer high-quality research and volunteer for randomization. Conclusion: Discovery of high-flux repair pathways and genes that have led to two-fold lifespan increases (or more) among fish, reptiles, birds and mammals leads us to expect either large benefits, similar to those we've seen since 2002, or else harm from nutrient-overdoses if caution is not maintained. Clear improvements will lead to carefully controlled follow-up trials.

**Learner Outcomes:**

- Discuss current theories about fundamental mechanisms of aging, cell renewal and longevity
- Describe how amino acid and other nutrients influence DNA repair and possibly hearing,
- Describe how lipid proportions and lipid-precursor nutrients enable more effective cell renewal and organism longevity.

**Author(s):** David Ryan, Sherri Smith, E.W. Sellers, M. Eckert, K. Schairer

**Title:** EEG measurements in effortful listening conditions

**Abstract:** Adults with hearing loss who report difficulty understanding speech with and without hearing aids often also report increased mental or listening effort. Although speech recognition measures are well known and have been in use for decades, measures of listening effort are relatively new and include objective measures such as working memory tasks, pupillometry, heart rate, skin conductance, and brain imaging. This purpose of this study is to evaluate an electroencephalogram (EEG)-based method to assess cognitive states associated with alpha (8-12 Hz) and theta (4-8 Hz) frequencies during effortful listening. Changes in high frequency alpha (10-13 Hz) have been associated with semantic memory and cognitive demands. In addition, changes in theta have been associated with encoding information and increased listening effort. Correlations between EEG frequency recordings, self-report, and behavioral measures in speech recognition a task will be described.

**Learner Outcomes:**

- Participants will be able to evaluate information about the correlation of attention and cognitive effort EEG measures with self-report and performance outcomes in a word recognition task.
- Participants will learn about the potential for EEG measurements of listening effort.
- Participants will learn about the cognitive processes of effortful listening.

**Author(s):** Carly Alicea and Karen Doherty

**Title:** Targeted re-instruction for hearing aid use and care skills

**Abstract:** Many adults who own hearing aids do not wear them, even when it has been determined to be the best intervention for their hearing loss. One of the most common reasons for hearing aid non-use among adults is difficulty with hearing aid use and care skills. During a hearing aid orientation, critical hearing aid use and care information is presented, but new hearing aid users may have difficulty remembering all of the novel information. The standard practice is to ask a new user if they understood the orientation and if they have any questions. However, relying on hearing aid users to self-identify the hearing aid use and care skills has been shown to be ineffective (Desjardins and Doherty, 2009). In the present 6-week randomized control trial study, a newly developed mobile app version of the Practical Hearing Aid Skills Test – Revised (PHAST-R) was used to identify specific hearing aid use and care skills that adults could not perform or had difficulty performing and needed targeted re-instruction on. The primary purpose of this study was to test the hypothesis that new hearing aid users who received targeted re-instruction as part of their hearing aid orientation would demonstrate greater improvements in their hearing aid use and care skills over time compared to new users who did not receive targeted re-instruction. Also, working memory function, hearing handicap, and hearing aid-related attitudes were assessed to determine if they were related to how well an individual could demonstrate hearing aid use and care skills.

**Learner Outcomes:**

- Describe the effectiveness of targeted re-instruction for improving hearing aid use and care skills
- Discuss the factors that are related to learning and remembering of hearing aid use and care skills
- Explain how much time is required to add targeted re-instruction to a hearing aid orientation

**Author(s):** Gabrielle Saunders, Lauren Dillard, Shienpei Silverman, and Melissa Frederick

**Title:** Photovoice as a tool for audiologists and audiology researchers

**Abstract:** Photovoice is a participatory action research method in which people take photographs to represent real-world experiences, so that issues of interest/concern can be shared. This study examined whether photovoice could have application to audiological rehabilitation (AR). Four experiments were conducted to determine whether photovoice could be used to facilitate provision of tailored communication strategies counseling (experiment 1), as a post-hearing aid fitting counseling tool (experiment 2), to enhance communication between partners regarding hearing loss (experiment 3), and/or to provide an understanding of the emotional impacts of hearing loss. Participants were 24 individuals who attended two research visits. During visit 1, participants received instruction in photovoice methodology. During visit 2, their photographs were discussed during an experiment-specific debriefing session. Participants reported that participation had made them think more about their hearing problems, appreciate their hearing aids more, and realize where the hearing aids helped and where they did not. Some said the exercise had been a learning tool and that it facilitated conversations with others about hearing problems. Participants in experiment 3 said the exercise had assisted with problem solving and gave insight into the perspective of their partner. The research team noted that photovoice facilitated highly-tailored counseling and provision of evidence-based recommendations for hearing assistive technology, provided insight into participants' lifestyle and communication needs, and generated rapport and trust. It is concluded that photovoice would be timely and valuable for improving provision of patient- and family-centered AR.

**Learner Outcomes:**

- Explain photovoice methodology
- Specify at least three ways in which photovoice methodology could be applied to audiological rehabilitation
- Describe at least three observations made by participants and/or researchers about use of photovoice

**Author(s):** Jean Pierre Gagné, Kenneth Southall, Kadia Saint-Onge, Cassie Greenough, Leslie Gauthier-Cossette and Célia Hammar

**Title:** Efficacy of self-stigma treatment programs: Insights based on a review of qualitative studies

**Abstract:** There is a social stigma associated to hearing loss. Some people with hearing loss self-stigmatize; that is, they hold the same negative stereotypic and direct prejudicial attitudes towards hearing loss as the general population. Under some circumstances, individuals who self-stigmatize experience a threat to their personal identity which may have a negative effect on their self-esteem and self-efficacy. Self-stigma generates stress and may have a negative impact on a person's behavior and life-style. Self-stigma is known to be a barrier to help-seeking. In some domains of health, treatment programs have been designed to reduce self-stigma. In this presentation I will briefly summarize a literature review of qualitative research studies in which the efficacy of self-stigma treatment programs was evaluated. Specifically, nine articles covering a number of different health conditions, were included in the review. The analysis revealed that successful self-stigma treatment programs may have a positive effect on the participants at three different levels: emotional, cognitive and behavioral. Examples of the beneficial effects of treatment programs are provided for each of the three levels identified. Finally, some implications of these findings for rehabilitation programs as well as for research designed to evaluate the efficacy of self-stigma reduction programs are discussed.

**Learner Outcomes:**

- Differentiate social stigma from self-stigma
- Describe a conceptual framework that captures the phenomenon of self-stigma and identifies its potential effects on individuals who self-stigmatize
- Identify positive effects of self-stigma reduction intervention programs.

# Keynote Speaker: Kris English, Ph.D.

## Family Matters: Enhancing Patient Outcomes With Help From Loved Ones



Kris English, PhD (San Diego State University/Claremont Graduate University) is a Professor Emeritus at the University of Akron. She has authored, coauthored, or edited numerous books and chapters, and has provided over 300 national and international presentations, primarily on the topic of audiologic counseling. Her service to the profession includes 5 years as a board member for the American Academy of Audiology (President, 2009–2010), and 10 years on the board of the Educational Audiology Association (President, 1997). She created and

writes for a web forum called [AdvancingAudCounseling.com](http://AdvancingAudCounseling.com).

**Abstract:** Family support has been shown to make a positive difference in the management of many health conditions. Given the impact of hearing loss on the quality of family life, audiologists are considering how to incorporate family support into the audiologic rehabilitation process. Family (defined in the broadest sense) can provide consistent encouragement, help the patient manage expectation, and serve as “validation reporters” regarding their loved one’s progress and challenges. However, it cannot be assumed that family members are ready to take on this supportive role. If they did not attend the assessment appointment, or were not actively included in treatment discussions, they will have little to add to rehabilitation success.

Engaging families in the entire rehabilitation process gives audiologists the opportunity to enhance patient outcomes. The challenge we face is: how to include families in a meaningful, efficient, and focused way? This session will review the evidence supporting family-centered care (FCC), and describe strategies designed to address potential barriers to FCC, including how to work through difficult conversations. Additionally, to advance the philosophy of FCC, the familiar concept of Quality of Life (QoL) will be expanded to remind us of the value of the Quality of Family Life (QoFL).

### Learning objectives:

- Describe two benefits of family-centered hearing care for adult patients and their families.
- List two barriers and two supports to successful implementation of family-centered hearing care.

**Author(s):** Anna Marie Jilla (Oyer Award Recipient)

**Title:** An economic analysis of hearing aid affordability in the United States using big data

**Abstract:** Cost has been a significant barrier to hearing aid (HA) uptake in the United States. Currently, the mean price for a single advanced digital technology (ADT) HA is \$2363. Two economic analyses, using catastrophic and impoverishment approaches, determined first the proportion of the entire United States population and then for those who self-reported hearing loss who would face significant financial hardship if they purchased a single HA at price points of: \$250, \$500, \$1000, \$1500, \$1657, \$1800, \$2000, \$2196, \$2363, \$2500, \$2898, \$3000, and \$3500. Results for the average purchase price of \$2363 indicated for the average that up to 39% of the US adult population would face financial hardship as a result of purchasing one HA compared to 53% Americans with self-reported hearing loss. Moreover, rates of financial hardship vary among those with and without hearing loss and across race, age groups, gender, and geographic regions. For those with bilateral sensorineural hearing loss, the purchase of two ADT HAs may place an even greater proportion of Americans at risk for financial hardship. Economic analyses should be the first step prior to determining policy for insurance coverage, third-party payers, and product development in hearing healthcare.

**Learner Outcomes:**

- Differentiate catastrophic and impoverished approaches
- Describe the financial cost of hearing aids



**Author(s):** Michael Kurth

**Title:** Speech tracking auditory training in the presence of noise in normal listeners

**Abstract:** The aim of this project was to examine effects of speech tracking auditory training in the presence of noise for normal hearing listeners. Computer assisted speech tracking training is a highly synthetic form of auditory training in which the listener verbally repeats a predetermined stimulus read by a trainer, with the aid of a computer to measure tracking rate and errors. 10 normal hearing subjects (mean age x) were recruited from the University of Connecticut and surrounding areas. They attended eight separate sessions in which they engaged in 45 minutes of speech tracking training in the presence of 6-talker babble at +6 dB SNR. This method showed significant improved changes in tracking rate ( $P < .001$ ) and tracking errors ( $P < .001$ ) across training sessions. Speech tracking in noise may be a valuable aural rehabilitation method for helping listeners to better aid speech understanding in noise. Future data analyses from this project will focus on behavioral, electrophysiological, and subject-reported outcome measures administered pre- and post-training.

**Learner Outcomes:**

- Gain an understanding of a new application for speech tracking training in the presence of noise.
- Describe the impact of speech tracking on behavioral outcome measures pre- and post-training.
- Describe the impact of speech tracking on electrophysiological outcome measures pre- and post- training.

**Author(s):** Geoff Plant

**Title:** Providing AR support for older adults with hearing loss

**Abstract:** The Hearing Rehabilitation Foundation (HRF) was established in 1996 to "provide and provide speech communication training for people with hearing loss." Over the past five years, the HRF has focused primarily on providing auditory training to older adults with cochlear implants and/or hearing aids. The services offered include:

\* 1:1 auditory training sessions tailored to meet to the needs of the individual client. These sessions typically run for two hours, and offer a wide range of activities including both analytic and synthetic training exercises, and opportunities for conversational practice. Clients are asked to make ratings of EFFORT and CONFIDENCE during the training activities, and these are discussed with reference to everyday communication experiences.

\* FIKA (Fostering Improved Kommunikation Awareness) sessions. These small groups consist of talk (30 - 45 minutes), followed by discussions and questions. FIKA also provides opportunities to meet and talk with others with hearing loss, discuss mutual concerns, and take part in a regular social activity.

\* Music activities designed specifically for adults with hearing loss. These activities have included concert performances, and a seminar on "Music and Hearing Loss.

The presentation will include client feedback on the activities and the relevance of such training for other centers will be discussed.

**Learner Outcomes:**

- Describe a range of auditory training activities suitable for use with older adults.
- Identify opportunities to improve speech communication training for older adults with hearing loss.
- Describe the use of the KTH Tracking Procedure with older adults with CIs and/or hearing aids.

## POSTER SESSIONS

**Author(s):** Claire Bernstein, Diane Brewer, Cassandra Bosworth, Karah Gottschalk, Anne Olson, Keena Seward, Gina Stillitano, Sarah Sydlowski

**Title:** Telehealth Delivery of Aural Rehabilitation: A Clinical Trial for Adult Cochlear Implant Users

**Abstract:** This study explores the feasibility of telehealth delivery of aural rehabilitation services via a randomized controlled clinical trial. Twenty-four participants are randomized to either an aural rehabilitation group or active control group. The protocol provides for six 90-minute individual training sessions presented via a telehealth platform. Participants are assessed pre-treatment and at 1 week and 2 months post-treatment. Preliminary results are presented and discussed.

**Learner Outcomes:**

- List at least 3 reasons for lack of access to AR services.
- Describe the areas of the multidimensional AR protocol used in this study.
- Identify 3 possible difficulties using a telehealth platform for AR delivery.

**Author(s):** Torri Ann Woodruff, Jackie DiFrancesco, Noelle Wigg, Lauren Benoit, and Kathleen Cienkowski

**Title:** Disposable hearing aid battery life

**Abstract:** This study investigated the impact of battery brand and streaming on the lifespan of zinc-oxide disposable hearing aid batteries. Oticon Opn1s, powered by 312 zinc-oxide batteries, were programmed with advanced features turned off and set to provide appropriate amplification to fit a mild to severe sloping high-frequency hearing loss, consist with presbycusis. Hearing aids were run in 12-hour cycles to mimic typical usage by clients and per ANSI specifications. A vocal stimulus was presented in the sound field or via a Bluetooth connected iPad for streaming. Battery life was assessed in 15-minute intervals via electroacoustic analysis during the last hours of the battery lifespan. Battery lifespan differed across the test conditions with a notable reduction in battery life with streaming. Preliminary analysis covers the interactions between brand and streaming condition. This study was support by a grant from Duracell.

**Learner Outcomes:**

- Describe the basic anatomy and function of zinc-oxide batteries
- Integrate zinc-oxide battery attributes with performance in hearing aids
- Compare different manufacturers of hearing aid batteries with regards to battery life and the impact of streaming

**Author(s):** Shannon McKinney, Alexandra Sellers, Sherri L Smith, and David Ryan

**Title:** Test-Retest reliability of the word auditory recognition and recall measure in older individuals with hearing loss

**Abstract:** Working memory is one of the cognitive processes involved in speech understanding and can vary in capacity between and within individuals. The Word Auditory Recognition and Recall Measure (WARRM) was developed to measure differences in working memory for speech in the auditory modality. The purpose of this study was to evaluate both inter- and intra-session test-retest reliability of the WARRM in older listeners with hearing loss. The WARRM was administered to 42 older veterans with sensorineural hearing loss. The first session included two administrations of the WARRM (intra-session test-retest reliability) and the second session included one administration of the WARRM two weeks after the first session (inter-session test-retest reliability). Word recognition and recall performance (both percent correct score and partial span score) on the first administration of the WARRM (WARRM 1) was significantly poorer at higher set-sizes than for the second and third administrations of the WARRM (WARRM 2 and WARRM 3), which were similar. This could be due to practice effects. Overall however, the measure showed good test-retest reliability across all conditions. In the future, more training prior to the first administration should be considered to reduce practice effects, facilitating the WARRM as an outcome measure with auditory interventions.

**Learner Outcomes:**

- Describe the role of working memory in speech understanding.
- Describe the Word Auditory Recognition and Recall Measure (WARRM) in terms of purpose, administration, and interpretation.
- Describe the intra-and inter-test-retest reliability of the WARRM.

**Author(s):** Jennifer Henderson Sabes

**Title:** Self-efficacy profiles of a large population of tele-rehabilitation users

**Abstract:** Home-based rehabilitation has been utilized in the field of audiology for over a decade. LACE Online is a home-based rehab program that integrates subjective outcome measures (HHIE and Communication Confidence), validated speech perception tests (QuickSIN), informational counseling and auditory training. Responses from this population allows for analysis of very large groups of participants. De-identified data from over 5000 users of LACE Online were analyzed. This study focused on pre-training assessments. Users of the program varied from normal performance on pre-training measures to severe impairments, with the average user performance in the moderate impairment classification for each measure (Ventry and Weinstein, 1982; Killian et al, 2004; Sweetow and Henderson Sabes, 2010). While inter-test variability is high in this data set, results from both subjective and objective measures were predictive of self-efficacy. Hearing Handicap scores were most closely associated with scores on the Communication Confidence Profile.

**Learner Outcomes:**

- Describe the subjective and objective measurements in LACE Online.
- Evaluate subjective and objective measure characteristics of 5000 users.
- Observe the variances and relationships between these measures.

**Author(s):** Sarah Hargus Ferguson, Brennan R. Payne, Jack Silcox, Amanda Lash, and Monika Lohani

**Title:** Assistive text captioning offsets the effects of background noise on speech memory and pupillometry

**Abstract:** We examined the effects of text captioning on memory for speech. Young normally hearing participants heard sentences quiet or in low or moderate levels of speech-shaped noise (signal-to-noise ratios of +7 and +3 dB, respectively). Speech was presented alone (speech-only) or with adaptive text captioning. Pupil responses were recorded during a 5-second retention interval as a physiological index of cognitive workload, and participants were cued for free recall following the retention interval. In the speech-only condition, recall was poorer with moderate background noise relative to low-level noise or quiet. With text captioning, the negative effects of noise on memory were reduced. In the speech-only condition, we observed graded effects of signal-to-noise ratio on pupil dilation. In the caption condition, the effects of noise on pupil dilation were reduced. These findings suggest that the visual presentation of captioned speech may ameliorate the negative effects of auditory perceptual decoding on speech memory in acoustically challenging situations.

**Learner Outcomes:**

- Describe the effects of text captioning on speech memory and cognitive workload.
- Describe the use of pupillometry as a physiological marker for listening effort.
- Describe the potential implications of the findings on clinical practice and application.

**Author(s):** Laura Gaeta and Julia Ahlquist Tanner

**Title:** Pilot program: A holistic and interprofessional approach to group AR and student training

**Abstract:** Holistic approaches to aural rehabilitation (AR) seek to reduce the difficulties associated with hearing loss through sensory management, perceptual training, instruction, and counseling. Group AR classes provide an opportunity for interprofessional education and training for the fields of speech-language pathology and audiology. We propose a four-class program that focuses on communication strategies training and lipreading. Each class will also feature a guest speaker from a related discipline, such as psychology, physical therapy, and gerontology, to discuss the latest research in those respective fields and how it relates to hearing loss. The program will involve undergraduate students in communication sciences and disorders and graduate students in speech-language pathology, providing students with hands-on experience in AR in an interprofessional setting. Participant and student outcomes from this program will guide future AR classes, encourage the interprofessional approach to AR and involvement of students, and contribute to the evidence on group AR classes.

**Learner Outcomes:**

- Describe the role of interprofessionalism in group AR
- List ways to incorporate students from communication sciences and disorders and speech-language pathology into group AR classes
- Summarize the proposed group AR program as it relates to interprofessionalism and student education and training



**Author(s):** Sheila Pratt, Elizabeth Lucius, and Leah Castrovine

**Title:** HHIE performance in older Veterans with hearing loss

**Abstract:** The Hearing Handicap Inventory for the Elderly (HHIE) was developed by Ventry and Weinstein (1982) to assess the impact of hearing impairment on the emotional and social status of elderly adults. It has been used widely as an assessment of hearing handicap and an outcome measure of rehabilitation success. The HHIE and the 10-item screening version of the test (HHIE-S) are commonly used in VA audiology clinics across the U.S., yet little data have been reported on their appropriateness with older Veterans.

This presentation will describe the results of a prospective record review of HHIE results obtained from 1100 Veterans just prior to their scheduled audiology clinic appointment in the VA Pittsburgh Healthcare System. Audiometric pure-tone threshold results and HHIE responses were collected from each Veteran by audiology clinical staff and later de-identified for analysis. Also collected with the HHIE were responses to open-ended questions about self-perceived hearing difficulties.

Factor analysis of the HHIE items showed that the two sub-scales of the questionnaire (social and emotional) accounted for little separate variance from the total score indicating that the HHIE is largely a unidimensional measure of hearing handicap. That is, the HHIE is a good measure of hearing handicap in older Veterans but the questionnaire performs less well for the two separate subscales independently. Moreover, a review of the items with the greatest factor loading indicated that the HHIE-S should be modified when used with the older U.S. Veteran population.

**Learner Outcomes:**

- Increase understanding of the HHIE structure.
- Know that the HHIE should be viewed as a unidimensional assessment tool.
- Know that the HHIE-S should be modified when used with older Veterans.

**Author(s):** Kathleen Cienkowski, Casie Guerrero, Renata Russo

**Title:** Readability and Comprehensibility of an Adult Audiology Report

**Abstract:** Patient portals are designed to allow improved access to and quality of patient health records. The intent is to assist patients in better managing their health conditions thus improving overall quality of life. However studies have shown that low health literacy can be a barrier to successful use of a patient portal especially for the management of chronic health conditions. This study examines the readability and comprehensibility of an adult audiology report created for an online patient portal. Results suggest that typical reports are written above an average reading level and may present a challenge to patient understanding even with the benefit of simplified graphics.

**Learner Outcomes:**

- Define health literacy
- Discuss the potential benefits of patient portals
- Discuss elements needed to create a patient-centered report

**Author(s):** Sarah Hargus Ferguson, Alison Behrman, Christen N. Madsen II

**Title:** The effect of clear speech on listener perception of nonnative speech

**Abstract:** Intelligibility, ease of understanding, and accentedness are related but distinct perceptual variables used to assess communication of nonnative talkers. The effects of clear speech of monolingual English- and Spanish-accented English talkers on these variables was assessed by young, normal-hearing listeners. The findings and implications for clinical practice. are discussed.

**Learner Outcomes:**

- Describe clear speech and critical differences between clear and conversational-style speech.
- Describe the methodology and findings of this study.
- Describe the implications of the findings on clinical practice.

**Author(s):** Valeriy Shafiro

**Title:** Reaching from afar: The beckoning promise of online rehabilitation

**Abstract:** Internet-based auditory training programs (ATP) are gaining wider acceptance among audiologists and patients with hearing loss as a means to improve hearing and communication abilities. Their potential advantages over traditional approaches include flexible timing, lack of travel requirements, reduced financial burden, compared to clinician-administered programs, and greater patient control over intervention delivery. There are also limitations such as the need to access the Internet, computer and audio setup, prerequisite technical skills, susceptibility to distractions, lower protocol compliance and engagement. Research evaluating online ATPs thus far has produced inconsistent results which may reflect a large variability in outcome measures, training methods, and patient populations investigated. Interventions that may be beneficial for some patients may not necessarily lead to positive changes in others. Factors specific to internet-based intervention delivery need to be considered to develop effective ATPs. Interactions of learning materials, learning settings and listener characteristics also need to be considered. This presentation will review current research in online auditory training and rehabilitation and discuss several approaches to online ATP development and participant engagement.

**Learner Outcomes:**

- Identify potential benefits of Internet-based auditory training programs.
- Describe known barriers to the development and administration of Internet-based auditory training programs.
- Describe how practical and theoretical knowledge gained in online education can be applied to address the barriers to Internet-based auditory training.

**Author(s):** Sherri Smith, Todd A. Ricketts, and George L. Spanos

**Title:** Efficacy of a coupler-based hearing-aid fitting approach for experienced users

**Abstract:** In situ probe microphone real ear aided response (REAR) measurements are the gold standard method of verifying real-ear hearing-aid performance. The current study evaluated an experimental fitting approach for patients receiving replacement amplification. Participants randomly were assigned to one of three groups that completed a 4-week field trial with replacement hearing aids that were received during via face-to-face appointment or via the mail. The devices were verified and validated using either in situ REAR measurements or two alternative real-ear to coupler difference (RECD)-based fittings (incorporating individually measured or average RECDs). All participants had replacement devices re-verified using in situ REAR measures and were administered self-report measures at the conclusion of the trial. Results indicated that the in situ REAR fitting approach provided a good match to prescriptive targets ( $\pm 3$  dB). In situ REARs of the alternative RECD-based fitting approaches revealed they were an overall good fit to prescriptive targets; however, the average RECD method slightly under fitted targets from 1000-4000 Hz. There were no significant differences among groups on any self-report measure. Preliminary findings suggest that an alternative hearing aid fitting approach using individually-measured RECDs might be viable for issuing replacement amplification for select patients.

**Learner Outcomes:**

- Demonstrate knowledge of incorporating RECD measurements into hearing-aid fittings.
- Compare the differences between in situ and test box hearing-aid verification methods.
- Evaluate the efficacy on an alternative hearing-aid fitting approach for select Veterans.

**Moderator: Joe Montano**

**Author(s):** Harvey Abrams, Jean Pierre Gagné, Kris English, and Catherine Palmer

**Title:** Panel discussion: Trends in AR

**Abstract:** Recent developments in technology, legislation and healthcare service delivery can have a direct impact on the management of people with hearing loss. This panel brings together members of the aural rehabilitation community to provide their impression for the future directions of Audiology and AR. Some topics slated for discussion are: eAudiology technologies, hearing aid delivery models and patient adherence and motivation. Audience members will be queried to contribute relevant questions for the panelists.

**Learner Outcomes:**

- Identify current changes to the hearing healthcare system that may impact future practices.
- Identify eAudiology technologies.
- Discuss the future directions for AR.