COMMUNICATING WITH A PATIENT WITH HEARING LOSS:
DEVELOPMENT OF A HEALTH CARE PROVIDER’S GUIDE AND
INTERPROFESSIONAL TRAINING

by
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As members of the Audiology Doctoral Project Committee, we certify that we have read the
Audiology Doctoral Project prepared by Melanie Dunne, titled *Communicating with a Patient
with Hearing Loss: Development of a Health Care Provider's Guide and Interprofessional
Training* and recommend that it be accepted as fulfilling the Audiology Doctoral Project
requirement for the Degree of Doctor of Audiology.

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requirement.

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STATEMENT BY AUTHOR

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SIGNED: Melanie Dunne
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ABSTRACT

Communication between a patient with hearing loss and a health care provider can be challenging and potentially contribute to poor health outcomes. This document describes an audiology doctoral project with clinical innovation emphasis on the development of a guide and interprofessional training for health care providers to communicate effectively with patients with hearing loss. A preliminary assessment of provider needs for training was followed by the development and implementation of an interprofessional training on hearing loss and communication strategies for the University of Arizona-St. Luke’s Home Interprofessional Education and Practice Program (Spring, 2015). Additionally, video training segments on effective communication in a health care setting were developed. Evaluation of the interprofessional training included administration of pre- and post-training questionnaires (n = 11). Results indicated a significant change in trainee confidence levels in screening for hearing loss and the use of appropriate communication strategies for communicating with hard of hearing patients. These results support further development and research on hearing loss and communication training for health care curriculums, interprofessional education, and in-service training meetings. Implementation of communication training may lead to improved patient-provider communication, with positive impact on health care experiences and outcomes for patients with hearing loss.
Communicating with a Patient with Hearing Loss:
Development of a Health Care Provider’s Guide and Interprofessional Training

CHAPTER 1: INTRODUCTION

This document describes an audiology doctoral project with clinical innovation emphasis on the development of a guide for health care providers to communicate effectively with patients with hearing loss. Following a literature review and preliminary assessment of provider needs for training, an interprofessional training on “Hearing in Elders” was developed and implemented for the University of Arizona-St. Luke’s Home Interprofessional Education and Practice Program (Spring, 2015). The process and evaluation of the training are described. Subsequently, short training videos of health care communication scenarios were developed as an additional format for provider trainings in the future.

Although the effects of hearing loss are known in the medical community, many physicians and health care workers have limited, or no training to screen for hearing loss or to communicate effectively with a hearing impaired patient. Hearing impairment is one of the most commonly reported chronic health problems in the older adult population. In the United States, an estimated 89% of individuals age 80 years and above are living with hearing loss in one or both ears (Lin, Niparko, & Ferrucci, 2011). Dr. Lisa Iezzoni (2012), who has spent more than three decades conducting health services research stated, “Physicians worldwide generally lack training about caring for persons with disabilities, thus frequently compromising their health care experiences and health outcomes... perhaps contributing to disparities in their care.” Effective communication is
necessary to improve the hearing impaired patient's access to health care and improve their experiences in the health care environment (Zazove, Niemann, Gorenflo, Carmack, Mehr, Coyne, & Antonucci, 1993; Mick, Foley, & Lin, 2014).

**Literature Review**

Screening for hearing loss has been shown to improve hearing aid uptake and quality of life. Yueh, Collins, Souza, Boyko, Loovis, Heagerty, Liu, & Hedrick (2010) investigated whether adult hearing screenings would improve hearing aid uptake one year from screening. In a randomized trial of 2305 older veterans, researchers compared outcomes of three screening methods (tone-emitting otoscope, questionnaire and both) to no screening. Subjects who screened positive for hearing loss by any of the screening methods were advised that they may have a hearing loss and provided with written instructions to call the VA for a comprehensive audiological evaluation. Subjects who screened negative for hearing loss or did not receive a screening were provided with the telephone number to the VA in case they wanted to have a hearing evaluation. A higher percentage of patients, (14.7%, 23.0%, and 26.6% respectively) who received a hearing screening chose to have a comprehensive audiological evaluation compared to 10.8% in the no screening group. The percentage of patients using hearing aids 1 year after screening was 6.3%, 4.1%, and 7.4% respectively, compared with 3.3% in the no screening group. Participants using hearing aids reported significant improvements in communication and hearing-related functions.

Although research indicates that hearing screenings improve hearing health care, and the American Academy of Family Physicians (2011) recommends screening a patient’s hearing during annual physicals, Cohen, Labadie, and Haynes (2005) found that
40% of primary care physicians (PCPs) do not routinely screen for hearing loss. In their study, 97.6% of physicians acknowledged that hearing loss affected their patient’s quality of life, yet only 60% of those physicians actually screened their patient’s hearing. The majority of participating physicians (89.4%) were aware of cochlear implants; only 25.9% had referred their patients for a cochlear implant evaluation. Bess, Logan, & Lichtenstein (1987) found that even when a patient complained about hearing difficulties, only half were referred for a comprehensive audiological evaluation. Increasing awareness of hearing loss in the medical community and teaching appropriate hearing screening methods is important because of the comorbid factors associated with hearing loss which can lead to more serious medical issues. Hearing loss, especially untreated, is associated with depression, social isolation, functional decline, cognitive deficits and a poor quality of life (Appollonio, Carabellese, Frattola, & Trabucchi, 2006, Hogan, O’Loughlin, Miller, & Kendig, 2009).

Communication barriers often prevent effective exchanges of information in the health care setting. PCPs and other health care workers identified barriers as: a lack of knowledge/skills of effective communication strategies (Hemsley, Sigafoos, & Balandin, 2001), a feeling of uncertainty and reluctance on how to use an assistive listening device (Murphy, 2006), a lack of information about a patient’s hearing loss in the medical record, the cost of hiring an interpreter and the effects of time constraints for implementing effective communication strategies, (Ziviani, Lennox, Lyons, & Del Mar (2004). These barriers, in combination with communication difficulties due to hearing loss, can lead to communication breakdowns between health care providers and patients with hearing loss.
A communication breakdown occurs when there is a misperception of or complete failure to exchange information between communication partners. A patient with hearing loss may demonstrate a communication breakdown by requesting clarification (e.g., “Could you repeat that?”), answering yes, or nodding when asked a question that required a specific response, (e.g., “What medications do you take on a daily basis?”), providing inappropriate responses (e.g., “Your appointment is next Monday.” “Sunday? I didn’t realize you saw patients on Sundays.”) or not responding at all when spoken to. A healthcare provider may contribute to the communication breakdown by not using effective communication strategies such as not verifying if the patient understood instructions, not facing the patient when talking, or neglecting to hire an interpreter when necessary.

The effects of miscommunication in the medical setting have been well documented for the general population and for the population of adults with hearing loss. Table 1 summarizes findings from studies on the consequences of poor communication in health care settings. Effective communication with healthcare providers is a necessity to ensure quality medical care for patients with hearing loss (Clark et al., 1997; DeVoe, Wallace, & Fryer, 2009; Frank, 2003; Hagihara & Tarumi, 2006; Lapane, Dube, Schneider & Quilliam, 2007).

Ineffective communication with a health care provider causes feelings of frustration, anxiety, confusion, embarrassment, and fear which often prevent patients from seeking medical care (Hemsley et al., 2008). Importantly, Iezzoni, O’Day, Killeen, & Harker, (2004) found that deaf and hard-of-hearing patients had decreased health care
satisfaction in a number of areas: patient-centered care, effectiveness of care, timeliness of care, and efficiency of care and equity in care.

**Table 1.** Consequences of poor communication between patients and health care providers.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Consequence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Errors in medication use</td>
<td>Iezzoni, et al. (2004)</td>
</tr>
<tr>
<td>Quality of Care Indicators</td>
<td>Delayed or missed appointments</td>
<td>Iezzoni, et al. (2004)</td>
</tr>
<tr>
<td></td>
<td>Adverse patient experiences in the health care setting</td>
<td>Bartlett, Blais, Tamblyn, Clermont, &amp; MacGibbon (2008)</td>
</tr>
<tr>
<td></td>
<td>Lower patient satisfaction with healthcare</td>
<td>Hoffman, Yorkston, Shumway-Cook, Ciol, Dudgeon, &amp; Chan (2006); Mick, Foley, &amp; Lin (2014)</td>
</tr>
<tr>
<td>Communication</td>
<td>Decreased exchange of health information</td>
<td>Knight, Worrall, &amp; Rose (2006)</td>
</tr>
<tr>
<td></td>
<td>Passive role of the patient in health care decision making</td>
<td>Worrall, Rose, Howe, McKenna, &amp; Hickson (2007)</td>
</tr>
<tr>
<td>Provider experience</td>
<td>Inability to verify patient’s understanding and adherence to treatment plans</td>
<td>Legg, Young &amp; Bryer (2006)</td>
</tr>
</tbody>
</table>

The Americans with Disabilities Act, 1990 (ADA) requires that title II entities (State and local governments) and title III entities (businesses and nonprofit organizations that serve the public) communicate effectively with people who have communication disabilities. According to the United States Department of Justice Civil Rights Division (2016):
“Covered entities must provide auxiliary aids and services when needed to communicate effectively with people who have communication disabilities. For people who are deaf, have hearing loss, or are deaf-blind, this includes providing a qualified note taker; a qualified sign language interpreter, oral interpreter, cued-speech interpreter, or tactile interpreter; real-time captioning; written materials; or a printed script of a stock speech (such as given on a museum or historic house tour). A “qualified” interpreter means someone who is able to interpret effectively, accurately, and impartially, both receptively (i.e., understanding what the person with the disability is saying) and expressively (i.e., having the skill needed to convey information back to that person) using any necessary specialized vocabulary.” (www.ada.gov/effective-comm.htm)

Gaps in training of health care providers on effective communication with patients with hearing loss have been identified in the literature. Iezzoni (2004) found that many PCPs lacked knowledge of or were simply unwilling to adequately respond to their ADA responsibilities. PCPs non-compliance was reportedly due to the expense and inconvenience of purchasing assistive listening devices or hiring an interpreter. Due to a lack of ADA compliance, Iezzoni (2004) found patients were required to use inadequate and ineffective modes of communication such as lip reading or bringing a family member to translate. When an interpreter was hired, he/she was rarely trained in medical interpretation.

Communication training for healthcare providers, recommended by The Joint Commission, (2010a), is one method of removing communication barriers in the healthcare setting. As experts in hearing and balance, audiologists can play a central role in addressing the communication challenges in health care delivery. One promising approach to foster such collaboration between audiologists and other health professionals is interprofessional education and practice. Currently, communication training offered in medical schools only provides skills for communicating with the general patient population, but does not specifically address the needs of patients with hearing loss.
Interprofessional education can assist health care professionals in caring for patients with hearing loss, assuring clear communication, providing person-centered care, and working in highly functioning interprofessional teams.

**Purpose**

The purpose of this audiology doctoral project was the development and evaluation of an interprofessional, educational training model in hearing screenings and communication strategies for future health care providers. Development of the training content was based on an exploratory study on provider training needs. Two training formats were developed in response to those needs: 1) the production of communication strategy videos to be used for on-site training purposes for health care providers in the field and 2) a training clinic for health professional students in the University of Arizona-St. Luke’s Home Interprofessional Education and Practice Program. The overarching goals of this project were to (1) educate future health care providers on specific hearing screenings methods they could employ in their specific medical specialty, (2) instruct current and future providers on the use of appropriate communication strategies for communicating with a hearing impaired patient and (3) promote interprofessional training as a means to increase collaboration between audiologists and the broader medical and health professional community in the care for older adults with hearing loss.

**Organization of the Audiology Doctoral Project**

In order to address the need of improving medical providers’ knowledge and skills in hearing screening methods and communication strategies for working with hard of hearing patients, this audiology doctoral project included:
(1) interviews of health care providers about training needs related to hearing loss and effective communication in health care settings,

(2) a communication strategies guide for providers was developed,

(3) a three part video training series on communication strategies was produced,

(4) an interprofessional face-to-face training module was developed and presented to health professional students, and

(5) subsequent care, including Living Well With Hearing Loss, was provided at the request of the community partners.

The following chapters of this document present an exploratory study on provider training needs and development of the guide and videos (Chapter 2), development and implementation of an interprofessional training (Chapter 3), and general discussion and future directions (Chapter 4).
CHAPTER 2: PROVIDER TRAINING NEEDS

Overview

As an initial step in the development of health care provider training materials, an exploratory study was conducted with a small sample of health care providers from different disciplines to explore training needs. A semi-structured interview was prepared by the audiology student to explore the opinions of health care providers on hearing loss, barriers to effective communication in health care settings, communication strategies, and ideas to improve communication training. Exploratory analyses of the results led to the development of a communication strategies guide and the development of short videos using health care communication scenarios to model use of effective communication strategies. In the future, systematic research could be conducted for statistically valid and representative samples of health care professionals to establish discipline specific and generic training needs.

Exploratory Study

A convenience sample of 14 health care workers provided opinions on training needs. Participants were from a variety of health care disciplines with years in practice ranging from 3 to 28 years with a mean of 12 years. Fourteen health care providers, nine males and five females, provided opinions through face-to-face interviews (8), telephone interview (1) or written surveys (5). Initial recruitment was of health care providers from Arizona were interviewed due to local proximity. In order to obtain a broader sample,
written surveys were e-mailed to health care professionals in other States. Table 2 represents the demographics of those participants.

**Survey Materials**

Semi-structured interviews and written surveys were used to gather exploratory information about (1) methods used to identify hearing loss, (2) observed behaviors that might indicate a patient has a hearing loss, (3) communication strategies used by the health care provider when working with a hard of hearing patient, and (4) barriers to communication in the health care setting. Face-to-face and telephone interviews were conducted using open- and closed-ended questions. Open-ended questions were selected to allow participants to provide greater explanations of their experiences working with the hearing impaired. Follow up questions varied depending on responses during the interview. Surveys were then e-mailed to an additional convenience sample of health care specialists outside of Arizona in order to obtain a broader perspective on health care provider’s opinions and experiences working with hard of hearing patients. Surveys included the same open-ended questions asked during the interviews but were not subject to follow up questions. Question categories included: (1) method used by health care provider to identify possible hearing loss: 4 questions, (2) communication strategies: 4 questions, (3) communication breakdowns: 4 questions, (4) time spent with patient: 2 questions, (5) emotions about working with the hearing impaired: 3 questions, and (6) quality of care: 1 question. See **Appendix A** for full survey. The scaled responses were analyzed using descriptive statistics and open-ended questions were evaluated question-by-question.
TABLE 2: Demographics of Participants

<table>
<thead>
<tr>
<th>State</th>
<th>Specialty</th>
<th>Years in Practice</th>
<th>Interview or survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>Cardiology</td>
<td>26</td>
<td>Interview</td>
</tr>
<tr>
<td>Arizona</td>
<td>Dentistry</td>
<td>15</td>
<td>Interview</td>
</tr>
<tr>
<td>Arizona</td>
<td>Nursing (Home Health Care)</td>
<td>3</td>
<td>Interview</td>
</tr>
<tr>
<td>Arizona</td>
<td>Optometry</td>
<td>5</td>
<td>Interview</td>
</tr>
<tr>
<td>Arizona</td>
<td>Podiatry</td>
<td>11</td>
<td>Interview</td>
</tr>
<tr>
<td>Arizona</td>
<td>Psychology</td>
<td>2</td>
<td>Interview</td>
</tr>
<tr>
<td>Arizona</td>
<td>Radiology</td>
<td>4</td>
<td>Interview</td>
</tr>
<tr>
<td>Arizona</td>
<td>Radiology</td>
<td>7</td>
<td>Interview</td>
</tr>
<tr>
<td>California</td>
<td>Nursing (ICU)</td>
<td>22</td>
<td>Survey</td>
</tr>
<tr>
<td>Idaho</td>
<td>Pharmacology</td>
<td>9</td>
<td>Survey</td>
</tr>
<tr>
<td>Mississippi</td>
<td>Dentistry</td>
<td>6</td>
<td>Survey</td>
</tr>
<tr>
<td>Mississippi</td>
<td>Nursing (Nursing Home)</td>
<td>28</td>
<td>Interview</td>
</tr>
<tr>
<td>Montana</td>
<td>Orthopedics</td>
<td>12</td>
<td>Survey</td>
</tr>
<tr>
<td>Montana</td>
<td>Podiatry</td>
<td>18</td>
<td>Survey</td>
</tr>
</tbody>
</table>

Exploratory Results

Health care providers described observing common communication behaviors of patients with hearing loss commonly asking for repetition, leaning forward, misunderstanding what was said or failing to respond appropriately to questions.

Although medical providers admitted to suspecting their patients were hard of hearing, all participants denied asking a patient directly if they had difficulties hearing or referring a patient for a hearing screening. Approximately 42% of respondents reported that the patient alerted the physician of their hearing difficulties.

Experiencing communication breakdowns with patients with hearing loss and trying to resolve it by speaking louder was reported by 13 of the 14 participants. An
inappropriate communication strategy of yelling at the patient was reported by one health care provider. Over half (57.1%) of providers indicated that working with a hard of hearing patient did not increase the amount of time spent treating the patient. Follow up questions revealed that when appointment time was not perceived to be affected, it was not necessarily an indicator of effective communication but rather a rush to end the appointment on time.

Health care providers were asked questions about their feelings when working with patients with hearing loss. Two respondents indicated that working with a patient with hearing loss caused negative feelings toward the patient and their job. One provider stated,

“It does add a level of stress to my day. As a nurse I may have 4 other patients with some complicated care and it elicits a sense of guilt when you don’t have the time you need to meet all your patient’s needs and then a hearing impaired person may be missing out or being neglected because of their inability to make their needs known to me.”

When responding to questions concerning the effects of hearing loss on quality of care, 4 providers indicated a negative impact on health care due to a patient’s hearing loss. One of the providers responded with an extreme example of the consequences of miscommunication on a patient’s health outcomes:

“I have worked with patients who did not understand my instructions and were doing a treatment wrong because they were embarrassed to ask me to repeat what I said. This resulted in patients who put a dressing on improperly (maybe too tight) which caused tissue death and amputation of a digit.”

Table 2 presents additional data collected via personal interview or survey. The majority of providers reported a lack of communication between patients and providers about hearing loss and its effects. None of the providers in the exploratory study reported
having referred a patient for a hearing screening and a small proportion of providers reported seeing information about hearing loss in the medical record. Providers observed a number of behaviors believed to correspond to signs of hearing loss or miscommunication. Only a limited number of providers in this sample reported using written communication with patients.

Communication Strategies Guide Development

In response to the findings of the exploratory study, it was determined by the audiology student and committee to develop a communication strategies guide for health care providers. In the process of developing the communication strategies guide, information from relevant research and literature was reviewed. One goal in the development process was to create an easy to remember acronym that would assist the medical provider in remembering communication strategies.

The guide was created as a one page chart, (see Appendix B) to be used as a poster in health care facilities or as a quick references. The acronym of A.C.E. Communication Strategies was chosen. A.C.E. stands for (A) attention, (C) communication and (E) environment. Several strategies, which were based on the research of Marrone and Harris (2012) and Barry and Stewart (2006), were chosen for each and used in the development of the video and interprofessional training materials.
Table 2: Results of interviews/survey

<table>
<thead>
<tr>
<th>Question Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hearing loss Identification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient told medical provider directly</td>
<td>6</td>
<td>42.8%</td>
</tr>
<tr>
<td>Hearing loss mentioned in medical record</td>
<td>3</td>
<td>21.4%</td>
</tr>
<tr>
<td>Asked patient directly</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Provider referred patient for hearing screening</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Observed behaviors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asked for repetition</td>
<td>13</td>
<td>92.8%</td>
</tr>
<tr>
<td>Saying “what”</td>
<td>11</td>
<td>78.5%</td>
</tr>
<tr>
<td>Not responding to questions</td>
<td>7</td>
<td>50.0%</td>
</tr>
<tr>
<td>Bringing someone to appointment</td>
<td>6</td>
<td>42.8%</td>
</tr>
<tr>
<td>Leaning forward</td>
<td>5</td>
<td>35.7%</td>
</tr>
<tr>
<td>Blank stare</td>
<td>2</td>
<td>14.2%</td>
</tr>
<tr>
<td>Mispronouncing words</td>
<td>1</td>
<td>0.07%</td>
</tr>
<tr>
<td><strong>Communication Breakdown</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provider experienced communication breakdown</td>
<td>13</td>
<td>92.8%</td>
</tr>
<tr>
<td><strong>Communication Strategies used by medical provider</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking louder</td>
<td>13</td>
<td>92.8%</td>
</tr>
<tr>
<td>Facing the patient</td>
<td>12</td>
<td>85.7%</td>
</tr>
<tr>
<td>Maintained eye contact</td>
<td>10</td>
<td>71.45%</td>
</tr>
<tr>
<td>Talked to family member at the appointment</td>
<td>6</td>
<td>42.8%</td>
</tr>
<tr>
<td>Used written information</td>
<td>2</td>
<td>14.2%</td>
</tr>
<tr>
<td>Yelled at patient</td>
<td>1</td>
<td>0.07%</td>
</tr>
<tr>
<td><strong>Time spent with patient</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No change in time with patient</td>
<td>8</td>
<td>57.1%</td>
</tr>
<tr>
<td>Provider spent more time than usual</td>
<td>5</td>
<td>35.7%</td>
</tr>
<tr>
<td>Provider spent less time than usual</td>
<td>1</td>
<td>07%</td>
</tr>
<tr>
<td><strong>Emotional Impact</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provider had no negative emotions toward patient</td>
<td>12</td>
<td>85.7%</td>
</tr>
<tr>
<td>Provider had negative emotions toward patient</td>
<td>2</td>
<td>13.2%</td>
</tr>
<tr>
<td><strong>Quality of Care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No change in quality of care</td>
<td>10</td>
<td>71.45%</td>
</tr>
<tr>
<td>Change in quality of care</td>
<td>4</td>
<td>28.5%</td>
</tr>
</tbody>
</table>
Video Series Development

Video development began with a review of the communication challenges described in the surveys or personal interviews. Several scenarios were chosen and matched with A.C.E. communication strategies that would improve the communication in that situation and used as the basis for script development. (See Appendix C for script outlines). The following communication strategies were targeted during the video clips:

1. Entering a room
2. Face the patient and speak slowly
3. Ask the patient concerning their hearing loss
4. Use of an assistive listening device (e.g. a pocket talker)
5. Creative communication such as tapping a patient when they are to inhale/exhale
6. Providing written results.

Meetings were held with a videographer/producer from the University of Arizona Biomedical Communications Department to plan the details of the script and to select a filming location. Filming took place on location at The University of Arizona Medical Center in an empty clinic room. Two volunteers, consisting of a certified physician assistant and his hearing impaired father, were provided with video scripts and one rehearsal session under the direction of an audiology graduate student, prior to shooting.

On the day of filming, multiple takes of each scenario were taken. The videographer and graduate student participated in directing the actors. During the filming of the clip that demonstrated the use of a pocket talker, the actor who played the patient made unscripted comments on how the use of the assistive listening device improved his ability to hear and wished all physicians would use one during their examinations. Initial
edits were made by the producer and provided to the graduate student for review. After final editing decisions were made in a collaborative effort, the producer edited and created (4) two minute video segments. Video clips are available by request for future use in training physicians or other care providers through the Department of Speech, Language, and Hearing Sciences.
CHAPTER 3: DEVELOPMENT AND IMPLEMENTATION OF
INTERPROFESSIONAL TRAINING

Overview

The interprofessional training module was developed and presented in collaboration with faculty in the Department of Speech, Language, and Hearing Sciences and The University of Arizona Center on Aging. The training utilized the already established St. Luke’s Interprofessional Education and Practice Program. The program is based on an academic-community partnership between the University of Arizona and St. Luke’s Home, a non-profit assisted living facility in Tucson, Arizona. There were 3 main goals for the interprofessional training on hearing and effective communication:

1. to educate future health care providers on specific hearing screenings methods they could employ in their specific medical specialty,

2. to instruct current and future providers on the use of appropriate communication strategies for communicating with a hearing impaired patient and

3. to promote interprofessional training as a means to increase collaboration between audiologists and the broader medical and health professional community in the care for older adults with hearing loss.

Setting

The St. Luke’s Interprofessional Education and Practice Program provides nursing, pharmacy, public health, medicine, and social work students opportunities to work with older persons in an assisted living setting. The program includes multiple interprofessional, competency-based learning activities. Informal health promotion seminars are presented by local health care professionals for the residents of St. Luke’s
Home. Local medical professionals provide monthly interprofessional training clinics, at St. Luke’s home, to educate future health care providers on various health issues that are important to the geriatric population. During the clinics, students received in-person training on a health topic and instructed in the use of a screening measure related to the particular subject. Immediately after training, student teams provide the screening measure for the residents (called Elders) of St. Luke’s Home, while being overseen by an interprofessional faculty. Results of the screenings and recommendations are reviewed by the invited health professional, discussed with the Elder, and given to St. Luke’s faculty. Follow up programs assist Elders in learning self-care skills and provide resources for further care and support.

**Framework: Kirshner & Curry’s Core Competencies**

Faculty and graduate students from the Department of Speech, Language, and Hearing Sciences at The University of Arizona were invited to plan and conduct an interprofessional training clinic on hearing loss. In developing the framework for the interprofessional training program, the following six core competencies for disability-related training, suggested by Kirshner and Curry (2009) were used as a guideline.

1. Framing disability within the context of human diversity across the lifespan and within social and cultural environments.
2. Skills training for assessment of disability and functional consequences of health conditions, considering implications for treatment and management.
3. Training in general principles concerning etiquette for interactions with persons with disabilities.
4. Learning about roles of other health care professionals forming integrated teams
to care for persons with disabilities.

5. Understanding legal requirements of the 1990 Americans with Disabilities Act for accommodating disabilities in health care settings, along with principles of universal design.

6. Competency in patient-centered care approaches, including understanding patients’ perceptions of quality of life. (Kirshner & Curry, 2009)

Participants

Trainee participants included 34 medical, nursing, pharmacy and public health students from the University of Arizona. The training was implemented by the Doctor of Audiology student, accompanied by faculty advisors (2 from audiology and 1 from Center on Aging), and St. Luke’s Home staff (2 administrators).

Training Components

The interprofessional training consisted of 8 parts: (1) pretest, (2) 30 minutes of didactic instruction, (3) hearing loss simulation, (4) assistive listening device (ALD) and otoscopic instruction and practice, (5) hearing screening tools, (6) communication strategies training, (7) hearing screening event and (8) post-test and debriefing. (See Appendix D for training day agenda and Appendix E for training day learning objectives and Appendix F for student instructions and checklist)

(1) Interprofessional Pre-test. Core competencies for disability training number two recommends skills training for assessment of disability. In order to assess the skill and comfort levels when communicating with a patient with hearing loss, training began with an optional pretest. Of the 34 student trainees, 11 participants chose to complete the
pre-test survey. Questions were presented in a written survey format. Questions consisted of: (1) yes/no questions concerning previous training on hearing loss, (2) open-ended questions: reason for participating in training session and observed communication behaviors of hard of hearing patients, two questions using a five point Likert scale format were asked concerning familiarity in hearing screening methods, and confidence level of communicating with a hard of hearing patient. All questions were answered by each of the 11 respondents. This information was gathered in order to understand the knowledge and opinions on hearing loss prior to participation in the educational training program. (See Appendix K for pre-assessment).

(8) Interprofessional Post-test and De-briefing. An assessment of student confidence levels in their ability to use A.C.E. communication strategies and screen for hearing loss was administered after the interprofessional training session as an optional reflection activity. Students were asked to compare and rate their confidence levels on various skills both prior to training and after training. Confidence levels were measured using a five point Likert scale. Values were assigned as: not confident, slightly confident, confident, very confident and extremely confident. Three questions asked students to rate their confidence levels in the use of the following A.C.E. communication strategy: to get the patient’s attention, to communicate with the patient, to use appropriate environments for communication and to screen for hearing loss. Students were asked to list two strategies for each A.C.E. skill. For purposes of improving the training modules, two open-ended questions were asked concerning what students liked best about the class and how the training could be improved. (See Appendix K for post-training assessment).
(2) Didactic Instruction. Using Kirshner & Curry (2009) core competencies for disability training as a foundation, a 30 minute interactive instructional presentation was designed to meet conducted and focused on the following topics:

(1) Epidemiology of aging-related hearing loss (competencies 1-3)

(2) Prevalence of hearing loss (competencies 1-3)

(3) Impact of hearing loss on patient’s quality of life (competencies 1-3)

(4) Clinical examples of communication breakdowns (competencies 1 & 6)

(5) Responsibilities of healthcare providers under the ADA (competency 5)

(3) Hearing Loss Simulation. A hearing loss simulation was created using the Hearing Loss and Prosthesis Simulator (HeLPS v2) and played through a Fender portable sound system. The simulation consisted of a sound clip from one of the instructional video clips created for this project. The clip was a male voice providing verbal results of testing to a patient. The same clip was used with three different filters representing: normal hearing moderately-severe high frequency hearing loss in quiet and moderately-severe high frequency hearing loss in nose. Students shared their impressions of communication challenges created hearing loss. (competencies 1 & 6).

(4) Assistive Listening Device (ALD), Otoscopic Instruction and Practice.

Student participants were trained on the benefit and use of an assistive listening device such as the Williams Sound Pocket Talker (competencies 2, 3 & 4). Students were paired with a partner in order to familiarize themselves with the use of the device. Pocket talkers were available for use during the hearing screening event.
Students also received hands-on training on the performance of a basic otoscopic exam using a Welch Allyn otoscope. Training was provided by two audiology faculty members and one audiology graduate student (competencies 2-4).

(5) **Hearing Screenings Tools.** Student trainees asked Elders 11 case history question and recorded responses on the St. Luke’s intake form. (See Appendix G for complete intake form) Three hearing screening tools were used in the training (1) The 5-Minute Hearing Test (Koike, Hurst, & Wetmore, 1994) (Appendix H), which has a high correlation with pure-tone measures, (2) Self-Assessment of Communication (Schow & Nerbonne, 1982) (Appendix I), and validated measure recommended by the American Speech and Hearing Association (ASHA, 1996) for the screening of hearing in adults over the age of 65, and (3) Client Oriented Scale of Improvement (Dillon, James, & Ginis, 1997) (Appendix J), a validated measure with good test, retest reliability Students were provided with each measure in printed form and instructed on the procedure of administration, scoring and interpretation of each particular measure was provided. (Competencies 2, 4 & 6)

(6) **Communications Strategies Training.** A printed copy of A.C.E Communication Strategies was provided to each student participant. Instructions on appropriate use of the strategies was reviewed with the students and reinforced with a simple role-play demonstration. Student participants were directed to pay attention to the communication needs of their patient and to use appropriate A.C.E. strategies during the hearing screening event (Competencies 1-6).

(7) **Hearing Screening Event.** The hearing screening event was held for residents in the dining hall of St. Luke’s Home. Students were divided into teams consisting of 3-4
students from different health care specialties. Under the supervision of clinical faculty and audiology graduate students, medical participants alternated between administration of the 5-Minute Hearing Test and the Self-Assessment of Communication. These measures are similar in question composition and allowed the students to have exposure to different types of measures available for use. A “Client Oriented Scale of Improvement” was administered to all elders. This measure provided the students with insights into situations where the patient would like to improve their ability to hear. This information was also valuable for making recommendations and counseling the patient. Questions from the screening tools were asked orally, recorded and scored on the screening measure by the student participants. Pocket Talkers were available for use at each table. Student providers were instructed to use appropriate A.C.E. communication strategies throughout the screening. Screening results were then presented to attending faculty for review.

Elders, who failed the screening based on the questionnaire tools, were referred for an audiometric screening. Audiometric screenings were performed in an adjacent room to the screening site. Pure-tone thresholds were obtained at 500-8000 Hz using a portable audiometer. Testing was performed by a licensed audiologist and an audiology graduate student. All interprofessional student participants were expected to observe one audiometric testing. Testing was provided by an audiology faculty member and an audiology graduate student. Review of results, counseling and recommendations were performed by audiology graduate student and observed by the student participants.
Evaluation Results

**Interprofessional Pre-training Results.** Of the 34 trainees, 11 volunteered to complete the pre-training assessment. Prior to participation in the interprofessional module, 4 of the 11 participants reported having received previous training on hearing loss in their coursework. Reasons for self-selecting participation in the “Hearing Clinic for Elders” training day included enjoyment working with older adults and a desire to increase professional skills. All 11 respondents correctly identified at least one behavior commonly demonstrated by an individual having difficulty hearing and 1 or more methods for screening hearing. Approximately 50% of responses indicated that communication between health care providers and patients with hearing loss was difficult. Fifty percent of participants felt slightly confident in their ability to communicate effectively.

**Interprofessional Post-training Results.** The 11 student participants, who completed the pre-training assessment, also completed a post-training evaluation. The students’ level of confidence in their ability to use A.C.E. communication strategies and screen for hearing loss were measured using a five point Likert scale. Values were assigned as: not confident, slightly confident, confident, very confident and extremely confident. The mean scale score for confidence levels in the use of communications strategies and screening for hearing loss was significantly higher after training, (mean = 2.09, S.D. = 0.63), compared with scores prior to training (mean = 4.34, S.D. = 0.64). At post-training, all participant respondents were able to correctly identify communication challenges for a hard of hearing patient and at least two A.C.E.
communication strategies in each category of attention, communication and environment.

(See Tables 3-4 for pre- and post-training results.

When asked what the trainee participants enjoyed most about the training, 63% indicated working with the residents of St. Luke’s Home, 18% indicated working on an interprofessional team, 18% reported the skills training and 1% reported ear wax removal (which was not part of the training session).

Table 3. Pre- and Post-training scores (n = 11) on the knowledge of communication strategies areas and hearing screening.

<table>
<thead>
<tr>
<th>Training Content area</th>
<th>Mean Pre-training (S.D.)</th>
<th>Mean Post-training (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>1.91 (0.54)</td>
<td>4.27(0.65)**</td>
</tr>
<tr>
<td>Communication</td>
<td>2.18 (0.60)</td>
<td>4.36 (0.67)**</td>
</tr>
<tr>
<td>Environment</td>
<td>2.36 (0.67)</td>
<td>4.55 (0.52)**</td>
</tr>
<tr>
<td>Screening</td>
<td>1.91 (0.70)</td>
<td>4.18 (0.75)**</td>
</tr>
</tbody>
</table>

** indicates paired samples t-test significant at <0.001 level

Hearing Screening Results

Based on administration of the 5-Minute Hearing Test, Self-Assessment of Communication and the Client Oriented Scale of Improvement, 18 elders (100%) tested positive for a hearing loss. A referral for a comprehensive diagnostic audiological evaluation was made for 16 elders (89%) following that onsite pure-tone screening.
Table 4: Confidence levels in using communication strategies and screening for hearing loss pre-training and post-training.

<table>
<thead>
<tr>
<th>Pre Training Confidence Level: A.C.E. strategies:</th>
<th>Not Confident</th>
<th>Slightly Confident</th>
<th>Confident</th>
<th>Very Confident</th>
<th>Extremely Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention strategies</td>
<td>0%</td>
<td>64%</td>
<td>18%</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td>Communication strategies</td>
<td>0%</td>
<td>46%</td>
<td>27%</td>
<td>27%</td>
<td>0%</td>
</tr>
<tr>
<td>Environment strategies</td>
<td>0%</td>
<td>46%</td>
<td>36%</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td>Screen for hearing loss</td>
<td>10%</td>
<td>45%</td>
<td>45%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Post Training Confidence Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention strategies</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
<td>64%</td>
<td>26%</td>
</tr>
<tr>
<td>Communication strategies</td>
<td>0%</td>
<td>0%</td>
<td>27%</td>
<td>46%</td>
<td>27%</td>
</tr>
<tr>
<td>Environment strategies</td>
<td>0%</td>
<td>0%</td>
<td>18%</td>
<td>55%</td>
<td>27%</td>
</tr>
<tr>
<td>Screen for hearing loss</td>
<td>0%</td>
<td>0%</td>
<td>18%</td>
<td>64%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Follow-up Program

Results and recommendations for a comprehensive audiometric evaluation were provided to the director of St. Luke’s Home and sent to the elders' primary care providers by the Center on Aging faculty. A three part Living Well with Hearing Loss program (Marrone & Harris, 2012), which provided communication training, group support, and
key resources for the elders, was taught on location by graduate students from the University of Arizona Audiology Department.

**Discussion**

The first two goals of the interprofessional training were to (1) educate future health care providers on specific hearing screenings methods that they could employ in their specific medical specialty including hands-on training in otoscopy, and (2) instruct providers on the use of appropriate communication strategies for communicating with a patient with hearing loss. Outcome measures indicated confidence levels and changes in knowledge of strategies and screening methods increased after training.

Although not indicated in the results sections, verbal feedback on this training model was very positive. Student trainees made statements that having the opportunity to interact with the Elders and participate in the screening provided valuable experiences that would influence their future health care careers. Student participants stated that prior to training, they did not fully understand the impact of hearing loss and appreciated the hearing loss simulation.

The third goal of this project was to promote interprofessional training as a means to increase collaboration between audiologist and medical community in the care for older adults with hearing loss. Administrators from St. Luke’s Home indicated that they would like hearing screenings to be an annual event and the first of all the interprofessional training sessions. Elders expressed gratitude for the hearing test and referrals. All participants reported positive feedback on their experience with this project.
Factors Contributing to the Success of the Program

A number of factors likely contributed to the success of this training approach. Part of the success of this program was demonstrating in a meaningful way to the students that the challenges of communicating with a patient with hearing loss is in a medical setting are very real and can lead to poor outcomes. This was accomplished by drawing upon real physician experiences that were shared on surveys and through the interviews. The use of the hearing loss simulator was also a key to helping the students have a greater understanding of the challenges related to hearing loss. Hands on training with otoscopes and real interactions with the Elders from St. Luke’s homes also lead to the success of this program because students were able to immediately use the skills they had been taught and see the success and benefit of using good communication strategies.

Advance preparation also contributed to a successful training day. Good communication between all collaborators was accomplished through face-to-face meetings, email messages, and phone calls. On the training day, all materials were prepared in advance and placed into individuals’ folders. This allowed the students to stay organized and easily transport material from the training location to the meeting space with the elders in St. Luke’s Home.

Interprofessional Education and Practice

The Interprofessional Education Collaborative Expert Panel (2011) stated, “The goal of interprofessional learning is to prepare all health professions students for deliberatively working together with the common goal of building a safer and better patient-centered and community/population oriented U.S. health care system.” They developed four core competencies for interprofessional education which are: 1) values
and ethics for interprofessional practice, 2) roles and responsibilities of other disciplines, 3) interprofessional communication, and 4) teams and teamwork. Although this model of interprofessional education was not developed using these core competencies, the design and training met all four goals. Many of the sub competencies of core value 1 focus on respecting the needs of the patient and providing professional service. This training sought to provide student trainees with deeper understanding into the challenges that patients with hearing loss face in a medical session. It also provided a set of communication strategies that could be used throughout their careers, enabling them to provide a higher level of care. Interaction between audiology professionals and the group of student providers from different disciplines provided an opportunity to understand the role of audiologist in patient centered care and how other professional can identify possible hearing loss in their patients. Recognizing the value and role that each professional provides when working with patients with hearing loss can possibly lead to referrals for hearing loss and improved communication with the patient. Competencies 3 and 4 describe the need for communication and teamwork. This training allowed for teamwork between audiology professionals and other medical disciplines, it also allowed for teamwork between the different disciplines themselves. This training fostered not only good communication skills with patients with hearing loss, but also amongst screening teams and audiology professional.

Project Limitations

One of the greatest challenges in the project was the limited size of participants from the initial health professional survey to the final post-training survey. Although results from the post-assessment indicated a significant change in confidence levels post-
training, it may not represent true result distribution. One possible reason for poor response of pre- and post-assessments may have been related to the time constraints of the seminar. A second limitation of the evaluation process is that outcomes were only assessed immediately after the training. On this timescale, it was not possible to ascertain and verify whether the trainees retained and applied their learning. Future evaluation efforts could utilize a longitudinal post-assessment design to determine whether future application of communication skills and utilization of hearing screening methods are achieved by trained professionals in their careers. Further, in order to promote continued implementation of the skills introduced in this project, follow-up training or memory aids may be needed.

**Future Opportunities**

Based on the positive outcomes of this interprofessional training effort, it is likely that hearing loss and communication strategies training could easily be incorporated into interprofessional training programs similar to The St. Luke’s Interprofessional Education and Practice. An area of growth for this project would be in the development of a simple training program that could be incorporated as part of new employee training, in-service meetings or as continuing education for health care providers. The videos created for this project are intended for practical situations that would aid professionals seeking methods to overcome the challenges of communicating with patients with hearing loss. The use of training videos and incorporation of hearing loss education into all health communication training curricula is important, and would assist professionals working with patients who are hard of hearing.
APPENDIX A: Hearing Loss and Medical Community Survey

Gender:
Years in profession:
Type of provider (MD, Nurse):
Specialty (internal medicine):

Patient Identification
● Have you had a patient tell you directly that they have difficulties hearing?
● Have you seen any mention of hearing loss in a patient’s medical record (audiogram?)
● Do you know how to interpret an audiogram?
● What types of behavior do you observe that makes you suspect a patient may have a hearing loss?

Communication Strategies
● How do you communicate with your patients?
  ○ For example: where is the patient in the room and where are you in the room when you are talking?
● What strategies, if any, do you use if you find you are having challenges communicating with your patient due to their hearing?
● Can you share an experience when communication went well and you were able to overcome a difficult situation?

Communication Breakdowns
● What types of challenges do you have when communicating with a patient you suspect has a hearing loss?
● Can you share specific experiences?
● What strategies improved your communication with a patient who was having a difficult time hearing?
● What methods didn’t help?

Time
● In general, do you spend more, less or the same amounts of time providing care for a patient with a hearing loss as you do for a patient without a hearing loss?
● What specifically causes the change in time spent?

Emotions
● How do you feel about working with individuals with hearing loss?
● Does it affect the way you feel about your job or particular patients?
● In what way?

Quality of care
How does a patient’s hearing loss impact the quality of care you are able to provide?
APPENDIX B: A.C.E. Communication Strategies

(Based on Medical Providers Handout by Marrone & Alt, 2014 and Marrone, Durkin, & Harris, 2012)

<table>
<thead>
<tr>
<th>Attention</th>
<th>Communication</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always have the patient’s attention before entering a room, having a conversation or performing any type of procedure.</td>
<td>These are the core skills for good communication with a patient with hearing loss. It takes practice to make them a habit with your patients.</td>
<td>The communication environment can make the difference between success and failure. Do not overlook factors that can impede communication.</td>
</tr>
</tbody>
</table>
| 1. Entering an exam/patient’s room:  
  ● Flash the lights  
  ● Open door slowly.  
  ● State the patient’s name.  
  ● Make eye contact. | 1. Face the patient:  
  ● Talk before you type.  
  2. Speak at a slower rate, but naturally.  
  ● Don’t shout!  
  ● It can be uncomfortable for hearing aid users.  
  3. Inform the patient of the topic and topic changes.  
  4. Repeat, then rephrase.  
  5. Use a certified interpreter:  
  ● Speak to the patient, not the interpreter.  
  6. Use an assistive listening device  
  7. Write it down:  
  ● Computer, whiteboard or pen and paper | 1. Reduce all possible background noise  
  ● Turn off radios and TV when communicating.  
  2. Don’t converse in noisy areas.  
  3. Do not obstruct your mouth.  
  4. Use good lighting.  
  a. Avoid lighting coming from behind you such as a window  
  5. Converse within three feet of patient  
  ● Do not talk to the patient as you walk down the hall with the patient behind you.  
  ● Sit on the side of the patient with the “good” ear. |
## APPENDIX C: Video Scripts Outlines

<table>
<thead>
<tr>
<th>Video</th>
<th>Audio</th>
<th>Props</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shot of patient sitting in a chair in the exam room looking at a magazine. Make the shot where you can see the door to the exam room and the physician walking in. Dr. knocks loudly, opens door slowly and calls patient’s name. Doesn’t enter until patient looks up and makes eye contact.</td>
<td><strong>DR.</strong> Mr. Johnson? (while standing in doorway waits for patient to look up) I am Dr. Davis. Nice to see you. <strong>PATIENT:</strong> Yes <strong>Dr.</strong> (entering, shaking hands): I’m Dr. Davis. Nice to meet you. Patient: Hi, nice to see you. I haven’t been to the clinic in while.</td>
<td>Magazine Laptop Stethoscope Pocket talker Rolling chair</td>
</tr>
<tr>
<td>Dr. sits at desk with a computer. Patient is in a chair nearest the desk. Dr is on a rolling chair and is turned, facing Patient.</td>
<td><strong>DR.</strong> (Facing pt and speaking slowly) Well, that’s probably a good thing. I hope I can help you with what- ever is troubling you today. I know that you have a hearing loss. Do you use a hearing aid? <strong>PATIENT:</strong> No I don’t. <strong>DR.</strong> Okay, I want to be sure that you are hearing me alright. I will do my best to face you and speak slowly. Let me know if you need clarification. You indicated that you like having written material. I will be sure to give you written results of our exam okay? <strong>PATIENT:</strong> That would be great. <strong>DR.:</strong> Tell me what brought you in today? <strong>PATIENT:</strong> Well, I have been having problems with my foot. It’s really hurting… (SOUND</td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>Dialogue</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Shot of Dr. talking with patient. Dr. turns to computer and makes notes but is not talking during this time.</td>
<td><strong>DR:</strong> Okay, I think I understand what is bothering you. Please hop up on the exam table and let’s take a look.</td>
<td></td>
</tr>
<tr>
<td>Dr. turns back to patient</td>
<td><strong>DR:</strong> Okay, I think I understand what is bothering you. Please hop up on the exam table and let’s take a look.</td>
<td></td>
</tr>
<tr>
<td>Video fades off and then on with the patient on the exam table. Or, we show him getting up on the table… whatever you think</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Patient is on the examination table. Dr. is facing the patient giving instructions | **DR:** Mr. Johnson, I want to listen to your breathing. I will be behind you so you may not be able to hear my instructions. I will tap you once on the shoulder when I want you to breathe in and twice when I want you to breathe out. So once (TAPPING HIM ON THE SHOULDER) means?  
**PATIENT:** Breathe in  
**DR:** And twice (TAPPING)  
**PATIENT:** Breathe out. |
| Dr. then moves behind the patient and proceeds with the examination-tapping patient. Patient makes exaggerated breathing so audience can see. | **NARRATOR:** Remember, if a patient with a hearing loss can’t see you, they may not be able to hear or understand you. |
| Dr. moves back to the side/front of patient. | **DR:** Okay, your lungs sound good. Let’s have a look at that foot that is bothering you. I will need to ask you some questions while |
**PATIENT:** What type of device?

**DR:** This device is a personal amplifier called a Pocket Talker. It has headphones that you can wear. I will be wearing this microphone. While I am talking, the microphone will send my voice to the headphones and you will be able to hear me. Let’s try it.

**PATIENT:** It’s a little loud, can you turn it down?

**DR:** Is that better?

**PATIENT:** Yes, that is fine.

**DR:** (Examining/looking at foot asking questions like….)

Does it hurt when I move it in this direction… or How about now… How did you hurt your foot…how long ago?
APPENDIX D: St. Luke’s Interprofessional Hearing Training Day Agenda

7:15-7:30 Welcome
- Distribute Pre-test as students are coming in (Bring pens!!)
- Sign in get email address for 3 month post
- Introduction of Audiologist

7:30 Basics on Hearing Loss

1. Prevalence
- Hearing loss is a major public health concern in America and around the world.
- Approximately 30 million Americans have a significant hearing loss.
- Less than 25% of people that need hearing aids actually get them.
- If you work with geriatrics a large % of your patients will have difficulty hearing.
- So how does that affect you and your ability to interact and provide care?

2. Example of Mr. G:
- 94 year old patient with hearing aids came in with his wife.
- Wife uses huge white board. She has to write to him because even with his aids, he can’t hear well enough.
- When I asked her about the white board she looked at me and said, “it’s this or homicide~”
- Explain briefly what it is like communicating with the two of them.
- Think about this being your patient, in your particular field.

3. How would this affect your communication with this patient?
- Would you feel confident that he understood you and how would you know?
- What if his wife was not present?
- What could you do to improve the situation?

4. Effects of hearing loss and challenges within health care
- Difficulty on phone
- Challenges in office/pharmacy
- Misunderstanding directions, questions etc.
- Fear of missing their name being called
- Anxiety of doc/nurse entering room while changing
- Embarrassment
- Nodding or answering yes, even when they don’t hear what is said

5. Hearing Loss Simulation:
Most people understand that hearing loss means people need sounds to be turned up in order to hear them. But what you may not know is that people lose clarity as well. Clarity is something that hearing aids can’t really help. We can make sounds loud again, but they may still sound unclear and distorted.

- I can hear you but I can’t understand you.
- Briefly explain vowel/consonant issue

6. Screening methods
   A. Case History: Important for students to note:
      - Patient reporting that they have difficulty hearing
      - Tinnitus
      - History of ear infections especially recent
      - One ear seems worse than the other
      - Dizziness
   B. Whisper test/ finger rub
   C. Questionnaire:
      - HHIE-S
   D. When to refer

7. A.C.E.
   - A.C.E. skills (See handout)
   - Pocket talker demo

8. Collect pre-test
8:30-11:30: Perform screenings with Elders
   - 3-4 audiometers
   - 1-2 AuD students helping with counseling
   - 1-2 AuD overseeing speech students performing screening
   - 3-4 speech students for screening (or if none show… using med students)

11:30: Post training discussions
   - Post test
APPENDIX E: Learning Objectives for Interprofessional Training

1. Able to identify and demonstrate A.C.E. communication skills:
   A. Gaining the patient’s attention
      o Eye contact
      o Tap the patient
      o Flashlights
      o Watch for signs of misunderstandings
   B. Appropriate communication strategies
      o Facing the patient
      o Rephrase
      o Slower rate of speech
      o Identification of topic
   C. Identify appropriate communication environments
      o Well lit room
      o Low background noise
      o Unobstructed view of mouth

2. Identify three challenges to HL patients related to health care

3. Identify methods to improve communication during communication break downs:
   o Write it down
   o Pocket Talker
   o Translator

5. Ability to perform basic in office hearing screen (finger rub, whisper, HHIE-S)
APPENDIX F: Student Instructions and Checklist

**Elder Hearing Screenings:**
*Complete the following using A.C.E. Communication Strategies.*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Case History</td>
</tr>
</tbody>
</table>
| **2** | Choose one NOT both  
|   | o One 5 Minute Hearing Screening  
|   | o Self-Assessment of Communication (SAC) |
| **3** | Mark box Pass or Refer |
| **4** | COSI  
|   | o Ask Elders situations they where they would like to hear better  
|   | o Write numbers 1-4 in boxes in order of importance (1= best) |
| **5** | If Elder refers, direct them to the room for audiometric screening.  
|   | o Give Elder Flow Packet to take with them. |

**Student Responsibilities: Check box after completing/observing**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Assessment</td>
</tr>
<tr>
<td></td>
<td>Case History</td>
</tr>
<tr>
<td></td>
<td>5 Minute Hearing Screening</td>
</tr>
<tr>
<td></td>
<td>Self-Assessment of Communication (SAC)</td>
</tr>
<tr>
<td></td>
<td>COSI</td>
</tr>
<tr>
<td></td>
<td>Use A.C.E Communication Strategies while screening</td>
</tr>
<tr>
<td></td>
<td>Observe one hearing screening with audiometer</td>
</tr>
<tr>
<td></td>
<td>Reflection activity</td>
</tr>
<tr>
<td></td>
<td>Use a Personal Amplification Device with an Elder or partner</td>
</tr>
<tr>
<td></td>
<td>Post-Assessment</td>
</tr>
</tbody>
</table>
APPENDIX G: Intake Form for St. Luke’s Hearing Screening

AGE ______

1. Do you think you have hearing loss?

2. When did you first start noticing the problem?

3. Which ear is better?

4. Previous hearing tests?________ If yes, when and what was

5. Have you ever worn a hearing aid?
   a. Do you wear one now?

6. Has anyone else in your family ever had a hearing problem? Who?

7. Do you have any history of ear infections or ear drainage? __________ If yes, when was the most recent infection?

8. Do you ever have a ringing or buzzing in your ears over long periods of time? Yes___ No___
   Right____ Left____ Both____ Constant____ Occasional____

9. Do you ever feel dizzy?__________ If yes, describe the problem:

10. Have you ever been exposed to loud noises either occupationally or recreationally?_____________
    Describe:

11. Overall, how is your health? Excellent Good Fair Poor
    (Circle one)
## APPENDIX H: 5-Minute Hearing Test

Adapted from the American Academy of Audiology:

**Directions:** Ask the patient the following questions then calculate their score. To calculate the score, give 3 points for every “Almost always” answer, 2 points for every “Half the time” answer, 1 point for every “Occasionally” answer, and 0 for every “Never.”

*Please note: If hearing loss runs in their family, add an additional 3 points to your overall score.*

<table>
<thead>
<tr>
<th></th>
<th>Almost Always (3 pts.)</th>
<th>Half the Time (2 pts.)</th>
<th>Occasionally (1 pt.)</th>
<th>Never (0 pts.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have a problem hearing over the telephone</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I have trouble following the conversation when two or more people are talking at the same time</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>People complain that I turn the TV volume too high</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I have to strain to understand conversations</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I miss hearing some common sounds like the phone or the doorbell ring</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I have trouble hearing conversations in a noisy background, such as a party</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I get confused about where sounds come from</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I misunderstand some words in a sentence and need to ask people to repeat themselves.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I especially have trouble understanding the speech of women and children</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I have worked in noisy environments (such as assembly lines, construction sites, or near jet engines)</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Many people I talk to seem to mumble, or don’t speak clearly</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>People get annoyed because I misunderstand what they say</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I misunderstand what others are saying and make inappropriate responses.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I avoid social activities because I cannot</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
hear well and fear I'll make improper replies.

Ask a family member or friend to answer this question: Do you think this person has a hearing loss? 

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**SCORE:**

Family hx of hearing loss (+3) __________

**TOTAL SCORE:** __________

**Score Interpretation**

0-5 Patient's hearing is fine. No action is required.
6-9 Suggest the patient see a hearing specialist
10+ Strongly recommend the patient see a hearing specialist
APPENDIX I: Self-Assessment of Communication

University of Arizona Hearing Clinic
Self Assessment of Communication (SAC)

Name: ___________________________ Date: ___________________________

Instructions: The purpose of this form is to identify the problems a hearing loss may be causing your significant other. If the patient has a hearing aid, please fill out the form according to how you communicate when the hearing aids are NOT in use.

One of the five descriptions on the right should be assigned to each of the statements below. Select a number from 1 to 5 next to each statement (please do not answer with yes or no, and pick only one answer for each question.

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you experience communication difficulties in situations when speaking with one other person? (at home, at work, in a social situation, with a dentist, a store clerk, with a spouse, boss, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you experience communication difficulties while watching TV and in various types of entertainment? (movies, radio, plays, night clubs, musical instruments, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you experience communication difficulties in situations where you are in an unfavorable environment? (at a noisy party, where there is background music, when riding in a car or bus, when someone whispers or talks from across the room, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often do you experience communication difficulties in the situation where you most want to hear better?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel that any difficulty with hearing negatively affects or hampers your personal or social life?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel that any problem or difficulty with your hearing worries, annoys, or upsets you?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you or others seem to be concerned or annoyed that you have a hearing problem?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often does hearing loss negatively affect your enjoyment of life?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(10) If you are using a hearing aid. On an average day, how many hours did you use the hearing aids? Hours ___________/16 = ________%

Please rate what you feel is his/her overall satisfaction with the hearing aids. 1 not at all satisfied (0%) 2 slightly satisfied (25%) 3 moderately satisfied (50%) 4 mostly satisfied (75%) 5 very satisfied (100%)

FOR OFFICE USE ONLY
- Pre-Assessment
- Post-Assessment
- Not currently using Hearing Aid
- Current Hearing Aid User

FOR OFFICE USE ONLY

Score: (Q1-9) _______/(9) _______ - 1 ______x25 = ______%  
Score (Q1-5)/5 = ______ (Q6-8)/3 = _______ Q9 = _______ 
-1x25 = D = ______% H = ______% Q = ______%
APPENDIX J: Client Oriented Scale of Improvement

<table>
<thead>
<tr>
<th>Specific Needs</th>
<th>Indicate Order of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conversation with 1 or 2 in quiet</td>
<td></td>
</tr>
<tr>
<td>2. Conversation with 1 or 2 in noise</td>
<td></td>
</tr>
<tr>
<td>3. Conversation with group in noise</td>
<td></td>
</tr>
<tr>
<td>4. Conversation with group in noise</td>
<td></td>
</tr>
<tr>
<td>5. Television/Radio @ normal volume</td>
<td></td>
</tr>
<tr>
<td>6. Familiar speaker on phone</td>
<td></td>
</tr>
<tr>
<td>7. Unfamiliar speaker on phone</td>
<td></td>
</tr>
<tr>
<td>8. Hearing sounds from another room</td>
<td></td>
</tr>
<tr>
<td>9. Hear front door bell or knock</td>
<td></td>
</tr>
<tr>
<td>10. Hear traffic</td>
<td></td>
</tr>
<tr>
<td>11. Increased social contact</td>
<td></td>
</tr>
<tr>
<td>12. Feel embarrassed or stupid</td>
<td></td>
</tr>
<tr>
<td>13. Feeling left out</td>
<td></td>
</tr>
<tr>
<td>14. Feeling upset or angry</td>
<td></td>
</tr>
<tr>
<td>15. Church or meeting</td>
<td></td>
</tr>
<tr>
<td>16. Other</td>
<td></td>
</tr>
</tbody>
</table>

**Final Ability (with hearing aid):**
- 10%
- 25%
- 50%
- 75%
- 95%

**Degree of Change:**
- New
- Return

**NAL Client Oriented Scale of Improvement**

**Name:**

**Audiologist:**

**Date:**
- Need Established
- Outcome Assessed

**Categories:**
- 1. Conversation with 1 or 2 in quiet
- 2. Conversation with 1 or 2 in noise
- 3. Conversation with group in noise
- 4. Conversation with group in noise
- 5. Television/Radio @ normal volume
- 6. Familiar speaker on phone
- 7. Unfamiliar speaker on phone
- 8. Hearing sounds from another room
- 9. Hear front door bell or knock
- 10. Hear traffic
- 11. Increased social contact
- 12. Feel embarrassed or stupid
- 13. Feeling left out
- 14. Feeling upset or angry
- 15. Church or meeting
- 16. Other
APPENDIX K: Pre and Post Training Assessment

Pre/Post-Assessment

*If you do not know an answer, please write “Do Not Know”*

<table>
<thead>
<tr>
<th>A.C.E. Communication Ability</th>
<th>Confident Level</th>
<th>Before Training?</th>
<th>Confident Level</th>
<th>Now?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to use <strong>Attention</strong> strategies with a patient.</td>
<td>Not Confident</td>
<td>Very Confident</td>
<td>Not Confident</td>
<td>Very Confident</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

What are two A.C.E **Attention** strategies you can use with your hard of hearing patients?

1. 
2. 

<table>
<thead>
<tr>
<th>A.C.E. Communication Ability</th>
<th>Confident Level</th>
<th>Before Training?</th>
<th>Confident Level</th>
<th>Now?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to use <strong>Communication</strong> strategies with patient</td>
<td>Not Confident</td>
<td>Very Confident</td>
<td>Not Confident</td>
<td>Very Confident</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

What are two A.C.E **Communication** strategies you can use with your hard of hearing patients?

1. 
2. 

<table>
<thead>
<tr>
<th>A.C.E. Communication Ability</th>
<th>Confident Level</th>
<th>Before Training?</th>
<th>Confident Level</th>
<th>Now?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to use <strong>Environment</strong> strategies with a patient</td>
<td>Not Confident</td>
<td>Very Confident</td>
<td>Not Confident</td>
<td>Very Confident</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

What are two A.C.E Environment strategies you can use with your hard of hearing patients?

1. 
2. 

<table>
<thead>
<tr>
<th>Hearing Screening</th>
<th>Confident Level</th>
<th>Before Training?</th>
<th>Confident Level</th>
<th>Now?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to screen a patient for hearing loss.</td>
<td>Not Confident</td>
<td>Very Confident</td>
<td>Not Confident</td>
<td>Very Confident</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

What is a method you can use to screen a patient for hearing loss?

How difficult is it for **individuals with hearing loss** to communicate effectively in a health care setting?

<table>
<thead>
<tr>
<th>Not Difficult</th>
<th>Slightly Difficult</th>
<th>Difficult</th>
<th>Very Difficult</th>
<th>Extremely Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

What are two challenges hard of hearing patients may experience in a health care setting?

1. 
2. 

What did you like best about this training session?

How can we improve this type of training?
REFERENCES


Berry, J., Stewart, A.J. Communicating with the deaf during the health examination visit. The Journal for Nurse Practitioners. 2006;2(8):509-15


Lapane, K., Dube, C., Schneider, K. and Quilliam, B. (2007). Misperceptions of patients vs. providers regarding medication-related communication issues. *Journal of Managed Care*, 13, 613-618.


