Audiology PRACTICES

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ACADEMY of DOCTORS of AUDIOLOGY®

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Let's Create Audiology's Future

The profession of audiology has evolved in the last several decades. Change is inevitable with advancements in technology, the needs of the consumer and the demands of the profession. Our organization is always evaluating these concerns and looking to be at the forefront of the change. As the organization that represents the autonomous audiologist, leadership also needs to be autonomous.

As a president starts their year in the hot seat it is always a goal to create positive change and leave their name on something special our profession can look back on saying "that was a good year, and they were a good president." With one year as president, it is challenging to accomplish a major project that will leave that lasting effect on our profession. The reality is it is more likely to make a small change in the direction of a strategic plan set forth by previous boards. Following a strategic plan can give guidance while still being autonomous on how you achieve the goals of the plan.

For ADA to continue moving forward our board met in person and looked back on the history of audiology and the plans created as far back as the formation of the AuD. Our goal was to evaluate where the AuD is and what the vision of Dr. Goldstein and his colleagues had back when the vision was in its infancy. We took time walking through the history of what we have accomplished with the AuD, and it is clear we still have some work to do to fulfill their vision, but we are on the right path. We also looked at other professions that parallel with audiology and what they have accomplished and how they achieved their goals. We have identified that we parallel well with dentistry and optometry and even though we parallel well with these professions, they are what seems like light years ahead of where we want to be to fulfill the goals of our forefathers.

We have several action items that came from our meeting that we can continue to work on for years to come. Some of these action items will include the whole profession working together so we need to start with building stronger relationships with our colleagues at AAA and ASHA as well as our neighboring colleagues at IHS and AAO-HNS. The profession of audiology plays a pivotal role in hearing healthcare, and it needs to advance its priorities responsibly and effectively. This includes making change at the state level as well.

One giant step forward for our profession happened just this summer at the state level. We applaud our Maryland colleagues for pushing their scope of practice forward with HB 464/SB 795 allowing audiologists to order imaging and blood work to better serve our patients. This scope advancement can drive our education forward as to order these tests we will need to be prepared to interpret the results to the patient. We will need to work with our ENT colleagues to ensure the regulatory process of this bill requires audiologists be prepared to order without compromising care.

Every positive change for audiology will continue to create positive momentum. As more states push to expand our profession, more of our goals of the vision of the AuD will be fulfilled. The autonomous audiologist will continue to push the AuD forward and our patients will be better served. There is a quote by Abraham Lincoln that rings true when it comes to the future. "The best way to predict the future, is to create it." I'm proud of the things audiologists are creating for the future. ■

ADA
ACADEMY of DOCTORS
of AUDIOLOGY®

BECOME A MEMBER!

Welcome to the Academy of Doctors of Audiology (ADA), the only national membership association focused on ownership of the audiology profession through autonomous practice and practitioner excellence as its primary purposes. ADA is the premier network and resource for audiologists interested in private practice.

Is ADA right for you? The answer is yes if:

- You want to belong to a professional organization that provides valuable practice management resources you can use in your business, right now, today.
- You want to have access to expert reimbursement consulting advice.
- You want to help advance advocacy efforts that will ensure patient access to audiologic healthcare and professional parity for audiologists with other doctoring professionals.

Visit audiologist.org/membership to learn more!

What is the Secret of a Good Life as We Age?

You don't have to be a news junkie to know that age is at the forefront of many conversations these days. There is simply no way to escape it during this election year. For audiologists whose core client base is typically over 70, age, and all its manifestations, has always been top-of-mind, and for good reason: Many of us spend several hours per week identifying hearing loss and developing treatment strategies that help aging adults stay active and reconnected with others. Regardless of the individual circumstances, our primary role as clinical audiologists is to help people lead their best life as they age. Hence, any data that sheds light on the question, what is the secret of a good life as we age?, is immensely helpful.

The answer to this question has been on the mind of researchers for more than 80 years. I was fascinated to recently learn there are seven longitudinal studies, conducted all over the world on a range of diverse populations that help us answer this question. All seven of these studies are summarized below; surprisingly, all find the same general conclusion. First, let's review these seven studies.

Study 1 British Cohort Studies

- 5 large nationally representative groups, started in the 1960s

- 17,000 individuals per group

- Followed from birth throughout their lives collecting information on education and employment, family and parenting, physical and mental health, and social attitudes, as well as applying cognitive tests at various ages

Study 2 Cal Berkeley Mills Longitudinal Study

- A 50-year investigation of adult development that has followed a group of women since they graduated from Mills College

- Currently engaged in their sixth follow-up assessment with the women, who are now in their early 70s

- Study is evaluating aging process on personality types, personality change and development, work and retirement, relationships, health, social and political attitudes, emotional expression and regulation, and wisdom

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choose from a range of payment options so they can select a solution that works for them

connect with family and friends and have the best hearing experience

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You are the AuDvocate Audiology Needs!

The need for robust advocacy for the audiology profession has never been more crucial. At both the state and federal levels, audiologists face unique challenges and opportunities that demand our attention and action. Your voice is essential in advancing the profession, ensuring that audiology's scope of practice reflects contemporary evidence-based practices, and advocating for critical legislative measures such as the Medicare Audiology Access Improvement Act.

Modernizing Scope of Practice

The scope of practice for audiologists must be dynamic. State audiology practice statutes should be responsive to evidence, evolving patient needs, and to address even unforeseen circumstances. For instance, audiologists in states with laws that allowed for tele-audiology during the COVID-19 pandemic were better able to assist patients than audiologists in states that did not. Advocating for coverage of tele-audiology services is equally important to ensure that patients have practical access to hearing and balance healthcare, regardless of geographic barriers.

Modernizing state audiology statutes to reflect audiologists' role in evaluating, managing, diagnosing, and treating auditory and vestibular conditions is imperative. As we adopt more comprehensive approaches to audiological care, our advocacy efforts must highlight the importance of these services in improving patient outcomes and quality of life. The vast majority of state statutes do not clearly define the practice of audiology in a manner that is consistent with the training and qualifications of audiologists as clinical doctoring professionals.

Many state statutes have yet to be updated to incorporate implementation of the Over-the-Counter Hearing Aid Act to address the role of audiologists as ordering or prescribing providers. This important update is necessary to assure continued efficient access to audiologists for consumers and prevent disruptions in coverage or claims denials due to ambiguity in statutes governing audiologists' scope of practice.

The Medicare Audiology Access Improvement Act

One of the most significant legislative priorities for audiologists and their patients is the Medicare Audiology Access Improvement Act. Medicare's outdated policies create unnecessary barriers for traditional Medicare beneficiaries. The Medicare Audiology Access Improvement Act addresses these issues through the following provisions:

AI-Driven Solutions

Revolutionizing the Way We Deliver Hearing Healthcare[1]

Donald W. Nielsen, PhD

Get ready to discover the astonishing reinvention of hearing healthcare. Generative artificial intelligence (GenAI) is the leading platform for revolutionizing healthcare and addressing numerous challenges. It is restructuring and modernizing the provision of healthcare.

GenAI-enabled hearing healthcare delivery will transform and enhance hearing healthcare (HHC) provision by utilizing AI to assign providers most efficiently and effectively and even create more providers. Importantly, it promises to significantly improve access and affordability, a key concern in the healthcare industry, fostering a sense of hope and optimism for the future of HHC.

HEARING HEALTH CARE'S PATIENT POPULATIONS

To truly grasp GenAI's transformative power in providing HHC, we must first acknowledge the diversity of our patient base and their unique needs. This patient diversity, coupled with the assortment of needs, is not a challenge but a driving force behind the redefinition of HHC providers and the transformation of their roles. Here is where we stand today.

Hearing Loss	Treatment & Patient Parameters	Patient Population Distribution
Profound Hearing Loss	Mostly elderly patients / Complex, sophisticated treatment / High device customization / High treatment costs	1.9M
Moderate to Severe Hearing Loss	Mostly later middle-aged patients / Wide range of treatment sophistication / Wide range of device customization / Wide range of treatment costs	7.6M
Mild to Moderate Hearing Loss	Mostly middle-aged Patients / Simple treatment devices / No customization / Low treatment costs	28.5M
No Audiometric Hearing Loss, but Self-Perceived Hearing Loss	The patient and treatment variables are being researched. Mild amplification and improving hearing in noise may be a promising treatment for some	25.3M

Figure 1. The distribution of patients according to their degree of hearing loss and the costs and quality of their treatments. Adapted from Taylor and Nielsen 2019, with data from Nash 2013, Lin 2011, Wallhagen and Pettengill 2008, Humes, 2021, Edwards, 2020.

Figure 1 illustrates that 75% of patients with measurable hearing loss have mild or moderate losses, while only 5% have profound hearing loss. There are overwhelming differences in the healthcare needs of these patient groups.

Much hearing loss is chronic, and as time passes, it gets more severe, so treatments and providers must evolve to accommodate those changes. Grouped by the severity of hearing loss, the illustration clarifies the significant differences in costs, treatments, and expertise needed to serve each group.

The main point is that audiology is undergoing a significant change because we can now utilize GenAI to effectively serve different patient groups by aligning their specific requirements with appropriate care, resulting in lower expenses and improved accessibility.

THE PIVOTAL THEME:
MATCH THE PROVIDER TO THE PATIENT'S NEEDS

Figure 2 illustrates that we must split the diverse patient base in Figure 1 into those requiring medical model care (prescription providers) and those who will do well with nonmedical model care (nonprescription providers). This triaging matches the patient's needs to the appropriate provider and allows us to assign providers most efficiently and effectively while improving access and affordability. Let's take a closer look.
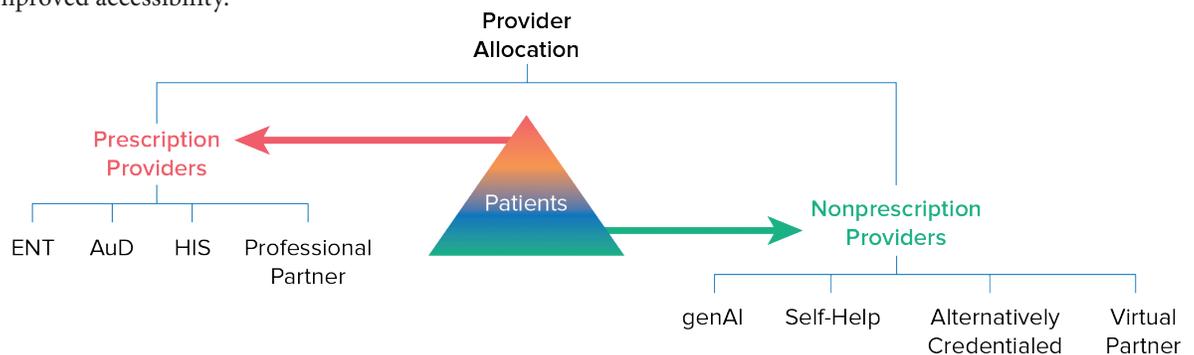
Figure 2. Patients in the upper portion of the triangle have complex prescription needs (See Figure 1) that are best met by providers using the medical model. Patients in the lower part of the triangle are best served by providers who do not use the medical model.

AI'S ROLE
IN FACILITATING THE
PATIENT/PROVIDER MATCH

Figure 1 shows HHC patients distributed according to their hearing loss. However, people don't know where they are in this population distribution or which providers they should see. They require guidance to match their needs with the right provider. AI's enormous contribution to HHC is its ability to facilitate that match and even create new providers.

AI'S ROLE IN MATCHING HHC PATIENTS AND PROVIDERS VIA PRIMARY CARE PROVIDERS (PCPS)

Why PCPs matter: PCPs play crucial roles in HHC. PCPs are often the patient's initial interaction point. They are responsible for identifying hearing loss in Medicare's annual wellness exam. HHC patients are twice as likely to seek treatments, ranging from OTCs and hearing aids to implant surgeries, if a PCP recommends them.

Patients Points of Entry for Senior Hearing Health Care

7,380
Hearing Aid Specialists

12,020
Doctors of Audiology

12,609
ENT's
1,324 Neurologists
6,557 General ENTs
4,728 Pediatrics and
Non-Otologic Specialties

441,735
Primary Care Physicians
By far the largest possible point of entry into hearing health care
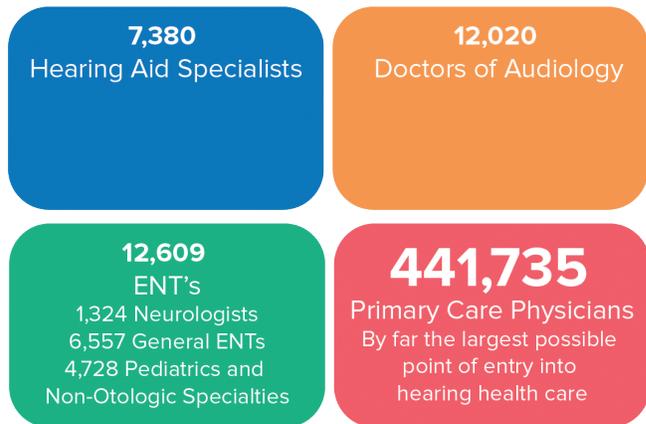
Figure 3. PCPs are the largest and most trusted entry point into senior HHC.

The problem: HHC has not been a top priority for PCPs. Only 12% of PCPs refer patients to hearing care, and many are confused or anxious about identifying the hearing health path their patients should follow. As a result, hearing issues can go undiagnosed and untreated or not seen by the optimum provider.

The assumptions on which we have traditionally based audiology, which dictate decisions about what to do, who does it, and what not to do, no longer fit our new AI-enabled reality.

The AI solution: We can embed HHC-based AI in primary care annual wellness intake forms to identify more people with hearing issues, diagnose them correctly, and guide them to the proper treatment device and provider.

An example: HCRpath, created by Sara Sable-Antry (www.hcrpath.com), provides an example of how AI embedded in a PCP's intake forms provides a solution that benefits patients, PCPs, audiologists, and ENTs. Here is how it works:

- HCRpath AI embedded in Medicare wellness exam intake forms identifies hearing loss and if the patient needs a medical exam to diagnose their hearing issues.

- HCRpath considers a broad range of hearing devices, from simple nonmedical amplification devices to sophisticated medical devices, and matches the patient to the appropriate device suggestions based on its analysis.

- HCRpath considers several providers and suggests the most appropriate providers that the PCP could recommend to the patient.

In addition, HCRpath has several additional advantages, including audiologists benefiting from more referrals for those patients genuinely concerned about hearing difficulties and ready to receive treatment. See www.hcrpath.com for more details.

This example demonstrates that AI embedded in the Medicare intake forms does not replace audiologists. Instead, AI, as the PCP's co-provider, makes informed decisions that guide only appropriate patients to their optimum providers, maximizing the providers' time and services. In the future, this approach can benefit significantly from including genomic information and other personal information in the patient's database and its integration into the intake form analysis.

To modernize the provision of HHC, a strong partnership between HHC providers and PCPs is necessary. AI can facilitate and strengthen that relationship. Audiology's involvement adds credibility and sophistication. We must work toward integrating AI-enabled HHC in the PCPs domain. Audiologists will gain from working with PCPs and their AI systems to be the clinicians or clinics the AI recommends.

Let's turn to AI's role in solving other HHC problems centered on matching the patient and provider.

AI'S MODIFICATION OF HHC DELIVERY

The recent blossoming of GenAI and the concurrent proliferation of nonprescription hearing treatments have reshaped how audiologists can serve the lower portion of the patient triangle who benefit from nonprescription providers. These emerging provider types include self-help and virtual partners, both of which benefit from GenAI empowerment.

A NEW GENERATION OF AI-ENABLED PROVIDERS ARE AUDIOLOGY EXTENDERS

Self-Help: Patients as Partners: A limitation to increasing patient information access and encouraging patients to investigate their problems is that we have thought of patients as passively waiting and then engaging a doctor when treatment is necessary. However, increasing offerings improved by GenAI let patients identify and triage medical issues and care for them independently, only bringing in a doctor when required. Meanwhile, medical devices customized for self-help are moving from the doctor's office to the home. Even cochlear implant recipients can self-test at home to monitor implant performance with smartphones or tablets (Wasmann et al., 2023).

Because of these changes and the mismatch of provider supply and demand, individuals are becoming long-term stewards of their hearing health. Viewing patients as medical self-health stewards makes them partners in the medical process. It acknowledges that there may be no other person or institution with a corresponding level of information, incentive, or influence as the individual. It does not undermine the role of the medical community and its institutions. It makes it more efficient (Hartenstein and Latkovic, 2022).

Virtual Providers: GenAI allows us to provide accessible, competent virtual providers instead of one-on-one in-person medical care when patients need constant or repetitive instructions. The AI that empowers virtual providers and self-help assistance is the same. We call it telepresence. Let's take a deeper dive into its operation and use.

AI ENHANCEMENT OF TELEPRESENCE

Telepresence —These technologies allow people to feel as if they are physically present with someone whom technology represents digitally. In prescription HHC, telepresence can be an essential part of digital therapeutics (DTx) to treat and manage diseases. DTx are patient-facing software applications that help patients treat, prevent, or manage a disease and have a proven clinical benefit. Given the widespread use of cell phones and computers, telepresence is rapidly evolving to strengthen health care and increase affordability and accessibility.

Previous virtual technologies, like Internet chat blogs, were not lifelike or personal—questioning and answering required laboriously written interactions with long delays, frustrating misspellings, and mistaken interpretations. Notably, the elderly find them challenging and unnatural.

Videos are an improvement over text-based chatbots; however, if you have assembled furniture while watching a YouTube video, you understand the limitations of the video instructional model. Self-help videos give limited instructions, lack interactions, and are often problematic.

AMIE is a chatbot created before GPT-4o to provide medical advice to patients. It was compared to human doctors to assess its ability to show empathy and engage in conversations. AIME performed better than doctors in 24 out of 26 aspects of conversation quality, offering patients an equal or higher level of empathy and support as human physicians (Haseltine, W., 2024).

Virtual providers using GenAI, like AIME, can learn, converse, and problem-solve like humans. Still, with the advent of GPT-4o, they can do better because GPT-4o is natively multimodal, which means it can "see," "hear," and "speak" in an integrated way with almost no delays. It can blend all of these modes together. It can see what you are doing, react to it, respond to interruptions, use realistic voice tones, and create images. Virtual providers can react like humans and influence patients as humans do (Mollick, E. 2024). GPT-4o is free. Experiment with it to discover its many attributes and imagine its use with 3D virtual providers. Virtual providers can exceed routine human communication by using captioning, clear speech, synced in—focus, and accurate lip movements. They have quickly evolved to be competent coworkers.

Contrary to popular belief, AI can express emotions by reacting to the feelings of others. GenAI-based systems can determine a patient's emotional state by analyzing speech patterns and other cues, such as facial expressions and physiological measures. These systems can help inform a virtual provider in real time if the patient is or is not engaged and what material is resonating. The virtual presenter could slow down, show more empathy, or make other changes. Patients will develop relationships with virtual providers as they do with friendly front office staff and human providers.

GenAI facilitates the development of new care delivery capabilities that fundamentally change how HHC teams spend their most valuable resource: time. Now, we can provide patients with needed information 24/7 from a virtual person who analyzes vast amounts of patient data, answers any verbal or written questions, and presents a pleasant, empathetic personality. As the virtual partner acquires more knowledge, it improves with use.

GENAI's INFLUENCE ON OTC DELIVERY AND ACCEPTANCE

By allowing patients to feel as if they are physically present with someone whom technology represents digitally, telepresence can transform over-the-counter (OTC) hearing aid adoption. The FDA promoted OTC hearing aids to provide high-quality hearing aids that people with mild to moderate hearing loss could buy online or at local pharmacies and big-box stores. However, acquiring hearing aids over the counter can still feel challenging. Not everyone with hearing loss is comfortable with online sales or do-it-yourself adjustments via apps. ASHA's OTC Hearing Aid Survey, 2023, found that only 24% of those patients who were at least somewhat confident an OTC device could assist them were satisfied they could choose the correct device. They need help.

AI-enabled platforms could be the key to adopting more excellent value-based care options. Consider how helpful interactive dialog with a quality virtual provider could be in informing patients about OTC devices. Patients could discuss if the devices are appropriate treatments for their hearing issues. If so, they can also get suggestions about which OTC device to purchase and how to unbox, fit, and maintain it. This system would introduce patients to HHC in a less expensive, more accessible, more prosperous, and more rewarding way than it currently does.

Perhaps the ultimate telepresence innovation is Google's Project Starline, which, without 3D glasses, provides the patient with a life-sized 3D image across the table from them: www.youtube.com/ watch?v=obuyCkotJ_s. No more flat, boring screens! The image is so lifelike that people try to reach out to each other to shake hands or fist bump. That 3D image could be a virtual representation of their personal physician or audiologist equipped with precision medicine knowledge, sensitive to the patient's emotions, and available 24/7 for consultation.

The more true-to-life experience of 3D and holographic medicine is already with us. The University of Central Florida, see: healthprofessions. ucf.edu/rehabilitation-innovation-center/#contact, uses holograms to train students and educate patients.

Virtual reality headsets are like having a computer strapped to your face. In time, these headsets will be inexpensive enough for healthcare systems and insurers to provide them so their patients can consult with a 3D virtual healthcare provider 24/7, creating a massive transformation in healthcare.

AI-powered virtual health care has the potential to be both convenient and cost-effective. Patients no longer need to schedule appointments, travel to a healthcare provider, or wait for an in-person, one-on-one meeting with their provider.

AI'S EFFECTS ON PRESCRIPTION HHC

In-Office AI-Enabled Audiology Extenders: While self-help and remote virtual providers will improve HHC access, in-office AI-enabled providers like AMTAS Pro will also be needed to accompany prescription care.

AMTAS Pro: This is made by GSI and provides an Automated Method for Testing Auditory Sensitivity. It is an in-office patient-directed hearing assessment tool that uses AI to obtain diagnostic or screening audiometry. Imagine the benefits of freeing up the time to perform complete diagnostic testing.

AMTAS Pro is self-paced, so patients may proceed at a rate that is comfortable for them. A complete diagnostic evaluation will typically take 15–20 minutes for the patient to complete independently, which provides more time for the audiologists to attend to other patients.

> Whoever dominates the interactive telepresence approach to OTCs will capture the mild hearing loss market and be the provider of choice for more weighty hearing issues as the patient's hearing deteriorates with age.

Audiology extenders are essential in freeing audiologists from routine testing tasks to reallocate their time to the most complex patients who can only succeed with audiologists participating in their HHC. In-office AI-enabled audiology extenders fulfill this role while reducing costs.

CONCLUSIONS

Believing that tomorrow will be similar to today is a deep-seated human bias, as it is typically true. However, not at this moment!

The fields of GenAI, genomics, precision medicine, and computer-driven big data analysis/systems are all flourishing and advancing simultaneously. These combinations of innovation and technology offer HHC private practice providers multiple new, better, and more competitive options for the future.

By directing the appropriate patients to new GenAI-equipped channels to diagnose and treat their nonprescription HHC needs, GenAI will streamline patient triage so only those needing qualified prescription-capable providers will see physicians and audiologists. This liberation of prescription providers will result in more patients with prescription needs being appropriately seen and treated, significantly improving HHC.

GenAI-driven precision medicine also increases the power and scope of prescription providers by allowing them to analyze enormous datasets, glean hitherto unavailable relevant information, and research that information to make patient-personalized diagnostic and treatment decisions. Because of GenAI, precision medicine can revolutionize the provision and delivery of prescription HHC. For an introduction to precision medicine, see Nielsen (2024). I explain it in more detail in an upcoming new Fuel Medical Group white paper, "Genomics and Precision Medicine: The Astonishing Reinvention of Hearing Healthcare."

To achieve growth and success, audiology must leave behind outdated practices from the 1900s and embrace new delivery methods that take advantage of rapidly evolving opportunities to effectively treat more patients, deliver improved care, and provide hope, optimism, and a viable strategy for the future.

> We have the power to improve audiology in the decades to come, and in ways we cannot even imagine now.

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Digital Marketing

IN AUDIOLOGY

Alexander Evertz

This article provides essential insights and guidance on digital marketing tailored for your audiology practice. It covers fundamental digital marketing concepts, from understanding various marketing channels and tracking performance to mastering customer relationship management. Drawing on years of experience from hear.com's digital hearing care model, we offer practical advice to start and improve your practice's digital marketing strategies.

Introduction

Today, people of all ages, from the young to the elderly, are actively engaging online. In 2023, according to Pew Research, 96% of individuals aged 50-64 and 88% of those 65 and older were active online within the United States, demonstrating a significant online presence among older generations. This trend underscores the importance of digital marketing for all businesses with an elderly target group, including your

audiology practice. Its role extends beyond merely attracting more patients to foster growth; it also plays a critical part in raising awareness. In an industry where many potential customers have yet to act, digital marketing addresses the crucial challenge of ensuring that individuals experiencing hearing loss are aware of and easily access the benefits of hearing aids.

Begin with your customer's state of mind

Understanding your customer's state of mind is pivotal to effective marketing. Today's consumers are not just looking for products; they are seeking solutions that seamlessly integrate into their lifestyles and address their specific concerns. In the context of audiology practice, this means recognizing the unique needs, emotions, and hesitations that potential hearing aid wearers might have.

Based on hear.com's experience in the hearing care market, the current population of potential hearing aid customers can be generally characterized as:

- **Connected:** 50% of individuals over 50 spend more than 15 hours online per week. This group is active on online shopping platforms and social media, even more so than millennials.

- **Affluent:** They possess the financial means and willingness to invest in quality products. This demographic is projected to remain the most affluent generation until at least 2030.

- **Busy:** They lead busy lives and have limited time for lengthy processes.

- **Younger:** They are younger than previous generations of hearing aid users, typically between 50 and 70 years old, indicating a shift in the customer base.

- **Demanding:** Your customers expect the highest quality in both service and product and are not hesitant to compare options and voice their opinions.

- **Active:** They are often still professionally engaged, travel frequently, and participate in a variety of hobbies and social activities.

Different online marketing channels reach different customer groups

Marketing that is customer-centric goes beyond traditional selling points; it requires a deep understanding of the customers' state-of-mind from being unaware of their hearing loss to the decision to seek assistance. The stage of awareness influences how potential customers can be engaged through various marketing strategies, divided broadly into "push", and "pull" tactics, as illustrated in Figure 1.

In push marketing, the strategy is proactive and targets potential customers who may not yet be actively seeking hearing aids. The objective here is to spark interest and create awareness about hearing solutions. By informing them about the latest advancements and benefits of hearing care, we aim to cultivate a desire for hearing aids before the need becomes apparent. Effective channels for push marketing include display, Google Display Network (GDN), acquisition e-mail and social media.

Conversely, pull marketing targets individuals who acknowledge their hearing loss and are actively seeking solutions. These customers are in the decision-making phase, ready to interact with content that will lead them to a purchase. Pull marketing ensures these potential customers find compelling reasons to choose our audiology practice over competitors. Key channels for pull marketing include search engine optimization (SEO), customer relationship management (CRM), search engine advertising (SEA) and direct marketing.

Figure 1: Overview of Customer Awareness and Respective Marketing Channels

| Unaware | Problem Aware | Solution Aware | Product Aware | Most Aware |

The customer is not actively looking for hearing aids yet.

Inform the customer about possibilities and new trends in hearing care and generate the desire of the customer to try hearing aids.

The customer is looking for hearing aids as a solution to the problem.

Ensure the customer understands that **you have the relevant solution** and that you are the best possible provider to buy from.

Push Marketing	**Pull Marketing**
Display GDN Acq Email	SEO CRM SEA
Social	Direct

Tackle the fears, prejudices, and misconceptions head-on

Stigma surrounding hearing aids consistently prevents people from addressing their hearing loss. Many hesitate or completely avoid seeking help due to deep-seated prejudices and stereotypes associated with hearing aids. Instead of ignoring these misconceptions, it's crucial to tackle them head-on. The objective is to transform these biases into positive messages that capture customer interest, sparking moments of realization and surprise. These positive messages are consistently reinforced at every stage of the customer's journey, from the initial advertisement through all subsequent appointments, ensuring a shift in perception.

Common Fears and Misconceptions

The most common prejudices against hearing aids arise from misconceptions about their appearance, functionality, and the associated stigma of hearing loss. These misconceptions largely stem from older models, which differ significantly from today's advanced devices. Below are some of the most prevalent misconceptions:
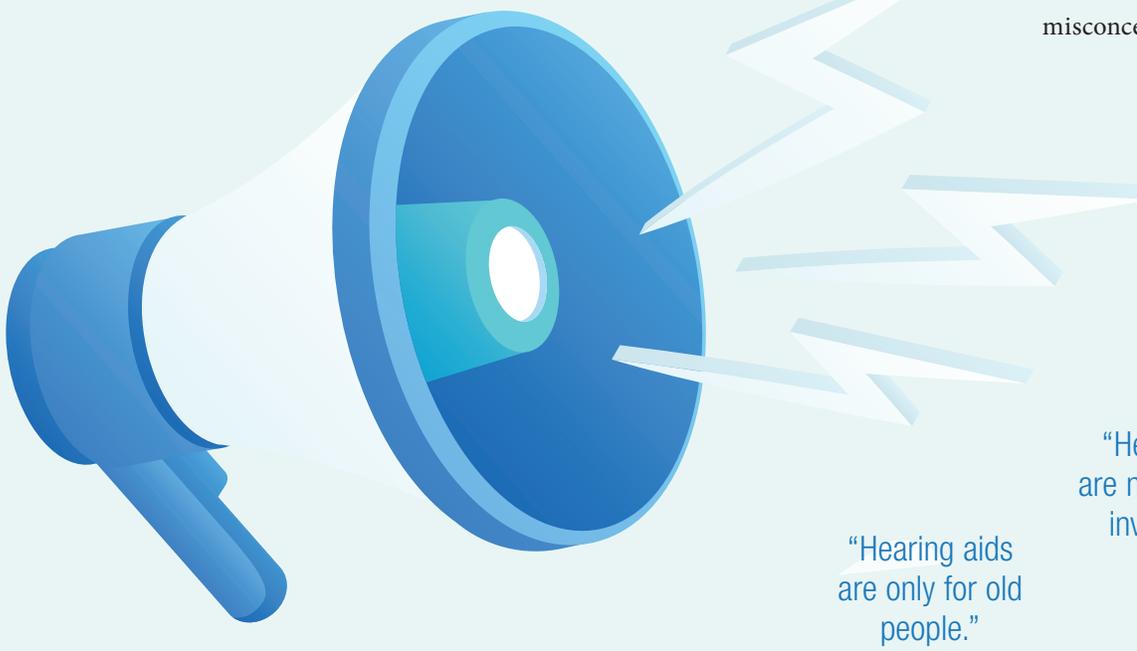
"Hearing aids are big and bulky."

"Hearing aids help only against severe hearing loss."

"Hearing aids are not worth the investment."

"Hearing aids are only for old people."

Reframing Misconceptions into Positive Marketing

Below are a few examples of how to counteract the common misconceptions with effective marketing campaigns and positive reinforcement during appointments.

To combat the idea that "hearing aids are big and bulky," marketing efforts should showcase sleek, invisible, in-the-ear models through compelling imagery. This helps to shift perceptions towards the discreet and advanced design of modern devices.

Addressing the belief that "hearing aids are only for old people," marketing should highlight younger users and showcase modern features like Bluetooth connectivity. This can make the devices more relatable to a broader demographic.

To challenge the notion that "hearing aids are not worth the investment," offering a free trial can be an effective way to demonstrate the immediate improvement in quality of life that these devices provide. In addition, it offers the customer the chance to experience the value of hearing care themselves.

Positive marketing is crucial, but it's equally important to reinforce these messages across all subsequent touchpoints. This includes not just appointments, but also emails, SMS messages, and printed materials provided to the customer during the initial weeks of trying out new hearing aids.

Be action-oriented and give high quality information

A landing page, like the one shown in Figure 2, is the designated entry point for a website, specifically designed to receive and convert traffic from marketing campaigns. Best practices recommend creating separate landing pages for different marketing channels or even specific campaigns. This strategic segmentation ensures that each landing page delivers messages tailored to resonate with the advertisement and channel from which the customer originated.

Furthermore, maintaining separate landing pages facilitates A/B testing—allowing marketers to experiment with various ad formats, headlines, and calls to action (CTAs). This structured separation helps marketers analyze which versions generate the most engagement and assess the success of individual campaigns.

A well-constructed landing page offers engaging, insightful content that not only informs but also motivates the visitor to take action, effectively transitioning them from casual browsers to potential customers.

1 **Headline:** The headline is the first element that visitors encounter, so it must immediately capture their attention and align seamlessly with the ad copy that brought them to the page. This synchronization ensures that there is no disconnect between the visitor's expectations and the page's content, providing a smooth transition.

2 **Call to Action:** The call to action should be distinctly clear and concise, ensuring that signing up feels like a logical step for the visitor. It must be prominently displayed on the page, utilizing strategic colors or placement to catch the eye immediately. Additionally, the process should involve minimal effort, presenting a low barrier to entry. For example, opting for a simple form fill-out rather than a phone call can significantly reduce hesitation.

3 **Image:** The chosen image must feature the hearing aid, illustrating the product that customers are considering. It should grab the visitor's attention and be strategically positioned to direct the viewer's gaze towards the CTA. This placement optimizes the visual flow, smoothly guiding visitors toward the desired action and reinforcing a direct link between the product's benefits and the call to action.

4 **Copy:** The copy of the landing page should be short yet informative, providing essential information about the product and clarifying the reasons for the visitor to take the next step. This text should explain what the product is, its key benefits, and how it can solve the visitor's particular needs or problems.

POSITIVE MARKETING IS CRUCIAL, BUT IT'S EQUALLY IMPORTANT TO REINFORCE THESE MESSAGES ACROSS ALL SUBSEQUENT TOUCHPOINTS, SUCH AS:
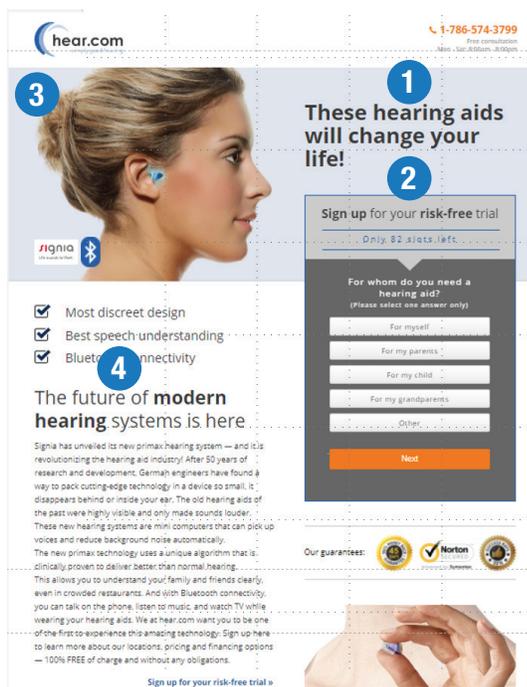
APPOINTMENTS • EMAILS • SMS • PRINT

Figure 2: Example of a Landing Page

Momentum is Key

In today's rapid information exchange (e.g., 30-second TikTok videos) and quick service environment (e.g., Amazon deliveries arriving at our doorstep within a day, sometimes hours), maintaining customer interest after their initial engagement is more important than ever. Once a customer has responded to your digital marketing efforts, timely follow-up actions are essential. This is comparable to managing a queue in a retail store; if the wait is too long, customers lose interest and may decide to take their business elsewhere.

It's important to recognize that even if a consumer understands why a hearing aid is beneficial, this doesn't necessarily mean they are ready to make a purchase. They may still harbor reservations, often operating under a 'not yet' mindset, constantly looking for reasons to delay action. Even in the late stages of the journey, they are still looking for ways out.

Momentum is particularly important for customers who come through online advertising. These individuals are often not as committed as those who might walk into your clinic in person. Reflecting on the customer awareness scale discussed previously, online customers typically fall into the earlier stages of awareness. They require more guidance and encouragement to move through the decision-making funnel compared to walk-in customers who have already taken more proactive steps towards purchasing.

Never underestimate the power of the phone

Following up quickly after a customer has shown interest is essential, as discussed in the previous chapter. While emails and SMS are efficient ways to reach out, they lack the personal touch that can make a significant difference in customer engagement. This is where the power of the phone comes into play.

A phone call adds a human element to the interaction, which can profoundly impact the customer's experience. It allows for a real-time, two-way dialogue that not only confirms details or schedules appointments but also delves deeper into the customer's needs and the reasons behind their interest.

This human touch point is crucial; it introduces a personal dimension that automated messages simply cannot replicate. The voice of a friendly, knowledgeable expert on the other end of the line can elevate initial curiosity to serious consideration. While not necessarily prompting an immediate purchase of hearing aids, this interaction can encourage a commitment to visit your clinic for further discussion.

Stay close, follow-up regularly and focus on solving the very hearing problem that made them reach out

Digital marketing does more than just attract new patients to your practice; it's a crucial tool for nurturing long-term relationships that boost customer satisfaction and promote business growth. It's essential to maintain ongoing communication with your customers, whether they've previously purchased hearing aids or disengaged during the process previously. Each interaction should be viewed as an opportunity to deepen the relationship.

In this context, it is vital to leverage technology to its fullest potential. Utilizing a CRMsystem can play a pivotal role here. Your CRM isn't just a tool for organizing customer information; it's a powerful marketing channel that helps personalize communication, track customer engagement, and anticipate needs based on past interactions.

A well-managed CRM system is arguably the most powerful marketing channel available. Over time, a robust CRM strategy can generate 40-50% of your business, making it not only the most impactful but also the most cost-effective channel. Given its significant potential for business growth and customer retention, your CRM system deserves special focus.

Measure everything, every step of the journey

Tracking and analyzing every facet of your online marketing efforts is critical to understanding the effectiveness of each dollar spent. By meticulously measuring various metrics, businesses can pinpoint which campaigns are successful and which should be discontinued.

To effectively manage your digital strategy, focus on several key performance indicators (KPIs), including quantitative metrics, conversion rates, and customer satisfaction. Quantitative metrics provide insights into the growth and scale of your online business, offering a comprehensive view of your overall progress. Conversion rates are essential for assessing the efficacy of your marketing tactics, pinpointing the stages at which potential customers may be dropping out, and identifying opportunities for optimization. Lastly, measuring customer satisfaction is critical for evaluating the quality of the experience you deliver, which is pivotal for customer retention and enhancing your brand's reputation.

BY METICULOUSLY MEASURING VARIOUS METRICS, BUSINESSES CAN PINPOINT WHICH CAMPAIGNS ARE SUCCESSFUL AND WHICH SHOULD BE DISCONTINUED.

Tracking Key Performance Indicators along the customer journey

The customer journey typically begins with ad views and website visits, metrics tracked using tools like Google Analytics. Ad views count the number of times your ads are displayed, offering insights into your campaign's reach. Tracking the number of unique website visitors helps assess how effectively these ads and your organic search efforts are attracting traffic.

As the journey progresses, linking generated leads, booked appointments, and sales directly to your marketing campaigns is crucial. This connection is key to understanding the effectiveness of different channels and campaigns. Although aggressive marketing might initially drive traffic, it can also lead to higher dropout rates later on. Therefore, it is important to track net sales, excluding any customers returning their hearing aids.

As you expand your marketing, it's crucial to monitor conversion rates at each stage of the customer journey. Tracking these rates helps pinpoint where potential customers are dropping out and highlights opportunities for improvement. For example, the click-through rate (CTR) measures the percentage of viewers who click on your ads, indicating how compelling your ads are. It's also important to track conversions from visitor to lead, lead to appointment, and appointment to sale. Low conversion rates at any stage of the customer journey may indicate that a specific touchpoint isn't optimized, doesn't fully meet customer expectations, or that earlier stages may not align perfectly. For example, if you advertise a hearing test but primarily promote hearing aids, this mismatch could confuse potential customers, leading to drop-offs. Therefore, it's crucial to ensure a coherent narrative links each touchpoint, smoothly guiding customers through the journey.

The financial efficiency of marketing campaigns is evaluated by tracking specific cost metrics such as cost per click (CPC), cost per lead (CPL), and cost per sale (CPS). The CPS metric is particularly relevant, as it indicates how much you need to invest in online marketing to generate one sale, thus providing a clear measure of your marketing activity's profitability.

Introducing the net promoter score

The Net Promoter Score (NPS) is a standardized metric used across various industries to measure customer satisfaction and loyalty. The NPS was created by Bain consultant, Fred Reichheld, more than 20 years ago, and it is used by hundreds of businesses today as a gauge of customer satisfaction and loyalty. The NPS is based on a single question: "On a scale of 0-10, how likely are you to recommend our company/product/service to a friend or colleague?" The simplicity of this question allows organizations to quickly gauge their customers' overall perception and satisfaction with the service they are receiving.

NPS categorizes respondents into three groups based on their ratings:

- **Promoters** (score 9-10): Loyal enthusiasts who will keep buying and refer others, fueling growth.

- **Passives** (score 7-8): Satisfied but unenthusiastic customers who are vulnerable to competitive offerings.

- **Detractors** (score 0-6): Unhappy customers who can damage the brand and impede growth through negative word-of-mouth.

To calculate the NPS, subtract the percentage of detractors from the percentage of promoters. The result is a score ranging from -100 (if every customer is a detractor) to 100 (if every customer is a promoter).

NPS = (% of Promoters) − (% of Detractors)

As a benchmark, the Marketrak 2022 survey indicates that the average Net Promoter Score (NPS) in the US hearing care market for hearing aid owners is 25. In online marketing, building trust is crucial to convincing potential customers to enter their personal details on your website. They often consult review platforms such as Google, Trustpilot, and the Better Business Bureau to gauge the credibility and reliability of a company. Therefore, maintaining high customer satisfaction is crucial. The NPS serves as an effective tool for tracking customer satisfaction, helping you identify how well your business meets customer expectations and where improvements can be made to enhance the overall customer experience.

Figure 3: Seven Core Lessons for Digital Hearing Care

1 Begin with the customer's state of mind

2 Tackle the fears, prejudices and misconceptions head on

3 Be action-oriented and give high-quality information

4 Momentum is key

5 Never, ever, under-estimate the power of the phone

6 Stay close, follow-up regularly and focus on solving the very hearing problem that made them reach out

7 Measure everything, every step of the journey

Conclusions

Although traditional forms of advertising such as print, television, and radio are still useful, digital marketing is now the norm for generating office traffic in an audiology practice. The various forms of digital marketing outlined here allow audiologists to communicate more consistently with prospective patients and to better understand their individual interests and needs. Consequently, audiology practices can add additional value by better understanding these individual needs.

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The Tools
You Need
to Run Your
Practice.

ADA's Practice Resource Library offers a comprehensive collection of off-the-shelf forms, documents, and guidance materials. These resources will assist audiologists and their staff with practice operations, compliance, and patient management.

- Adult Case History
- Business Associate Agreement
- Employee Manual
- Hearing Aid Bill of Sale/Purchase Agreement
- Hearing Aid Insurance Waiver
- Hearing Aid Loaner Agreement
- Hearing Aid Orientation Checklist
- Hearing Aid Upgrade Notice

- HIPAA Security Policy Template
- Insurance Verification Form
- Notice of Non-Coverage
- Office and Financial Policies
- Patient Registration Form
- Policies and Procedures Manual
- Price Quote Form

ADA members receive a discounted rate when purchasing any of the above forms. Visit audiologist.org/forms for details!

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of AUDIOLOGY®

HOW PROMOTIONAL FINANCING EDUCATION HELPS YOUR PATIENTS
Prioritize Their HEARING HEALTH
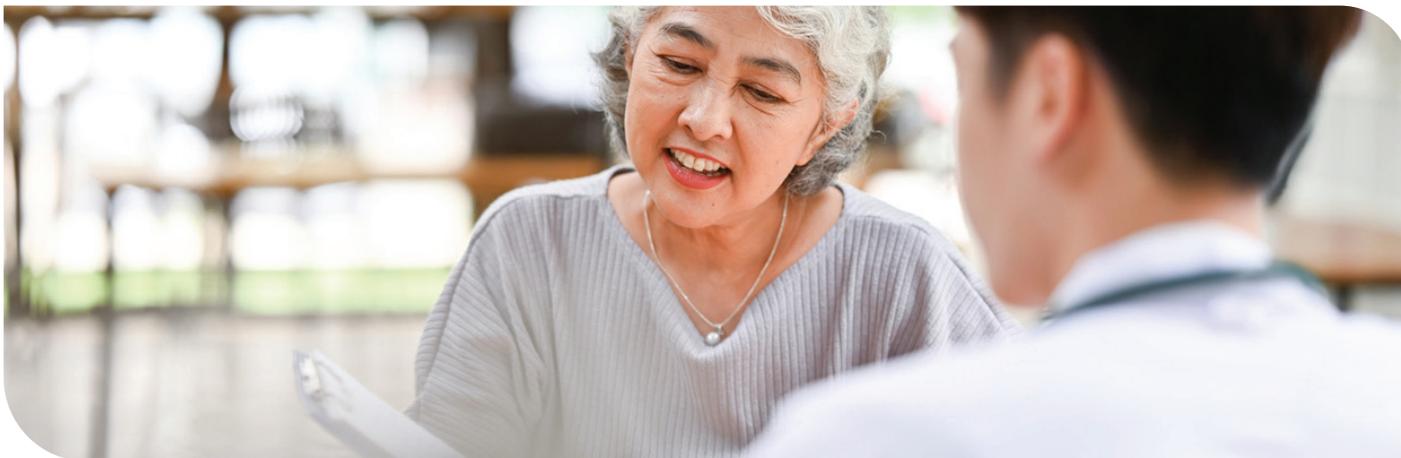
by CareCredit Staff

With today's high cost of living, it's no surprise that our health and wellness costs are being impacted too. For people seeking hearing care specifically, costs can have a significant influence on their hearing health decisions, preventing some from getting the care they want and need. Findings from Synchrony's Hearing Health & Loss Prevention study revealed that 70% of people consider their hearing a priority, yet less than 10% have visited an audiologist in the past year.[1]

Though, when it came to talking to a healthcare provider about their hearing health, the study shows only around half of respondents indicated the primary motivating factors for getting their hearing checked would be if they developed noticeable symptoms (56%), or if the hearing assessment were free (43%), indicating people are not focused on preventing hearing loss and cost may be a barrier to hearing care. Additionally, nearly 4 out of 5 (78%) hearing device users said their device was expensive.[2]

70%
OF PEOPLE CONSIDER THEIR HEARING A PRIORITY...

YET ONLY
10%
OF PEOPLE HAVE VISITED AN AUDIOLOGIST IN THE PAST YEAR

Keeping this in mind, audiologists and their teams must be prepared to educate patients with varying levels of financial knowledge about the cost of care, such as what's covered by their insurance and what they can be expected to pay out-of-pocket, which can support them in making informed choices about their hearing health. Further, it's essential for providers to have conversations and share resources with patients about the payment options available to help manage the cost of care.

If patients need help to manage the cost of care, providers can refer to and share readily available resources with them, such as CareCredit's WellU financial health articles, to equip them with insightful information about their options to help pay for out-of-pocket costs, such as:

- Financial assistance (when applicable)

- Health savings account (HSA)

- Flexible spending account (FSA)

- Promotional financing solutions, including deferred interest options

Deferred interest is a convenient option for people who want the flexibility to pay for their hearing care costs over time; however, providers must emphasize that deferred interest financing is not the same as an interest free loan. It is crucial to communicate to patients that:

- With this type of financing, patients will not pay any interest if they pay the promotional balance in full by the end of the agreed-to promotional period

- But interest will start growing from the date of purchase, so if they don't pay the balance in full by the end of the promotional period, all the accrued interest will be added to their balance

- Deferred-interest financing should not be described as an interest free loan, no-interest or zero-interest financing unless it is accompanied by clarifying language, including "if paid in full by the end of the specified promotional period"

To ensure they can manage their monthly payments and avoid excess payments, it's important for providers to help patients understand exactly how promotional financing works and direct them to resources to help them make an informed decision about the payment process. This includes:

Cost may be a barrier to hearing care. Nearly 4 out of 5 (78%) hearing device users said their device was expensive.

- Education on how much they'll be expected to pay towards their balance each month

- If the required minimum payment is adequate to pay their balance off in time

- When their promotional period ends

- If possible, audiologists and their teams should develop a plan with patients to try to pay off their balance prior to the end date

In the end, as long as patients understand their expected hearing care costs, keep up with payments and pay off the balance on time, promotional financing can be helpful to pay for care on any budget. ∎

Endnotes

[1] Synchrony. May 14, 2024. Hearing Health & Loss Prevention study. https://www.synchrony.com/contenthub/newsroom/new-synchrony-study-reveals-consumers.html

[2] See reference 1.

Fitting Low-Gain Hearing Aids on Adults with Normal Audiograms and Self-reported Hearing Difficulties:

Opportunity or Threat?

Brian Taylor, Au.D.

A Common Scenario

A middle-aged person has arrived at your clinic for a routine hearing assessment. During the case history he states that he has struggled with communicating in background noise for more than a decade.

Although he has no other symptoms or complaints that would warrant a referral to an otolaryngologist, he does vociferously complain that his communication ability is progressively worsening, and he is beginning to feel frustrated and annoyed during social and workplace situations when there is a lot of noise and reverberation. Your routine audiological assessment indicates no medical complications. In fact, the basic air conduction, pure tone audiogram, shown in Figure 1, is within the traditional range of normal hearing (<20 dB HL, pure tone average). Other tests, such as word recognition and immittance audiometry are completely within the normal range.
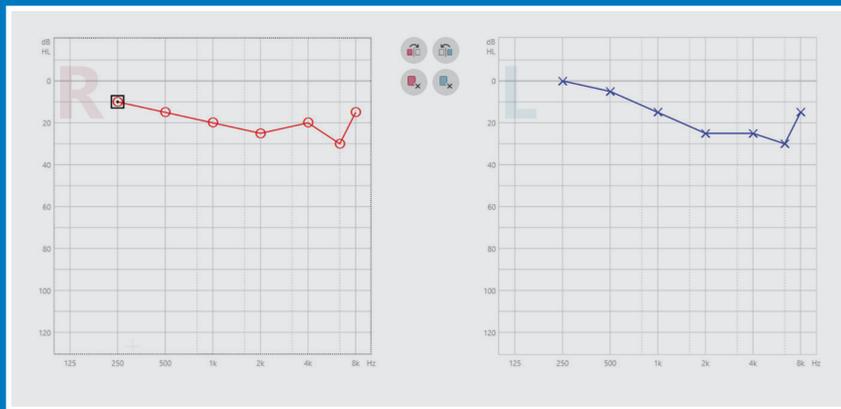
Figure 1. The basic pure tone audiogram of our middle-aged adult patient who presents with significant self-reported hearing difficulties.

Self-reported hearing difficulty accompanied by a normal audiogram is relatively common scenario. According to 209 audiologists surveyed:

45%

report seeing 1 to 3 individuals per month with normal or near-normal PTAs who report communication difficulties.

23%

report seeing more than 4 patients per month who report communication difficulties despite having normal or near-normal PTAs.

Hearing Thresholds Through the Lifespan

Figure 2 illustrates that typical decline in hearing thresholds associated with the normal aging process. Note that hearing thresholds in the high frequencies, on average, do not dip below 20dB HL until a person is well into their sixth decade of life. The decline is hearing thresholds through the lifespan, as they are charted on the routine audiogram in Figure 2, do not explain the self-reported hearing difficulties of younger and middle-aged adults who may present in your clinic with significant communication difficulties, particularly in acoustically challenging situations, and normal hearing thresholds through 8000 Hz.

Recent studies using distortion-product otoacoustic emissions (DPOEs) and extended high-frequency audiometry indicate age-related changes occur in the cochlea as early as the third decade of life. These age-related changes in extended high frequency hearing are illustrated in Figure 3. This data, pooled across five age cohorts, indicate high-frequency hearing loss begins to appear on extended high-frequency audiometry as early as a person's late-20s. Additionally, these changes accelerate over the next twenty years and may not show up on a conventional hearing test until age 50 or older.
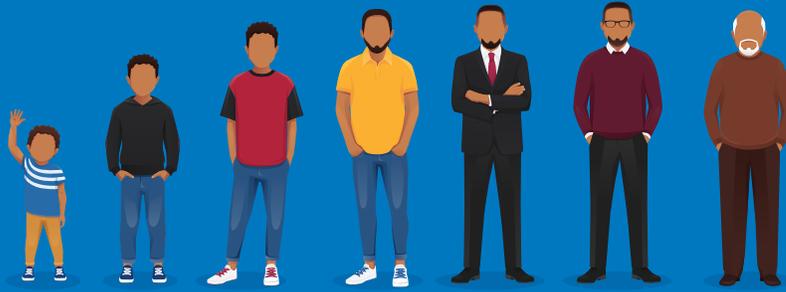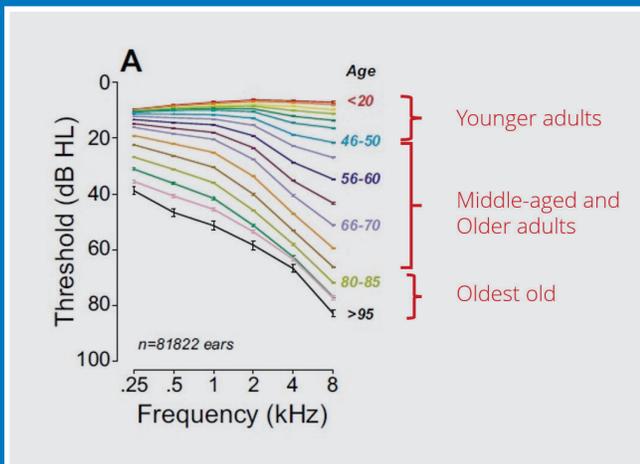

Figure 2. Average hearing thresholds as a function of age for healthy adults without ear disease.

Source: Grant, K. J., Parthasarathy, A., Vasilkov, V., Caswell-Midwinter, B., Freitas, M. E., de Gruttola, V., Polley, D. B., Liberman, M. C., & Maison, S. F. (2022). Predicting neural deficits in sensorineural hearing loss from word recognition scores. Scientific Reports, 12(1), 8929.
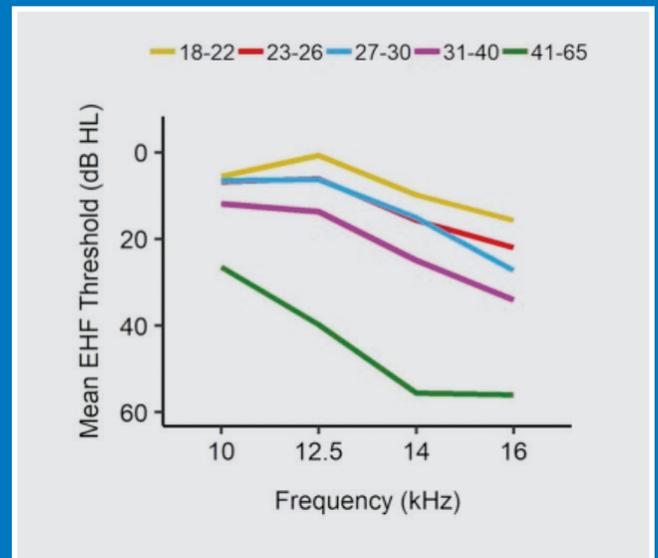
Figure 3. Extended high-frequency hearing loss for five groups of adults.

Source: Motlagh Zadeh, L., Silbert, N. H., Sternasty, K., Swanepoel, W., Hunter, L. L., & Moore, D. R. (2019). Extended high-frequency hearing enhances speech perception in noise. *Proceedings of the National Academy of Sciences of the United States of America, 116*(47), 23753–23759

3

A Condition that Goes by Many Names

All these terms have been used to describe the adult, often young to middle-aged, who presents in the clinic with self-reported hearing difficulties and a normal routine audiogram. Although it might be tempting to label these individuals with APD, according to American Academy of Audiology (AAA) guidelines, an APD diagnosis requires an individual perform at two standard deviations below the mean in at least one ear on two or more behavioral auditory tests. Since the profession lacks a clear consensus on what APD tests should be part of an assessment battery, it is extremely difficult to make a definite APD diagnosis. Consequently, these other terms are often used to describe the condition.

"

Auditory Processing Disorder (APD

Cochlear synaptopathy

Obscure Auditory Dysfunction   **Elevated neural gain in the CNS**

Low Normal Hearing

Auditory nerve demyelination   **Subclinical Hearing Loss**

Hidden Hearing Loss

Impaired neural adaptation

"

4

Prevalence of the Condition

12% to 15%
OF THE ADULT POPULATION

Given the subjective nature of quantifying self-reported hearing difficulties, it is tough to know exactly how many individuals experience this condition. However, two separate studies provide some insights. In one study involving 2783 participants with normal audiograms, Tremblay, et al (2015) reported that 12.0% had self-reported hearing difficulties. Another study with 2176 participants, Spankovich et al (2018) indicated that 15.0% had normal hearing through 8000 Hz accompanied with self-reported hearing difficulties.

Sources: Spankovich, C., Gonzalez, V. B., Su, D., & Bishop, C. E. (2018). Self reported hearing difficulty, tinnitus, and normal audiometric thresholds, the National Health and Nutrition Examination Survey 1999-2002. *Hearing Research*, 358, 30–36.

Tremblay, K. L., Pinto, A., Fischer, M. E., Klein, B. E., Klein, R., Levy, S., Tweed, T. S., & Cruickshanks, K. J. (2015). Self-Reported Hearing Difficulties Among Adults With Normal Audiograms: The Beaver Dam Offspring Study. *Ear and h\Hearing*, 36(6), e290–e299.

UP TO
26 million
AMERICANS

5 Impact on Functional Communication Ability

Although it is difficult to objectively diagnose this condition, data clearly show that it has a serious effect on functional communication ability. In addition to difficulty hearing in background noise, there is an extensive list of emotions and behaviors associated with hidden hearing loss.

Difficulty in background noise
Often situational in nature

Negative emotions and maladaptive behaviors

Helpless   Worn out
Overwhelmed
Embarrassed
Unhappy   Easily distracted
Lonely
Stressed out
Concerned   Fatigued   Anxious   Frustrated
Isolated
Annoyed
Tired

Source: Mealings, K., Yeend, I., Valderrama, J. T., Gilliver, M., Pang, J., Heeris, J., & Jackson, P. (2020). Discovering the Unmet Needs of People With Difficulties Understanding Speech in Noise and a Normal or Near-Normal Audiogram. American journal of audiology, 29(3), 329–355.

Functional Communication Assessment

Given the relatively high prevalence of self-reported hearing difficulties among younger and middle-aged adults with normal audiograms, it recommended that a validated self-report or questionnaire be a part of the routine assessment process. Two self-reports that have been scientifically validated with this population are the family of Hearing Handicap Inventory for Adults/Elderly (HHIA/E) questionnaires and the hearing component of the Tinnitus and Hearing Survey (THS-H).

Hearing Handicap Inventory Screening Questionnaire for Adults

1) Answer **No**, **Sometimes** or **Yes** for each question.

2) Do not skip a question if you avoid a situation because of a hearing problem.

3) If you use a hearing aid, please answer according to the way you hear with the aid.

	No	Sometimes	Yes
1. Does a hearing problem cause you to feel embarrassed when you meet new people?	0	2	4
2. Does a hearing problem cause you to feel frustrated when talking to members of your family?	0	2	4
3. Do you have difficulty hearing / understanding co-workers, clients or customers?	0	2	4
4. Do you feel handicapped by a hearing problem?	0	2	4
5. Does a hearing problem cause you difficulty when visiting friends, relatives or neighbors?	0	2	4
6. Does a hearing problem cause you difficulty in the movies or in the theater?	0	2	4
7. Does a hearing problem cause you to have arguments with family members?	0	2	4
8. Does a hearing problem cause you difficulty when listening to TV or radio?	0	2	4
9. Do you feel that any difficulty with your hearing limits or hampers your personal or social life?	0	2	4
10. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?	0	2	4
Totals:			

* Adapted from: Ventry, I., Weinstein, B. "Identification of elderly people with hearing problems" American Speech-Language-Hearing Association. 1983, 25, 37-42. *

Auditory Wellness Scale
Excellent: 0-2   Good: 3-7   Fair: 8-15   Poor: 16-23   Very Poor: <24

Figure 4. The HHIE-S with the auditory wellness scoring system.

Figure 4 is the HHIE-S. It is comprised on 10 questions that can be administered during the routine hearing assessment. Note, there are three possible answers for each question that correspond to zero, one or two points. Simply add up the total number of points for the 10 questions to obtain a measure of the patient's auditory wellness. According to Humes (2022) a score of 16 or higher on the HHIA/E-S is an indication of poor or very poor auditory wellness.

Another self-report that can be used clinically is a modified version of the Tinnitus and Hearing Survey (THS-H). Comprised of four questions, the THS-H can be completed by most patients in about 45 seconds. According to Davidson, et al (2024), a score of 27 or higher corresponds to significant hearing difficulty in everyday listening situations.

A score of 16 or higher on the HHIE-S and 27 or higher on the THS-H are indications that the individual would benefit from hearing aids.

Tinnitus and Hearing Survey-Hearing

HEARING	NO, NOT A PROBLEM							YES, A BIG PROBLEM			
Over the last week, I couldn't understand what others were saying in noisy or crowded places.	0	1	2	3	4	5	6	7	8	9	10
Over the last week, I couldn't understand what people were saying on TV or in movies.	0	1	2	3	4	5	6	7	8	9	10
Over the last week, I couldn't understand people with soft voices.	0	1	2	3	4	5	6	7	8	9	10
Over the last week, I couldn't understand what was being said in group conversation.	0	1	2	3	4	5	6	7	8	9	10

Figure 5. The THS-H.

Sources: de Gruy, J. A., Spankovich, C., Hopper, S., Kelly, W., Witcher, R., & Vu, T. H. (2023). Defining Hearing Loss Severity Based on Pure Tone Audiometry and Self-Reported Perceived Hearing Difficulty, National Health and Nutrition Examination Survey. Journal of the American Academy of Audiology, 10.1055/a-2095-7002.

Humes, L.E. (2022). 20Q: Assessing auditory wellness in older adults. AudiologyOnline, Article 28087. Available at www.audiologyonline.com

Davidson, A., Ellis, G., Sherlock, L. P., Schurman, J., & Brungart, D. (2023). Rapid Assessment of Subjective Hearing Complaints With a Modified Version of the Tinnitus and Hearing Survey. Trends in hearing, 27, 23312165231198374.

7 Hearing Aid Interventions

There are several studies that have examined the effectiveness of hearing aid interventions for young and middle-aged adults with self-reported hearing difficulties and normal audiograms. Highlights of each study are summarized next.

Study 1 Roup et al (2018)

- All 20 participants had self-reported hearing problems per the HHIA but hearing sensitivity <25 dB for 250-8000 Hz. A control group of 20 young adults (19–27 years of age) without any self-reported hearing difficulties were included.

- As part of the pre-fitting testing, a battery of tests believed to be sensitive to auditory processing disorders were administered. Most of the participants in the experimental group performed abnormally on at least one of these tests.

- The experimental group was fitted bilaterally with hearing aids providing ~10 dB insertion gain. Laboratory testing included the Revised Speech in Noise (R-SPIN) test.

- Results of the aided R-SPIN aided shows significant benefit over unaided condition and comparable to control group. See Figure 6 for details.

- Although significant benefit was demonstrated for the experimental group, just 3 of the 17 participants opted to purchase the hearing aids at the end of the trial.
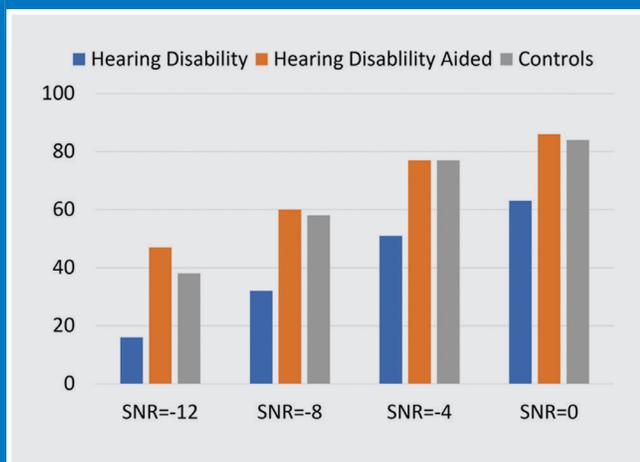
Figure 6. R-SPIN scores expressed as percent correct aided vs. unaided and compared to a control group of normal hearing listeners at four SNRs.

Study 2 Humes (2020)

- 40 adults with normal audiograms were fitted with hearing aids and placed into one of two groups: A.) fitted under the watchful eye of an audiologist who followed best practices principles to fit the hearing aids (AB group) and B.) participates self-fitted the devices in the clinic with no direct involvement from an audiologist (CD group).

- The HHIE was administered before and a few weeks after the fitting of the devices.

- Results are illustrated in Figure 7. One, the unaided HHIE scores (black bars) for all three groups indicated that the unaided perceived hearing difficulties is about the same, with mean HHIE-Total scores ranging from about 27 to 33. Two, the light-grey bars in Figure 7 show the aided HHIE-Total scores and the medium-grey bars show the HHIE benefit (unaided minus aided) scores. There were no significant differences ($p > 0.05$) in mean HHIE benefit among the three groups in either panel of Figure 7. Interestingly, participants with normal hearing are reporting, on average, the same amount of benefit on the HHIA as those with moderate hearing loss.

- The self-fitted CD group experienced aided benefit that was similar to those fitted by audiologists using best practices. (AB group).

- At study completion, nearly 80% of those in the "normal" group purchased their hearing aids at the end of the trial, albeit at a significantly reduced rate relative to the commercial market.

80%

of those in the "normal" group purchased their hearing aids at the end of the trial.
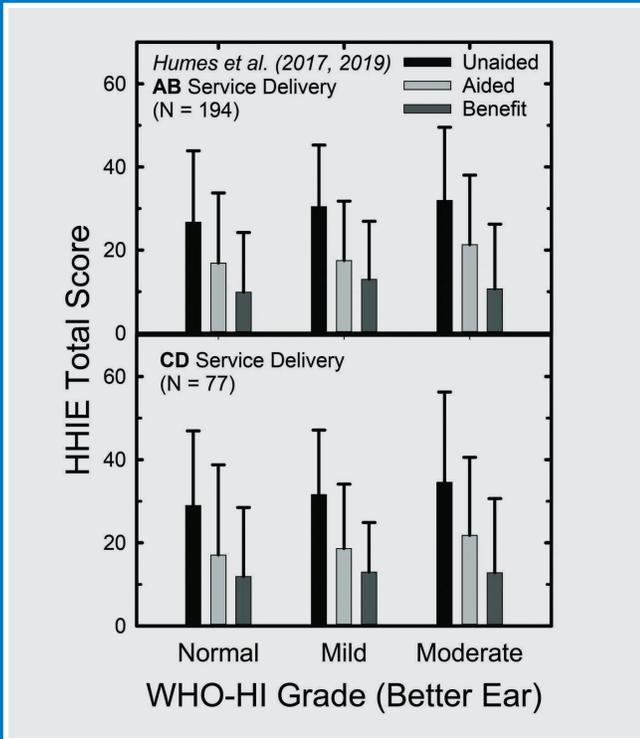
Figure 7. Pre- and post-fitting HHIE and benefit scores from Humes (2020). Top and bottom panels divide the data by fitting method.

Study 3 Mealings et al (2023)

- Participants were 27 adults (17 females, 19–68 years old. Mean age was 36). All had an average hearing loss of <25 dB HL. The mean audiogram with range of individual thresholds are shown in Figure 8.

- This was a double-blinded case-control study where participants completed retrospective questionnaires (e.g., SADL, SSQ), real-world ecological momentary assessments (EMAs), speech-in-noise testing, and mental effort testing with and without hearing aids.

- The "experimental group" trialed mild-gain hearing aids with advanced directional processing. The "control group" also were fitted with hearing aids, but their hearing aids were programmed to 0 dB insertion gain, with no directionality.

- Results indicated that experimental participants reported significantly lower levels of hearing-in-noise difficulties when they were fitted with mild-gain hearing aids compared to no device. The placebo control group showed no difference between the aided and unaided conditions. The experimental participants reported significantly higher satisfaction with the devices than those in the placebo control group.

- For the real-world EMA, the experimental group reported a significantly better hearing experience when they were aided compared with unaided. The placebo group did not.

- Despite the real-world benefit reported by the participants (91% reported improved speech understanding in background noise), when given the option of buying the hearing aids for a purchase price of ~$3500, none of them agreed to this option.

Figure 8. Mean audiograms for the experimental and control group used in Study 3.

Study 4 Davidson et al (2024)

- 186 US Miliary Service Members who wore hearing aids were surveyed using the THS-H.

- The average age of the participants was about 35 years old

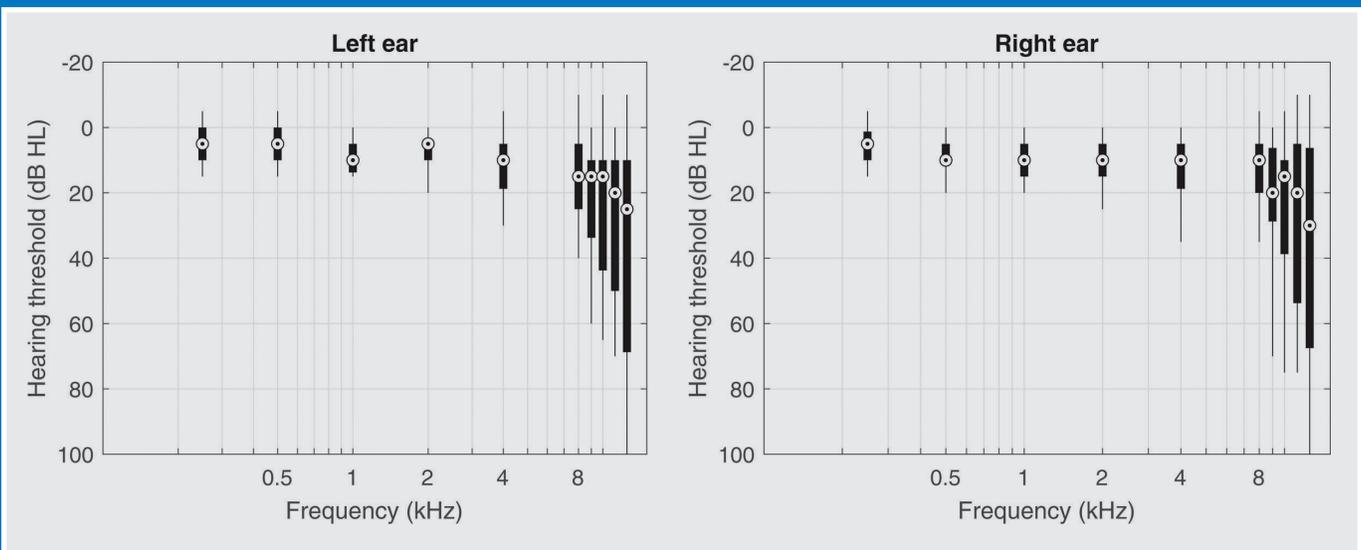- The participants were divided into four groups (See Figure 9):
  - Hearing loss (HL) and no self-reported hearing difficulty
  - Hearing loss (HL) and self-reported hearing difficulty
  - Normal hearing threshold (NHT) and no self-reported hearing difficulty
  - Normal hearing threshold (NHT) and self-reported hearing difficulty

- Survey results indicated that individuals in the NHT/Self-reported Hearing Difficulty category were the most likely to wear their hearing aids.

- ~95% of those self-reporting hearing difficulties said they worn their hearing aids every day.

- Those that have no self-reported hearing difficulty, regardless of hearing loss, were highly likely to discontinue hearing aid use within a month or two.

- Individuals in the Self-reported Hearing Difficulty categories were 20x more likely than individuals in the No Self-reported Hearing Difficulty categories to report benefit.
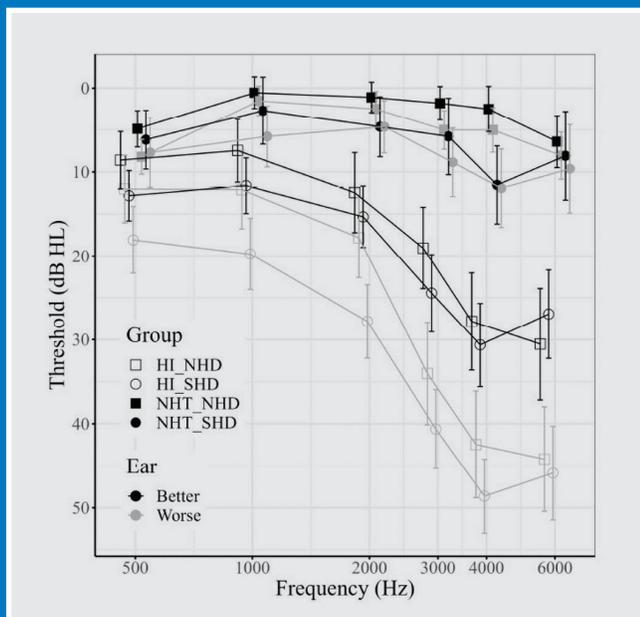
Figure 9. Mean audiograms for the four groups participating in Study 4.

Survey results indicated that individuals in the NHT/Self-reported Hearing Difficulty category were the most likely to wear their hearing aids.

Sources: Roup, C. M., Post, E., & Lewis, J. (2018). Mild-Gain Hearing Aids as a Treatment for Adults with Self-Reported Hearing Difficulties. Journal of the American Academy of Audiology, 29(6), 477–494.

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Mealings, K., Valderrama, J. T., Mejia, J., Yeend, I., Beach, E. F., & Edwards, B. (2024). Hearing Aids Reduce Self-Perceived Difficulties in Noise for Listeners With Normal Audiograms. Ear and hearing, 45(1), 151–163.

Davidson, A. J., Ellis, G. M., Jenkins, K., Kokx-Ryan, M., & Brungart, D. S. (2024). Examining the Use and Benefits of Low-/Mild-Gain Hearing Aids in Service Members with Normal Hearing Thresholds and Self-Reported Hearing Difficulties. *Healthcare (Basel, Switzerland)*, 12(5), 578.

Clinical Implications

- Results from these four studies clearly support the use of hearing aids as a suitable intervention strategy for those who self-report hearing difficulties and have normal hearing on the traditional pure tone audiogram.

- Individuals with normal audiograms and self-reported hearing difficulties experience benefit from hearing aids that is comparable to those with mild and moderate hearing loss.

- Even though benefit is easily established in this group, cost is a significant factor in the acquisition of hearing aids.

- Study 2 suggests that OTC and other direct-to-consumer devices could be a suitable low-cost alternative that yields outcomes similar to those derived from the traditional in-person dispensing model.

$$Value_P = B_P / \$C_T$$

Benefits ↑   **Cost** ↓

VALUE

Cost ↑   **Benefits** ↓
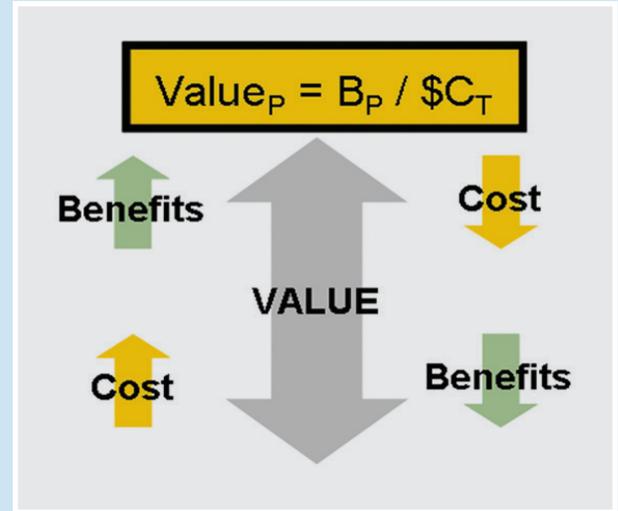
Figure 10

- Adults with normal hearing and self-reported hearing loss are still largely an untapped market segment that could benefit from hearing device interventions. This group has unique needs relative to prescription hearing aid wearers. They might benefit from hearing device innovations that have the appearance of consumer earbuds that can be worn all day (15-plus hours/day) without the battery being recharged and excellent sound quality in noise at a price point of under $500 per pair.

- Given the apparent low margins associated with successfully fitting hearing aids on this group, audiologists should consider the provision of direct-to-consumer device options. ■

Successful interventions appear to be all about value.

"We Have No Security Concerns":

Understanding the Privacy-Security Nexus in Telehealth for Audiologists and Speech-Language Pathologists: Understanding the Privacy-Security Nexus in Telehealth

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ABSTRACT

The advent of telehealth revolutionizes healthcare by enabling remote consultations, yet poses complex security and privacy challenges. These are often acutely felt by lower-resourced, allied-healthcare practices. To address this, our study focuses on audiologists and speech-language pathologists (SLPs) in private practice settings, often characterized by limited information technology resources. Over the course of six months, we conducted semi-structured interviews with ten audiologists and ten SLPs to understand their telehealth experiences and concerns. Key findings reveal a diversity of opinions on technology trustworthiness, data security concerns, implemented security protocols, and patient behaviors. Given the nature of the medical practitioners' primary work, participants expressed varied concerns about data breaches and platform vulnerabilities, yet trusted third-party services like Zoom due to inadequate expertise and time to evaluate security protocols. This work underscores the imperative of bridging the technology-healthcare gap to foster secure, patient/provider-centered telehealth as the prevailing practice. It also emphasizes the need to synergize security, privacy, and usability to securely deliver care through telehealth.

CCS CONCEPTS

• **Security and privacy → Human and societal aspects of security and privacy**; **Social aspects of security and privacy**; *Privacy protections*; *Usability in security and privacy*; Economics of security and privacy.

KEYWORDS

Telehealth, Privacy, Security, User Study, Healthcare

1 INTRODUCTION

Telehealth has garnered widespread acceptance among people who need healthcare and those who provide it [85, 98]. This digital transformation of healthcare, however, introduces substantial risks to patients' privacy and security [47]. While both telehealth and traditional in-person visits often utilize cloud-based services for managing patient data, telehealth introduces unique nuances to existing vulnerabilities and challenges. These include challenges related to authentication, identity verification, consent, screen sharing and recording, and regulatory compliance [36]. These may stem from specialized hardware and software needed for video communication or data collection from remote patient medical devices. Therefore, telehealth systems not only have to comply with existing legal and regulatory frameworks which may vary across jurisdictions, but they also need to account for these risks [37].

In the United States where our study was conducted, the Health Insurance Portability and Accountability Act (HIPAA) applies to all protected health information (PHI) no matter where or how it is stored [83]. HIPAA requires various "reasonable safeguards" to accommodate the varied needs and circumstances of healthcare entities and professionals [20]. A large hospital may have a substantial budget and full-time staff that manages a mature telehealth and cybersecurity program that is HIPAA compliant [5, 42], while independent providers and small private clinics may need more economical solutions due to fewer overall resources and limited expertise [27]. Allied healthcare clinics that provide speech and audiology services are one such healthcare setting that faces challenges arising from both resource limitations and technical expertise constraints [39]. Similar to other healthcare practices,

speech and audiology clinics must contend with infrastructure, personnel, and technology costs. However unlike many other areas of healthcare, audiology and speech services encounter a unique set of challenges, including limited reimbursement options and declining reimbursement rates from private and Medicaid insurances [40, 94]. Insurance reimbursements constitute the primary and often the only source of revenue for these clinics. So, many private clinics may have to rely on general-purpose video conferencing technologies such as Zoom and Google Meet to conduct telehealth sessions. Moreover, speech and audiology services involve ongoing patient engagement, as the same individuals often require regular therapy, evaluation, and coaching. The recurring nature of their services makes telehealth an attractive option, and therefore, there is an increasing demand from patients for flexible speech and audiology services [63]. Therefore, it is critical to understand the challenges, including the security and privacy challenges, that private clinics experience with telehealth technologies. Yet, resource-constrained healthcare settings remain severely understudied.

Ensuring privacy and security in telehealth is not solely a technological challenge. Humans interacting with telehealth platforms play an important role, especially the primary users of the technology - healthcare providers. It has been suggested that the behaviors and preferences of both patients and healthcare professionals must be considered in the design and implementation of telehealth platforms [92] but there is a lack of studies that discuss medical providers perspectives on telehealth security and privacy. For instance, several studies found that patients who express satisfaction with telehealth encounters are more inclined to keep utilizing telehealth services [28, 57, 66]. Furthermore, Wilowska et al. found that females and healthy adults have the most stringent security and privacy requirements for telehealth compared to males and the ailing elderly [97]. This study aims to address this research gap by investigating how audiologists and SLPs in private practice settings currently utilize telehealth services. We specifically focus on these two allied health specialties as a preliminary exploration for understanding broader concerns of data privacy and security in telehealth in low-resource medical settings. Through interviewing 20 audiologists and SLPs who actively engage in telehealth, this research provides invaluable insights into real-world practices, professional perceptions, and attitudes concerning privacy and security risks. Finally, we identify opportunities for both technological enhancements and behavior-driven solutions that can bridge the existing gaps. Our contributions are three-fold, offering a holistic understanding of privacy and security behavior in telehealth.

- Firstly, this study furnishes a comprehensive overview of the prevailing understanding and attitudes toward privacy and security among audiologists and SLPs operating in private healthcare practices. This highlights not just the level of awareness among healthcare professionals, but also reveals the nuanced complexities and considerations that inform their daily interactions with telehealth technologies.
- Secondly, we identify specific privacy and security challenges that are unique to these specialists. These challenges encompass difficulties in securely transmitting sensitive auditory and verbal patient data and assisting particularly vulnerable populations in the secure use of telehealth software.

These issues aren't solely technological; they intertwine with complex HCI problems related to usability, trust, and accessibility.
- Lastly, based on our findings, we propose a set of actionable strategies for mitigating identified challenges, thereby improving the privacy and security posture of telehealth services. These recommendations aim to facilitate a more harmonious integration of technology with healthcare delivery, making it easier for healthcare professionals to comply with security protocols without sacrificing usability or patient care. The strategies touch upon the development of intuitive user interfaces and the creation of targeted training modules for healthcare providers informed by our research, thereby forming a synergistic approach that straddles the intersecting domains of security, privacy, and healthcare delivery.

2 RELATED WORKS

2.1 Telehealth Privacy and Security Concerns

The field of healthcare has observed a significant rise in privacy and security threats, particularly within the telehealth domain [32, 74, 85]. This mirrors telehealth's increasing importance in contemporary healthcare delivery [76]. Many researchers stress the essential role of protecting patient data and ensuring confidentiality within telehealth services [74, 96]. Furthermore, data breaches remain a significant concern in telehealth [15], mirroring trends seen across various industries [9]. Several factors contribute to these breaches, including employees' lack of awareness, inadequate security protocols, and a limited allocation of resources for technological solutions [19, 38]. This underscores the importance of understanding users' perspectives beyond just the patients'.

Establishing secure communication channels between healthcare practitioners and patients stands paramount in telehealth security [86]. Alarmingly, some providers use messaging software that falls short of regulatory standards for patient information exchange [1, 22, 93]. This non-compliance jeopardizes both the HIPAA requirements and patients' privacy [75]. As telehealth adoption accelerates, we must bridge knowledge gaps—especially in private and specialty practices—to ensure the safe operation of telehealth platforms [24]. Drilling deeper into specialties, fields like speech-language pathology and audiology have seen growing telehealth integration, sparking concerns over security and privacy. While much research in these areas has delved into implementation barriers and tech solutions, they often overlook the privacy and security facets [82]. Prior studies have highlighted the necessity of earmarking resources and delivering training for robust patient data protection [36]. This involves adopting data encryption techniques, rolling out rigorous privacy and security training modules, and investing in technology that protects patient data, while simultaneously elevating practice efficiency [12, 95] which may not be aligned with the resource limitations of allied healthcare practices such as that of audiologists or SLPs. Studies squarely focused on audiologists and SLPs have concentrated predominantly on telehealth implementation barriers [13, 80], increasing adoption of telehealth [16, 33] or policy considerations [43]. Nevertheless, there is a notable gap in the literature concerning the privacy perceptions

and behaviors of these professionals in relation to telehealth. A study conducted by Dykstra et al. investigated the cybersecurity behaviors of audiologists in private practices. The study revealed that audiologist possess a limited understanding of cybersecurity and do not allocate sufficient resources to protect against potential cyber threats [27]. However, it is important to note that this study did not consider the telehealth practices of the participants.

2.2 Perspectives of Allied Healthcare Professionals on Telehealth

The exponential expansion of telehealth has spurred substantial investigation into its implementation and ramifications [74, 85, 92]. Moreover, current research on telehealth security and privacy largely focuses on creating new technological solutions [82], while technology is pivotal, addressing human and organizational aspects that might lead to security risks is equally crucial [71]. Yet, perspectives from audiologists, SLPs, and similar allied healthcare professionals in private practices remain notably understudied [38, 82]. Building on the security and privacy challenges previously discussed, healthcare practitioners and patients continue to employ telehealth technologies, highlighting their indispensable value [30]. However, breaches in security can significantly erode trust in these systems, underscoring the importance of improving our understanding of healthcare security and privacy within telehealth, especially from the lens of healthcare professionals [46]. Hall and McGraw highlight that breaches in patient privacy and security lapses can both compromise care quality and weaken patients' trust in telehealth technologies [36]. Such a decline in trust might deter patients [72, 92], especially those in remote or under-served regions, from using telehealth services they heavily rely upon [89]. While we gather comprehensive insights into the general perceptions of these professionals regarding telehealth, a gap remains in research addressing their specific privacy and security apprehensions. Our study aims to bridge this, focusing on the allied healthcare practices which are severely understudied.

Among healthcare providers, attitudes and apprehensions regarding telehealth security substantially impact its acceptance and adoption [36, 48]. In their systematic study, Watzlaf et al. analyzed the existing practices regarding privacy and security in the utilization of telehealth technology by healthcare practitioners. Nevertheless, the authors failed to document any studies that take into account the viewpoints of allied health professionals such as audiologists or speech-language pathologists [96]. Similarly, Houser et al. performed a comprehensive analysis to uncover the obstacles and contributing variables concerning privacy and security in telehealth visits during the COVID-19 pandemic. They conducted a systematic evaluation of scholarly articles that examined the utilization of telehealth in the healthcare industry, encompassing both providers and consumers of healthcare using telehealth. The selected articles were published between January 2020 and February 2022. Nevertheless, the authors did not report on any papers that consider the allied health perspectives [38]. Building on the vulnerabilities associated with healthcare providers' authentication and access control techniques often raise concerns in telehealth security [27], even though experts frequently suggest them as security solutions.

Previous studies have shown that providers sometimes bypass authentication steps or share login credentials [29], often driven by burdensome access control measures [79]. Research on this topic tends to focus on larger healthcare institutions, potentially overlooking challenges unique to smaller private practices with limited tech resources [96]. A related challenge lies in patient education about telehealth security [45, 78]. Patients' limited understanding can lead to unintentional breaches, like revealing personal health details in unsecured environments [35, 91]. Providers often underestimate this knowledge gap, highlighting the need to gain a deeper understanding of these issues from their perspective.

Although there is an increasing number of studies on telehealth, there are still gaps in healthcare professionals' readiness to adequately handle important privacy and security concerns in telehealth [24, 36]. Dubose-Morris et al. conducted a study on telehealth education and training during the COVID-19 pandemic. They discovered that prior to the pandemic, telehealth training, which encompassed privacy and regulatory frameworks, was not consistently provided. Approximately 30% of programs reported a lack of formal training [26]. In addition, healthcare personnel often have insufficient training and awareness of cybersecurity and data protection best practices for telehealth [99]. As such, it is essential to have a more profound understanding of perspectives surrounding healthcare security and privacy in telehealth, particularly from healthcare experts.

2.3 Cybersecurity Concerns in Under-Resourced Healthcare Practices

As telehealth extends beyond traditional healthcare environments, the need to protect sensitive patient information grows even more crucial. Nevertheless, privacy and security remain insufficiently studied, especially in low-resource healthcare environments such as allied healthcare practices [90]. This gap persists despite audiologists, SLPs, and similar allied healthcare professionals in private practices facing unique challenges, particularly those contending with limited technical resources [27, 59, 62]. Because of these challenges, healthcare practitioners often struggle to implement cybersecurity measures, resorting to self-taught approaches [44, 69, 96]. Practice size and IT capabilities introduce further complexity in the telehealth landscape. As Pickering et al.'s study highlighted, small and medium enterprises in general with fewer technical resources markedly struggle to consistently uphold security protocols [64]. Prior research conducted in Indonesia [69] and Malawis [62] underscored deficiencies in cybersecurity awareness among medical professionals in lower-resourced community health clinics. However, minimal research has examined audiology and speech-language pathology practices in the US contending with similar resource limitations. Our work significantly builds on findings from these previous studies through robust sampling focused exclusively on small-scale practices within the two fields of audiology and SLP. Several studies have also underscored the role of patient demographics and accessibility barriers in shaping telehealth experiences. Wang et al. stressed the importance of optimizing telehealth platforms to serve diverse populations equitably [92]. Complementarily, Almalki et al. called attention to pronounced service access barriers frequently encountered by elderly patients in telehealth [6]. Other

works emphasized potential telehealth benefits for rural areas as well as homebound individuals facing mobility constraints [31, 89]. Such demographic considerations may disproportionately affect audiologists and SLPs, since they routinely serve patients from vulnerable or marginalized groups. Thus, our study provides crucial firsthand qualitative insights into this complex landscape from the direct lens of such healthcare professionals.

3   METHOD

This study aims to focus on the relationship between the adoption of telehealth services and the awareness of healthcare professionals—specifically audiologists and SLPs—concerning issues of privacy and security. We concentrate our investigation on professionals working in private practice settings within the allied healthcare disciplines of audiology and speech-language pathology in the United States where they have limited IT resources to support their privacy and security needs. By focusing on these specialized fields, we aim to shed light on the setting-specific implications of telehealth technologies. The overarching objective of this research is to systematically investigate the privacy and security practices, attitudes, and measures that are perceived by audiologists and SLPs to be connected with the integration and application of telehealth services in their respective fields. We seek to explore how these professionals balance challenges and risks while embracing the advantages of telehealth technology, especially with resource constraints.

3.1   Research Questions

This study aims to reveal how various factors centered on privacy and security affect the use of telehealth technologies among audiologists and SLPs in private and allied healthcare settings. To understand this multi-faceted issue, we formulate the following research questions:

- How much do audiologists and speech-language pathologists practicing in private healthcare facilities understand privacy and security issues related to telehealth?
- What strategies and practices do audiologists and speech-language pathologists employ in the realm of privacy and security when integrating telehealth technologies into their clinical workflows challenged by resource constraints? What emergent challenges related to privacy and security are perceived by these professionals?
- How do audiologists and SLPs in private healthcare settings actively institute measures to protect the privacy and security of sensitive patient data when utilizing telehealth technologies?

3.2   Recruitment Strategy

The research team adhered to institutional ethical guidelines and obtained approvals from relevant ethics review boards prior to participant recruitment. The target population comprised professionals from two allied healthcare disciplines: audiology and speech-language pathology. Utilizing a stratified purposive sampling approach [68], we aimed to recruit an equal number of audiologists and SLPs—10 from each field—to allow for a balanced exploration of professional viewpoints. Initial outreach was conducted via professional networks, academic forums, and special interest groups.

To augment the study's visibility, we leveraged specialist social media groups focusing on audiology and speech-language pathology, along with other digital platforms, to disseminate information about the study's aims and participation criteria. Two authors of the manuscript had personal connections with individuals working in the field of speech and audiology services. The insights and perspectives gained from these personal connections served as the initial source of motivation for undertaking this study. These personal connections also played a pivotal role in facilitating the recruitment process.

We also enlisted the partnership of relevant professional societies to help distribute the invitation, namely the American Speech-Language-Hearing Association (ASHA) [7] and the Academy of Doctors of Audiology (ADA) [60]. Recruitment emails were disseminated to members of these organizations using their expansive membership databases. As an auxiliary strategy, we also employed snowball sampling methods to broaden the participant base. However, these inclusive recruitment methods also led to a considerable influx of 83 ineligible or false queries. Subsequently, we implemented a rigorous screening procedure involving manual evaluation to identify and exclude spam responses.

3.3   Participant Demographics

Upon concluding the recruitment phase, the study assembled a participant pool exhibiting considerable demographic and professional diversity. Participants were drawn from various geographical locations across the United States through online participation, thereby capturing perspectives influenced by different regional healthcare policies and practices. The participant composition was deliberately diverse, representing a spectrum of professional roles within the fields of audiology and speech-language pathology. Participants differed not only in their specific job responsibilities but also in their years of practice and familiarity with telehealth technologies.

The incorporation of participants with varying levels of experience and expertise in telehealth provided multifaceted insights into the challenges and opportunities linked with the adoption of telehealth services in private healthcare settings. For a detailed breakdown of the participant demographics, please refer to Table 1. This table provides a comprehensive profile, encapsulating elements such as professional designation, gender, years of experience, and platforms used for telehealth consultations. While, our sample exhibited some skewness in gender distribution (100% female SLPs and 70% female audiologists). This disproportionate gender is reasonably representative given that over 80% of audiologists [1] and over 90% of speech-language pathologists [2] are female.

3.4   Interview Process

We initiated the interview process by actively disseminating recruitment materials to our targeted audience. When potential participants contacted our research team using the provided email, we conducted preliminary screenings to determine their suitability. From 104 inquiries, we vetted and identified 21 participants who met the study's criteria, ensuring a pertinent participant pool. We then arranged virtual interviews for these 21 candidates on Zoom, a

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[1]https://datausa.io/profile/soc/audiologists
[2]https://www.zippia.com/speech-language-pathologist-jobs/demographics/

ID	Role	Position	Gender	Work Exp.	Telehealth Exp.	Platform(s)
A1	AuD	Provider	M	6-10	1-5	Tuned*
A2	AuD	Owner/ Provider	M	11+	6-10	Tuned*
A3	AuD	Owner/ Provider	M	11+	1-5	Blueprint
A4	AuD	Clinic manager	F	1-5	1-5	Zoom
A5	AuD	Owner/ Provider	F	6-10	1-5	CounselEAR
A6	AuD	Provider	F	6-10	1-5	CounselEAR
A7	AuD	Owner/ Provider	F	11+	11+	CounselEAR + Epic
A8	AuD	Owner/ Provider	F	11+	1-5	Zoom + CounselEAR
A9	AuD	Partner/ Consultant	F	11+	1-5	ModMed + Athena
A10	AuD	Provider	F	6-10	6-10	Zoom
S1	SLP	Owner/ Provider	F	1-5	1-5	Google Meet
S2	SLP	Provider	F	11+	1-5	Zoom
S3	SLP	Owner/ Provider	F	11+	6-10	TheraPlatform
S4	SLP	Owner/ Provider	F	11+	1-5	TheraPlatform + Zoom
S5	SLP	Provider	F	11+	1-5	Zoom
S6	SLP	Provider	F	6-10	1-5	Zoom + Google Meet
S7	SLP	Provider	F	6-10	1-5	Zoom + Google Meet
S8	SLP	Provider	F	11+	1-5	Zoom + Google Meet + doxy.me + Blink Session
S9	SLP	Senior director of teletherapy	F	11+	1-5	Televate (proprietary platform)
S10	SLP	Provider	F	6-10	1-5	Zoom

Table 1: Demographic Profile of Study Participants with Telehealth Platform Transition Indicator. *: Denotes participants who transitioned to a new telehealth platform less than three months prior to the interview.

platform familiar to many professionals. Over a span of six months, from August 2022 to January 2023, we conducted interviews to capture their attitudes and experiences. While sessions lasted anywhere from 32 to 90 minutes, the average duration was 46 minutes, indicating deep and engaging conversations. Before each interview, we briefed participants about the study's objectives, methodologies, and ethical considerations. We obtained verbal informed consent from each participant, which included permission to record the session on Zoom Furthermore, we gave participants the option to disable their video if they felt uneasy about visual recording. However, due to unforeseen circumstances, one interview had to be canceled, leading to a final count of 20 participants.

We adopted a semi-structured interview format, crafting open-ended questions to elicit detailed responses from participants. This design fostered honest conversations, letting each session naturally adjust based on the participant's insights. The full questionnaire is provided in Appendix A. We refined these questions through 13 pilot interviews involving our research team, lab members, and external contributors from October 2021 to July 2022. To show our appreciation for the participants' input and time, we rewarded each participant with a $50 USD electronic gift card upon interview completion.

3.5 Data Analysis

After each interview, we auto-transcribed the audio recordings and verified them against the original audio to ensure accuracy. For the participant who opted out of recording, we captured their input through real-time manual notes. We then anonymized all transcripts and notes to remove identifiable details. Both the first and last authors reviewed the content to eliminate any identifiers.

Subsequently, we permanently deleted the original audio recordings for confidentiality.

For our analysis, we used a thematic approach, as described by Mildner [53]. The first author generated a codebook using an inductive review of the interviews. To verify the coding's consistency, the second author recoded two random transcripts. Their inter-rater reliability (IRR) revealed a Cohen's kappa of $\kappa = 0.76$, denoting strong coder agreement. Both authors then discussed discrepancies, clarifying code definitions and merging insights to refine the codebook. With the updated codebook, Two researchers analyzed the remaining 17 transcripts and one manually noted interview through an iterative process, meeting regularly with the other authors to discuss emerging themes. We employed NVivo [49] and MAXQDA [51] for data coding and analysis. We added, merged, and split codes as new patterns emerged over three coding iterations. The first iteration focused on open coding to identify first-pass themes. The second iteration involved refining, consolidating, and organizing codes under higher-level categories. The final iteration aimed at distilling themes into a structured narrative focusing on the nuances of implementing telehealth solutions, especially regarding privacy and security. This narrative offers a deeper grasp of the practical and ethical dynamics within the audiology and speech-language pathology sectors.

4   RESULTS AND DISCUSSION

Ensuring the confidentiality and security of patient data during telehealth is crucial in audiology and speech-language pathology, as our participants have recognized. During the interviews, the healthcare providers discussed various topics related to their use of telehealth, including data collection, authentication, and security awareness in telehealth. Participants also discussed patient

attitudes towards telehealth from their perspectives. Our analysis examines participants' views on data privacy and also variations in their knowledge of telehealth security and privacy. Lastly, we highlight the distinct perceptions of audiologists and SLPs, emphasizing challenges, particularly in patients' technical proficiency, including children and older adults.

4.1 Patient Data Collection and Identity Verification Processes

In the context of audiology and SLP services, healthcare providers employ a variety of strategies to collect and protect patient data during telehealth sessions. This data includes personal information, health records, insurance data, and pertinent symptoms and concerns of patients. The primary objective of this data is to ascertain that the healthcare practitioner possesses a comprehensive understanding of the medical history of their patients and to provide them with personalized care.

4.1.1 Data Collection Strategies and Procedures. Our participants follow a variety of privacy and security strategies to collect patient data. Some of our participants (A1, A9, S2, S8) mentioned that telehealth is introduced only after the initial visit and exclusively to established patients, aligning with organizational policy compliance. This approach minimizes personal information collection during telehealth sessions, as the bulk of personal data is submitted in person. Another way of data access control our participants mentioned is avoiding use of third-party web services and instead collecting information through phone calls, preferred by their patients. For example, as A1 emphasizes that:

> "Any personal information is really limited as far as what is verbally addressed through the call." (A1)

Consequently, during telehealth sessions, limited personal information is disclosed, such as patient name and the particular health issue under discussion. The limited data interchange arises from the provider's possession of extensive medical histories and patient information, from previous encounters. Providers who accept new patients for telehealth services adhere to different protocols. Some healthcare providers utilize electronic communication to send forms to gather personal information, health records, insurance particulars, and pertinent symptoms or concerns. The primary objective of this data collection endeavor is to ascertain that the healthcare practitioner possesses a comprehensive and precise understanding of the medical history of the recently admitted patient. As A3 explains:

> "The new patient has already initiated an appointment so we then send online forms." (A3)

In a similar vein, S10 delineates their intake protocol for new patients, which entails the involvement of administrative personnel who contact these patients in order to collect the necessary information, patient concerns and the initial appointment is scheduled.

> "The admin will reach out to the client, gather basic information concerns and they will schedule the initial appointment." (S10)

This process involves the collection of sensitive personal information, necessitating secure data handling and communication channels. Collecting patient data prior to the consultation is crucial

because it helps the providers prepare for the telehealth consultation. It also prevents the need for spending valuable consultation time in trying to obtain the necessary information.

4.1.2 Patient Identity Verification Processes. The process of verifying the identity of patients participating in telehealth is critical in order to uphold ethical and legal standards, comply with healthcare regulations, and secure sensitive health information. To prevent medical errors, improve the precision of prescriptions and treatments, and foster confidence between patients and healthcare providers, precise identification is vital. Additionally, it is instrumental in secure against fraudulent activities, ensuring precise invoicing, and establishing a secure chain of accountability within the field of digital healthcare. As such identity verification measures are indispensable for ensuring the security and efficacy of telehealth services.

We asked our participants to explain their patient identity verification processes, there is variation between respondents in their procedures pertaining to the verification of patient identity prior to the start of telehealth sessions. For example, A9 finds formal validation unnecessary as they indicated their ability to recognize their patients:

> "Most of the people that I'm doing telehealth with on the audiology side…I know these patients…I know their face." (A9)

In the interview, A9 highlights their familiarity with the majority of patients in telehealth sessions, emphasizing recognition of their faces. This suggests an established relationship, from prior in-person consultations. While this familiarity can enhance the patient-provider connection and reduce the need for extensive data exchange, it raises considerations for formal identity verification and ensuring informed consent. Conversely, A2 delineated a procedure in which they authenticate the identification of patients:

> "I confirm their identity because that's always kind of a question mark when you're meeting people online, you never know who's actually signing in." (A2)

Our participant responses underline the significance of identity verification within the telehealth domain. Ensuring the authenticity of participants' identities is of utmost importance, particularly in the digital domain where it may not be feasible to authenticate using physical evidence. As such, A2 highlights the critical need for confirming patient identity in telehealth, given the inherent uncertainty of online interactions. The potential for anonymity afforded by the internet gives rise to apprehensions over the true identity of those situated behind the screen. The verification process serves the dual purpose of protecting the privacy and security of telehealth sessions and promoting trust and confidence between healthcare providers and patients. This process ensures that confidential medical information is only shared with the intended recipient, thereby improving the overall quality of care provided via telehealth.

Furthermore, telehealth provides a secure platform for confidential health consultations, protecting people' sensitive health information from public exposure. This is particularly vital for those in delicate professions. The need of this discretion is emphasized by A2, who, when questioned about their patients' apprehensions, stated that certain patients are deeply concerned about the

confidentiality of the information they provide, fearing potential repercussions on their professional careers:

> "I'm working with a patient who's a singer …and [they] tell me I'm having trouble perceiving pitch now because of my ear injury and I don't know if I can keep singing at the level that I used to but they don't want that information getting out because that could impact their employability and their ability to continue their career."

4.2 Provider Awareness of Security and Privacy

Our participants exhibited a diverse array of perspectives coming from varied background and discuss in detail about security and privacy in telehealth, demonstrating a combination of awareness and confusion.

4.2.1 Limited Awareness and Understanding. Eight participants (A2, A4-A6, A8, A10, S1, and S8) expressed a relative lack of awareness of potential security concerns associated with telehealth. For instance, A2 displayed a sense of assurance by asserting that their actions were as safe as a confidential conversation held face-to-face in a private setting. As they state:

> "What we're doing is as secure as a phone or as a conversation in a room behind closed doors." (A2)

This attitude might stem from a generally positive experience with telehealth. This statement also conveys a high level of confidence in the security of telehealth sessions, indicating that any sensitive information exchanged during these exchanges is effectively protected. This perception that telehealth is inherently secure is due to the lack of our participants' expertise in cybersecurity which has been emphasized by multiple participants (A8-A10, S5, S7-S10), and as A10 notes when asked about the ways security and privacy of healthcare data factor into their telehealth appointments:

> "This is outside of my area of expertise." (A10)
> "I don't have like a tech background." (S5)
> "I would not consider myself an expert in computer privacy and security by any means" (S7)

Furthermore, three participants (A4, A6, A9) admitted to having a restricted understanding of privacy and security matters, which might be attributed, in certain instances, to their limited exploration of the security dimensions associated with telehealth. In fact, A4 acknowledged a lack of comprehensive examination of privacy statements from the viewpoints of both patients and providers, hence indicating a deficiency in comprehension pertaining to the implemented security measures:

> "I'm actually not sure I…you know…I'd have to go in and read their privacy statement from the patient side and from my side, which I'll be honest I have not done." (A4)

This raises apprehensions regarding our participants understanding of the data privacy and security protocols implemented during telehealth sessions. The lack of understanding regarding the platform's privacy policies may jeopardize the privacy of patient data and impede the effective communication of privacy measures to patients, which would affect trust and informed consent. However, this limited inquiry might be ascribed to the underlying premise that others bear the responsibility for guaranteeing security and privacy.

4.2.2 Recognition of Inherent Limitations. Four participants (A5, A8-A9, S1) demonstrated some level of skepticism towards the concept of information security, recognizing the significant difficulty in attaining complete security within any digital framework. A5 expressed this sentiment by observing:

> "Nothing is perfect, nothing is impenetrable if somebody really wants in, they're going to get in it." (A5)

By citing real-life instances, such as the multitude of security breaches encountered by prominent corporations such as the 2013 Target data breach, participants emphasized the alarming fact that even the most heavily fortified systems can be susceptible to persistent hackers. This acknowledgment of the inherent limitations of security measures reflects a pragmatic understanding of the complex landscape surrounding information security.

4.2.3 Variation in Security Knowledge and Implementation. The significance of security measures and the level of awareness among telehealth practitioners cannot be overstated, given the highly sensitive and confidential nature of healthcare data. During telehealth sessions, healthcare providers are entrusted with the private medical information of patients, and it is incumbent upon practitioners to fulfill their ethical and legal obligations in ensuring the security and privacy of this data. Insufficient security protocols may result in the occurrence of data breaches, thereby jeopardizing the confidentiality of patient information and potentially inflicting irreversible damage. As such, we try to understand the levels of awareness of our participants as well as the security measures they implement. Seven of our participants (A4, A6, A9, S5, S7-S9) expressed a restricted comprehension of security and privacy, as indicated by S7:

> "Maybe I should preface this by saying I would not consider myself an expert in computer privacy and security by any means so my feelings on it I guess are impacted by my lack of knowledge in the area." (S7)

The acknowledgment of a lack of expertise in computer privacy and security implies that their perceptions or attitudes regarding privacy and security in telehealth are shaped by their restricted understanding in this domain. This suggests possible difficulties in navigating the intricate field of digital security in telehealth, resulting in an increased susceptibility to overlooking crucial security measures. Nevertheless, the majority of participants (A1-A4, A6, A9, S1, S2, S4, S8-S10) recognized the significance of privacy and security. As such, many participants (A7, S7-S8, S10) reported that they rely on assistance in addressing matters pertaining to security and privacy. Both A7 and S10 indicated receiving support and guidance from their respective spouses. Nevertheless, A7 reports depending on the aid of non-experts, to navigate issues related to information technology and cybersecurity:

> "Right now, it is my husband who can help me, and he's not an IT person. He knows enough to fix things and get things done, but he's not an IT professional by trade." (A7)

This reliance on non-IT professional raises concerns regarding possible oversights in ensuring the security of the telehealth environment. underscores the prevalent issue of healthcare professionals lacking IT expertise and resources and depending on personal connections for technical assistance, emphasizing the necessity of guaranteeing sufficient IT resources to adequately handle privacy and security concerns. Furthermore, three participants (A5, S1, S6) have placed significant emphasis on their dedication to ensuring privacy and security, noting that they have implemented extensive measures to protect the confidentiality of their telehealth sessions, demonstrating a proactive stance towards ensuring security. As A5 notes:

> "We do the best and we carry policies and insurances to protect us in the event that [a cyber attack] happens…everything is protected…we do the best that we can in a way that should minimize our risks of hacking we don't open links from emails the whole team knows that, we review it every year, if I have software updates we do them physically through our software we don't do them through links so we do the best that we can." (A5)

Participants such as A5 highlighted their proactive stance towards ensuring data privacy and security in telehealth. They discuss the implementation of policies and insurance coverage as a measure to mitigate the possible impact of cyber attacks, showcasing a strategic approach to risk management. Furthermore, some of our participants emphasized the implementation of precautionary measures, such as refraining from clicking on email links and doing software upgrades manually. It also promotes the cultivation of a collective understanding of these practices across the whole team through periodic evaluations. However, not all telehealth practitioners have the same level of expertise or awareness when it comes to cybersecurity. While some take proactive measures, such as implementing two-factor authentication, access control, auto-logout features, and virtual waiting rooms, others may be less informed due to their professional background, or the resources available to them, or time constraints to acquire knowledge and expertise pertaining to privacy and security:

> "I don't have like a tech background to know like every single thing about Zoom security" (S5)
> "A lot of it in the beginning was just trying to find any resources" (S9)
> "I have to depend on other people to do this because guess what I don't have time and my job is not to do cybersecurity, my job is to take care of patients." (A9)

Our participants highlight the importance of efficient and user-friendly security solutions to overcome gaps in knowledge and time constraints as well as limited resources, in order to ensure effective protection of data in the changing field of digital healthcare. Furthermore, the observed disparity in security awareness and implementation underscores the necessity for continuous education and support in order to improve the security and privacy of telehealth services.

4.3 Data Security and Privacy Concerns

Our participants expressed varying concerns regarding the security and privacy aspects of telehealth. Certain individuals voiced substantial concerns, but others appeared to be less apprehensive or held misunderstandings regarding potential hazards.

4.3.1 Apprehension Over Data Security. Seven out of 20 participants (A9, A10, S4, S5, S7, S9-S10) expressed apprehensions over the security of patient data. Concerns were raised over the poor understanding among vulnerable populations, especially older adults and the younger population, regarding the data usage of their smartphones and the possible vulnerability of sensitive health information to penetration by malicious third parties. These healthcare practitioners have an understanding that hackers might readily exploit weaknesses. As A10 notes:

> "I often work with older adults and sometimes they just have no idea on how much data their phone has and so I try to avoid it as much as possible because all it takes is for them to download the wrong app and then all of this health information is potentially going somewhere." (A10)

This demonstrates the cognizance of our participants about the security and privacy risks linked to using smartphones, particularly for older individuals who may have little comprehension concerning the data kept on their devices. This also demonstrates that certain participants in our study are actively striving to decrease reliance on personal devices and prefer secure platforms to ensure the confidentiality of health information during telehealth sessions.

However, in contrast, eleven respondents (A1, A4-A7, S2-S4, S8-S10) had a lesser degree of concern over security issues. Some participants exhibited a certain level of naivety and indicated a lack of prior experience with any challenges. The seeming nonchalance expressed by individuals may be attributed to a perception that their telehealth platforms have robust security measures, as A6 states:

> "We have not had any security concerns with any aspects of telehealth. The third-parties we use are all healthcare entities and know the importance of security and consequences if there are issues." (A6)

This statement shows the confidence some of our participants in the security of their telehealth practices, as well as their confidence in the third-party software providers they use highlighting their apprehension towards security and the potential consequences in case of issues. It also indicates a dependence on reliable third-party services in the healthcare industry, with the anticipation that they prioritize strict security measures to protect patient data. On the other hand, this seeming nonchalance can also be due to underestimating the possible threats involved. In fact, when asked about whether they had any privacy or security concerns, S9 answers:

> "I don't, and part of that's being naive but we haven't had any issues ever." (S9)

Through this declaration, S9 acknowledges that they do not have any privacy or security concerns in telehealth. It suggests that this lack of worry may be due to a combination of inexperience and a lack of observed problems. This remark implies a possible lack of knowledge or aggressive actions regarding the protection and

confidentiality of data in their telehealth services. Although the lack of detected flaws is acknowledged, the possible consequences of ignorance are worrisome as they may lead to the oversight of vulnerabilities, hence leaving patient data susceptible to unauthorized access or breaches.

Furthermore, two participants (S1 and S7) displayed a conspicuous absence of concern over privacy and security in the context of telehealth. For example, the lack of concern exhibited by S1 towards parents allowing their children to conduct sessions from unsecured settings demonstrates a level of acceptance towards patient activities that might potentially jeopardize security. Moreover, this nonchalant attitude gives rise to apprehensions over possible breaches in data security and privacy. Allowing sessions in less secure contexts might potentially expose sensitive information to undesired individuals, hence increasing the risks of eavesdropping or unlawful access.

> "Parents choosing to sign on with their phone in the middle of a parking lot…if they want to do that that's fine…I don't care." (S1)

Allowing sessions in less secure contexts might potentially expose sensitive information to undesired individuals, hence increasing the risks of eavesdropping or unauthorized access. Which emphasizes the necessity for explicit protocols and instruction on secure telehealth practices to protect the privacy of healthcare interactions. Similarly, S7 minimizes the significance of eavesdropping by drawing a comparison to a group therapy session within the occupational therapy realm.

> "We also have a shared like computer space where multiple people are working at the same time and sometimes we will do a telehealth session from there, so there are times when I might be walking by and see someone else's telehealth session happening which in my mind is pretty similar to walking by a therapy room and hearing a session happen or in the occupational therapy world. A lot of times there's just a shared gym space and lots of kids are having therapy in the same space so it's all within the clinic building so I see it as confined in the same way as those other situations." (S7)

This analogy implies that the perceived level of security in telehealth is on par with that of in-person sessions conducted within the controlled environment of a clinic facility. However, this analogy is flawed as it neglects to recognize a crucial contrast between traditional treatment sessions done in person and telehealth sessions carried out via digital platforms. In the context of in-person treatment, all participants possess a broad awareness of their physical environment and the presence of others within the shared therapy space. Conversely, in the context of telehealth sessions, individuals could lack awareness of the absence of a private environment. Telehealth relies on the assumption of a private and secure digital environment, and patients expect that their conversations and sensitive information are protected from eavesdropping or unauthorized access, when in fact these conditions are not always met.

4.3.2 Concerns Over Platform Security. Two participants (A2 and S6) voiced an alternative viewpoint that centers on apprehensions

over their own privacy as well as the privacy of persons unintentionally captured on camera during telehealth meetings. The participants placed significant emphasis on the possibility of patients or their parents recording or assuming control of a session, showing greater concern over these situations compared to external hackers. As S6 states,

> "A concern that the client or the parent was going to record the session or take over the session. I think I was more concerned about those people than [a] cyber hacker." (S6)

Our participants responses depict the difficulties that professionals encounter in guaranteeing the privacy of telehealth conversations. Considering data privacy and security, concern emphasizes the necessity of implementing steps to avoid unintentional disclosure of sensitive information by participants during the session.

A2 additionally brought attention to the frequently disregarded matter of privacy concerning those inadvertently present in the backdrop of telehealth meetings, encompassing both family members and unfamiliar individuals. These circumstances have the potential to cause unease for all those involved, including the service providers, since they may unintentionally bear witness to intimate moments or confidential information that was not intended for disclosure. A2 explained that:

> "Privacy is not just about the person who's on camera but also the people who are inadvertently on camera in the background. I'm sure everybody has experiences like this, but I've had siblings, spouses, children, strangers who show up in the background without knowing that they're on camera and that can lead to uncomfortable situations for them and for the providers sometimes." (A2)

The remarks made by this participant highlight the intricate aspects of privacy within the realm of telehealth, wherein the delineation of personal boundaries and inadvertent exposure emerge as noteworthy considerations, particularly in the context of utilizing video conferencing technology.

Six participants (S1-S2, S5-S6, S9-S10) conveyed apprehensions regarding security breaches, specifically citing instances such as Zoom bombing that occurred during the peak of the COVID-19 outbreak. Despite lacking personal experience with such attacks, the sheer awareness of their existence heightened their perception of vulnerability and underscored the necessity for implementing comprehensive security measures. As S6 notes,

> "I heard about [Zoom bombing] happening during our transition to telehealth, students being able to kind of take control of the screen, and then present their screen or inappropriate material to other people …that's obviously a concern and that I did hear about situations like that happening to providers and teachers during the very beginning of the pandemic." (S6)

4.4 Trust and Confidence in Telehealth Security
The study's participants demonstrated a range of trust levels about the security and privacy features of telehealth technology. At one

extreme of the continuum were those who publicly articulated a profound sense of skepticism towards many entities, encompassing software suppliers among others (A3, A10, S6, and S8). The mistrust exhibited by individuals was mostly based on apprehensions over the protection of personal data, as S8 states when asked whether they trust their software provider:

> "No, I don't really trust anybody with anything to be honest. The fact that you could say something and suddenly on Facebook there's all these ads for is scary." (S8)

This participant had an increased sense of unease over the wider security environment. This statement also demonstrates a dearth of confidence in diverse institutions, emphasizing apprehensions around internet spying and data monitoring.

4.4.1 Trust in Organizational Decision-Makers.
Several participants (A4, A6, A10, S7, S10) shared a perspective influenced by their professional positions within their respective organizations. These participants hadn't been in decision-making positions and held the belief that it was not incumbent upon them to evaluate or execute security protocols. Conversely, the individuals or teams responsible for these tasks were entrusted with the responsibility, as it was believed that the encryption levels and security measures were in accordance with the requirements outlined by HIPAA. From these participants' perspective, their main responsibility was to offer therapeutic services, while they entrusted the complexities of security to individuals whom they perceived as being more capable of making well-informed judgments. S7 states that:

> "I haven't been in a decision making position in the jobs that I've had have. I'm just a therapist working at a private practice so in that way from my perspective I am putting a lot of trust in the people making the decisions…and then I just kind of do what I'm told because in my eyes it's not my job to make sure those things are done so I'm just trusting that they are done." (S7)

We notice a dependence on the decisions taken by others and view it as outside their responsibility to ensure the implementation of security and privacy measures. This position may present potential vulnerabilities, since it implies a passive attitude to privacy and security. In contrast, nine participants (A3, A5-A9, S4, S6-S8) expressed comparatively diminished apprehensions pertaining to the security and privacy aspects of telehealth technology. The rationales for this exhibited notable disparities. A certain cohort displayed a sense of assurance in the individuals responsible for decision-making within their respective organizations, who diligently scrutinized the software employed. The individuals held the belief that the provision of their tools by these entities engendered a sense of security. As S8 explains:

> "What I use is through the district so I feel like it's pretty safe it's not just like open to the public." (S8)

The demonstrated trust in decision-makers highlights the influence of different roles and organizational structures on perceptions of security in telehealth. From a perspective of data privacy, using a platform sponsored by the district indicates compliance with institutional security procedures. Nevertheless, it is crucial to acknowledge that institutional backing does not provide complete security, underscoring the continuous requirement for alertness and best practices to ensure patient data confidentiality during telehealth sessions.

4.4.2 Trust in Software Providers.
Several participants expressed concerns, especially regarding the security and privacy of certain technological platforms. S6 expressed their lack of faith in the Zoom platform, particularly with regard to concerns about password encryption and stability issues, which ultimately resulted in their decision to cease using it:

> "I think I didn't trust Zoom to work with the password encryption version because it wasn't working so I stopped using it." (S6)

Similarly, A10 expressed apprehensions over the insufficiency of comprehensive details pertaining to the security protocols employed by third-party applications utilized in telehealth, even in cases when they are supported by the makers of the devices.

> "What I didn't feel comfortable with and where I had concerns is I didn't have a lot of information about the specific training companies and their apps for remote programming…[Manufacturers] have been telling that their system is secure however I just didn't have any information other than the manufacturer's word on that." (A10)

A subset of participants exhibited a significant level of trust in their software providers (A4, S1, S3-S5, S7, S9-S10). Several participants noted that they had not encountered any significant usability issues with the software provider they had adopted. Over the course of time, these participants' confidence in the technology grew stronger, especially as they encountered seamless and problem-free engagements with the platform. For these interviewees, the absence of technical malfunctions and usability issues was a testament to the software's overall reliability. This is corroborated by S5's response:

> "I really haven't had a ton of concerns especially as time has gone on. Maybe these things have just been going pretty smoothly." (S5)

S4 notes:

> "I do just trust the platform is maintaining security on their end." (S4)

The trust in the system and technology is sometimes ascribed to the company's established reputation and credibility. The platform was perceived by users as a reputable organization that placed a high emphasis on security, thereby mitigating apprehensions regarding the security and reliability of data. As A3 states:

> "You get what you pay for so we feel comfortable that Blueprint has our best interest at heart and they provide a quality service as well." (A3)

This trust our participant showed their software providers demonstrates a firm belief in their capacity to prioritize data privacy and security. The consequence is an assumption that the software providers' high-quality service includes robust measures for protecting sensitive patient information during telehealth sessions. The

existence of different degrees of trust and the various circumstances that have impacted them highlight the intricate nature of security and privacy views among the telehealth practitioner community.

4.5 Patient Attitudes Toward Security and Privacy

Participants in the interviews provided a range of perspectives on their patients' views regarding the security and privacy aspects of telehealth. Four participants (A3-A4, A8, S6) observed that the patients they encountered placed a higher emphasis on the convenience and user-friendliness of telehealth services compared to any concerns regarding security. Indeed, A8 implies an emphasis on technological disruptions above proactive efforts for data privacy and security. The potential outcome is the possibility of disruptions in telehealth sessions, which might affect the smooth provision of healthcare services.

> "As far as security, no not at all, just a couple of times where the internet has been a problem that's been a frustration on both ends." (A8)

In the case of these individuals, prioritizing the accessibility and efficacy of telehealth in meeting their healthcare requirements superseded concerns regarding security. In fact, when asked whether their patients have ever voiced any concerns over the security and privacy of telehealth, A9 answered:

> "No, they don't feel good they don't hear well that's all they care about." (A9)

This concession that patients do not voice concerns regarding the security and privacy of telehealth indicates a potential lack of patient awareness or engagement with the security aspect of telehealth, emphasizing their primary focus on health issues.

Concerns regarding data logging and the collection of information during telehealth sessions were expressed by some patients, as reported by A10. According to A10, some patients worry about the potential recording of sensitive conversations, despite the primary focus of data logging being on non-verbal information, such as usage patterns in various contexts. This concern emphasizes the delicate nature of patient anxieties regarding confidentiality. In fact, A10 reveals:

> "Patients are concerned about [data logging] on occasion. To them, it might be concerning like 'oh are you recording this information?' I mean how can you record conversations? There might be private conversation I can say with confidence that it's not recording any actual conversation but those are concerns that the patients have and so the data logging can be a super helpful tool but that's the one that patients are often concerned about." (A10)

Conversely, two participants (A2 and S4) reported cases in which patients demonstrated a pronounced inclination towards telehealth as a result of their concerns regarding privacy. S4 provided an example of a particular patient who made the decision to utilize telehealth services to obtain therapy discreetly, thereby circumventing the need for in-person appointments that might inadvertently disclose their condition to individuals within a close-knit community. Telehealth thus allowed this patient to make progress, stressing the

significance of service accessibility in influencing patient decisions, stressing the necessity for more extensive telehealth options to tackle privacy apprehensions and accommodate varied healthcare requirements.

> "[A patient] came in for the evals for [physical therapy (PT)] and [occupational therapy (OT)] and speech, but would not come back for treatment and I had suggested that we try telehealth and he was open to it. He was there twice a week did amazing…but would not come into the clinic for PT and OT and I think it was because he maybe knew it was a small community and he didn't want anyone to see him receiving therapy. Our PT and OT didn't offer telehealth at the time, so he just went without those services." (S4)

In a similar vein, A2 observed that telehealth proved to be a viable option for individuals occupying sensitive roles within their professions, as they harbored heightened apprehensions regarding their privacy and confidentiality. These individuals opted for telehealth services to protect the confidentiality of their personal and medical information. They highlighted that telehealth may be particularly suitable for specific patient demographics that place a greater emphasis on privacy sensitivity. As A2 states:

> "It's really only for specific patients who are very worried about the information that they're sharing being sensitive for their career." (A2)

4.6 Comparative Discussions for Audiologists and Speech Language Pathologists

Within our study, a significant demographic contrast arose between audiologists and SLPs regarding the patients they serve. Forty percent of the questioned audiologists (A3-A4, A6, A10) specifically said that a substantial proportion of their patients were "older adults." Conversely, a lesser percentage of SLPs indicated dealing with older adult patients, with 8 of them (S1, S3-S9) stating that they primarily focus on treating younger patients. This differentiation is essential as this patient demographic frequently face difficulties with technology, a characteristic that significantly impeded their adoption of the shift to telehealth. Several audiologists have seen a dearth of approval or enthusiasm among their primarily older patient demographic about telehealth as A3 states:

> "A lot of our population is elderly and we didn't see a real acceptance or excitement to try it [telehealth]" (A3)

Audiologists highlighted the challenges their patients had while adjusting to digital platforms, revealing a significant obstacle to the mainstream acceptance of telehealth among this particular group even during the peak of the COVID-19 outbreak, as A4 explains:

> "For most of our patient population which is older adults over the age of 65 typically they just would rather come in person to talk to someone…when we offered the telehealth appointments most of them say I'll just come in…I think our patients feel comfortable coming in despite all the precautions and the risk there was before we had [COVID-19] vaccines" (A4)

This also correlates to the overall quantity of telehealth services provided by each group. During 2021, audiologists, on average, provided less than 20% of their sessions through telehealth. Among them, only A2 conducted more telehealth sessions than in-person sessions. In contrast, 4 out of 10 SLPs almost exclusively delivered care through telehealth sessions. Furthermore, audiologists emphasized the technological literacy difficulties faced by their elderly patient demographic on many occasions as well as lack of technology in other cases, as A6 confirms:

> "Our patients really don't have the technology to actually do it [Telehealth] unless they have like a daughter or a family member that's there" (A6)

These patients who lack the necessary devices or digital skills for telehealth, may depend on technologically savvy family members for help, this dependence brings about certain security weaknesses, since family members may interact with the technological elements, putting sensitive health information at risk of unintended disclosure.

On the other end of the spectrum, SLPs emphasized the difficulties encountered in telehealth sessions, particularly with younger children. These children's parents have expressed discontent with the efficacy of telehealth sessions in the early stages of the epidemic. Several participants observed that parents often voice dissatisfaction with the progress made during telehealth sessions and express a preference for in-person therapy, as A4 explains:

> "Parents of now three or four year olds will come in and say that …during the pandemic or the early pandemic they were in therapy that was all virtual and it was very challenging and didn't seem to help at all I hear that comment a lot and then they were eventually be able to find someone providing SLP in person and then usually their parents will report that they started seeing progress once the child was in person" (S7)

This implies that the physical and interactive aspects of in-person therapy may be more advantageous for very young children. It also emphasizes the pragmatic challenges and limitations of telehealth for certain age groups. It implicitly emphasizes the significance of customizing telehealth methods to address the particular requirements and phases of growth of patients.

Our study revealed a nuanced spectrum of perceptions regarding security and privacy was observed among both SLPs and audiologists engaged in telehealth practices. While variations existed within each group, an interesting trend surfaced: a comparatively higher awareness of cybersecurity risks among audiologists. Notably, a greater number of audiologists displayed awareness of the complexities and possible dangers related to cybersecurity in the telehealth setting. The increased consciousness can be ascribed to the unique difficulties audiologists encounter, especially when working with elderly adults who are less acquainted with digital tools. Nevertheless, it is essential to recognize that there were differing perspectives within both occupations. Remarkably, two SLPs (S8, S10) and one audiologist (A8) stated that they would have greater apprehensions regarding cybersecurity if they were involved in a different profession as we can see in the following quotes:

> "[For] most of the students I work with, it's mild to moderate articulation or stuttering…I'm not doing like psychotherapy." (S10)

> "If I were in a different kind of healthcare then I could see maybe some concerns but the kind of stuff I deal with is out in the open, it's not things that people are trying to be quiet about or concerned that anybody's gonna find out about…and I might be less inclined to do as much telehealth as I do just because it would be more sensitive information" (A8)

This viewpoint implies that there may be a tendency to underestimate the security threats related to telehealth. It highlights the importance of being cautious in protecting even seemingly non-sensitive information in order to preserve patient privacy. Furthermore, these admission highlight the fact that cybersecurity issues are influenced by the unique professional domains within the allied healthcare industry, and that individuals' perspectives are shaped by their unique environments, which is influenced by the perceived sensitivity of the information being handled.

5 IMPLICATIONS

Telehealth, a rapidly emerging domain in the healthcare industry, offers a promise of unprecedented flexibility as reflected in its adoption trajectory. At its core, the telehealth paradigm facilitates remote health services for people in need, bridging the geographical divide, and making healthcare more accessible. Drawing from our earlier discussions, we find that audiologists and SLPs hold diverse opinions and experiences about telehealth security and privacy. Our interviews underscore a consensus that security and privacy considerations should harmoniously complement the main objective of healthcare delivery. The present insights from telehealth studies illuminate significant implications for healthcare professionals, researchers, service providers, software vendors, and policymakers.

5.1 Duality in Flexibility

As our participants discuss, the primary driver for this shift towards telehealth adoption often hinges on the flexibility it affords to both patients and practitioners. Our participants also acknowledge that unique communities, whether defined by geographical constraints or socio-cultural factors, particularly benefit from telehealth (see quote from S4 in Section 4.5). For professionals in high-profile or sensitive job roles, the benefit of telehealth lies in its promise of discretion, ensuring their health consultations remain confidential and free from public scrutiny [3] (see quote from A2 in Section 4.1.2). Similarly, for individuals who are reliant on external means of transportation—be it due to financial constraints, physical disabilities, or other reasons—telehealth provides a consistent and convenient avenue for access to healthcare without the hassles of travel [31].

However, the very flexibility that makes telehealth appealing also brings to the fore several challenges, especially in the realms of security and privacy. Our interactions with practitioners shed light on a spectrum of concerns. A recurrent theme was the potential for unauthorized recording of sessions, notably by parents or caregivers (see quotes from S6 and A2 in Section 4.3.2). Such recordings, besides infringing on patient-practitioner confidentiality, could pave

the way for unauthorized dissemination of proprietary therapy and care techniques. This could have cascading effects, from privacy violations leading to trust issues between patients and providers, to potential legal and ethical ramifications. Another emergent concern revolved around the unintended intrusion of caregivers or parents into telehealth sessions (see quote from A2 in Section 4.3.2). Such intrusions, whether inadvertent or deliberate, compromise the session's sanctity, potentially derailing the care trajectory and jeopardizing patient privacy. Adding another layer of complexity, practitioners also highlighted an emerging trend: patients attending sessions from unconventional or unsecured locations (see quote from S1 in Section 4.3.1). Such practices not only introduce additional variables into the care process but also lead to practitioners feeling undervalued or disrespected. Our findings also underscore a significant concern that often remains in the backdrop: the vulnerability of specific patient segments.

While some population groups gain accessibility with telehealth, others fall behind. For instance, elderly individuals, often not as technologically adept, may struggle with platform intricacies [6] (see quote from A10 in Section 4.3.1). Similarly, there is evidence that neurodiverse adults might find the transition to digital platforms overwhelming [88]. As the telehealth industry evolves, addressing accessibility issues of people with additional needs should be at the forefront, especially when it comes to the protection of healthcare data. The majority of past research discusses the opportunities that telehealth offers [74, 85]. This work extends this body of literature by highlighting the challenges that come with the flexibility that telehealth offers, challenges associated with ensuring the privacy of patient information, preventing unauthorized use of therapy and clinical interventions, and inclusion of people with different abilities.

5.2 Recommendations for Increasing Trust in Telehealth Technologies

Trust is fundamental to the adoption and continued use of telehealth as mentioned by our participants (see Section 4.4) and shown through prior works [84]. A synthesis of our participant feedback suggests that trust towards telehealth is multifaceted, and bears significant consequences for platform developers and healthcare providers alike. Our findings suggest that a comprehensive discussion about trust necessitates a thorough understanding of its many elements and drivers. Direct and indirect user experiences lay the foundation for trust.

People often favor technologies that have strong reputation, garnered positive feedback, or have secured commendable reviews from both their peers and industry experts [21]. This is a form of institutional trust: that learned towards a specific brand and/or institution [2]. Similarly, healthcare technology providers that have a strong reputation in a community were favored by the providers and more importantly, were trusted to prioritize security and privacy (see quote from A3 in Section 4.4). However, complete transparency regarding the collection, processing, and storage of data by telehealth providers is demanded [41] (see quote from A10 in Section 4.4). Platforms that champion this information transparency would position themselves favorably in the trust spectrum [56]. An absence of understandable and readily available information

could foster mistrust, particularly if users perceive they are wading through a quagmire of technical jargon. Despite the strong reputation and transparency, some providers may be apprehensive about adopting telehealth technologies due to dispositional trust - individuals' propensity to trust technologies [34]. Participants in this work did not discuss dispositional trust as a factor but we posit that it may play a significant role in telehealth adoption.

Trust is also a dynamic construct that is established over time through individual interactions with technology [55]. Error-free interactions with emerging technologies (automated process controls, adaptive cruise controls, autonomous driving) have been shown to consistently increase trust over time [58]. Likewise, several providers in this work mentioned how error-free interactions with telehealth technologies have influenced them to perceive the system to be reliable and trustworthy (see quote from S5 in Section 4.4). However, this doesn't necessarily suggest that providers are over-trusting, but the contrary: participants understood the telehealth technologies could be vulnerable to threats (see quote from A5 in Section 4.2.2). It is expected that technologies that fail should lead to a temporary reduction in trust [50]. They typically stem from one's own firsthand experience of errors encountered while using the technology. However, providers in this study noted stories about security attacks (on healthcare systems or otherwise) as a cause for degraded trust. For example, Zoom which is one of the most prevalent videoconferencing platforms used by healthcare providers has experienced several data breaches which may contribute to trust degradation [67]. Providers also noted personal experiences as causes for trust degradation. For example, authentication errors, while they might seem minor, can have grave implications such as privacy violations, data breaches, and operational inefficiencies [54] (see quote from S6 in Section 4.4). Such issues don't just hamper the individual workflows but also cast doubts over the platform's overall reliability especially when it comes to healthcare data.

When providers aren't the main agents choosing the technology, trust is indirectly anchored on the credibility of the decision-maker(s). This is a notable dimension of trust and decision-making that emerged from interviews with the providers in this work - a form of distributed trust and decision-making (see quote from S7 in Section 4.4.1). While it reduces the burden on providers by enabling experts in information and computing technology to adopt and manage telehealth technology, it also brings unique challenges and opportunities. We characterize this as distributed trust because individuals (IT experts) who are making the adoption decisions based on initial institutional and dispositional are distinct from individuals (providers) who are learning to trust based on their interactions with telehealth technology. Such a distributed trust relationship may introduce misaligned priorities and trust levels. For instance, the technology may be trustworthy from a deployment and management perspective but unreliable from a regular interaction perspective. Likewise, there may be instance of over-trust that emerges from such distributed trust relations (see quotes from S7 and S8 in Section 4.4). Also, in scenarios where a suggested platform underperforms, who is accountable for the patient data? Establishing well-defined lines of responsibility and involving users (providers) in early phases of decision-making may preempt potential future disputes.

Finally, healthcare providers should be leveraging business associate agreements (BAAs) with telehealth technology providers including Zoom or Google, as required under HIPAA. These legal documents can help offset risk by requiring third party vendors to protect PHI. Although, all our participants emphasized their commitment to complying with HIPAA regulations in respect to the technology they use and their operational processes, only four participants mentioned having or relying upon BAAs with telehealth platform providers to protect PHI or manage security and privacy liability.

5.3 Recommendations for Training and Awareness of Security Hazards

Within the healthcare industry, it is broadly acknowledged that training is paramount for compliance efforts [4, 81]. All the participants practiced in the United States and are required by law to know and comply with HIPAA. While HIPAA provides flexibility in implementing obligatory security and compliance measures, participants often demonstrated limited awareness of these requirements (see Section 4.2). More concerning is the variation we observed in participants' awareness of threats and understanding of the necessary actions. Many were understandably anxious while few others reported to be taking actions (safe practices, investing in IT resources) to prevent a breach and buying insurance to cover losses in the event of a breach. This resulted in a deficiency in their understanding of potential security and privacy threats. Every healthcare professional—not just business owners—is accountable for HIPAA compliance.

This prevailing variation in awareness and responsibility about security threats amongst healthcare providers has the potential to compromise patient data, thereby undermining the efficacy of telehealth services. Comprehensive training tailored to telehealth could ameliorate these risks. Specialized telehealth awareness becomes pertinent given that the attack surface for telehealth distinctly deviates from traditional in-person information exchanges. This distinction was often misconstrued by participants (see quote from A2 in Section 4.2.1). Telehealth introduces an intermediary third-party communicator, a novel internet-based data transmission, and a unique patient connection environment. Although awareness of security and privacy threats is a prerequisite for compliance, current evidence doesn't conclusively establish that such awareness indeed minimizes data breaches or other similar incidents [10].

Current medical and state licensure processes should adopt mandates for specific knowledge in cybersecurity and privacy. This would fit within state licensure that typically necessitates a set duration of continuing education. Incorporating telehealth cybersecurity training, either as an essential prerequisite for conducting telehealth or as an elective within continuing education, seems judicious. Most private clinics have the budgets to support continuing education. Given the ceaselessly evolving cyber threat landscape, instating telehealth security training as an imperative appears indispensable. Periodic continuing education will ensure healthcare providers stay updated on emerging challenges and their countermeasures [17].

5.4 Telehealth Service Providers and Software Vendor Recommendations

Telehealth hinges not only on technological innovation but also on a symbiotic balance between usability, security, and privacy. As pivotal stakeholders, telehealth service providers and software vendors wield the unique responsibility to ensure that software architecture and deployment strategies align with the best interests of both practitioners and patients. Given the sensitive nature of healthcare data, it is imperative for vendors to build applications from the ground up with security in mind. Ensure that data, both at rest [11] and in transit [70], undergoes end-to-end encryption [52]. This diminishes the risk of unauthorized access or breaches during transmission between client and server or while stored. Undertake regular penetration testing and vulnerability assessments to identify [87] and rectify potential weak points in the system before malicious entities exploit them.

Embedding privacy controls from the onset can mitigate potential risks in data handling and processing is critical. We recommend incorporating comprehensive consent management tools that enable patients to have granular control over who accesses their data, how it's used, and for what purpose [14, 25]. Adhering to the principle of data minimization [73], such a solution could ensure that only essential data is collected and stored. This reduces the potential attack surface and exposure. Additionally, engagement with industry experts and practitioners to develop specialized guidelines tailored to address the unique challenges such as difficulties observing subtle communication cues that help SLPs assess articulation, fluency and overall communication effectiveness, or difficulties with calibration and standardization faced by audiologist, as well as limited ability to assess sound perceptions and understanding speech in noisy environments faced by both audiologists and SLPs in telehealth will be helpful. This requires collaborations with regulatory bodies, institutions, and practitioners to continuously refine and update standards, ensuring they remain relevant in the face of evolving technological landscapes. Additionally, while intuitive interfaces play a pivotal role in encouraging telehealth adoption, it is crucial to strike a harmonious balance where ease of use doesn't jeopardize security protocols. We recommend integrating adaptive authentication mechanisms, which adjust authentication challenges based on contextual factors such as user behavior or device integrity. This aligns with the experiences of certain participants who have raised concerns about the usability of certain telehealth platforms, namely for patients who struggle with account creation and session login and authentication as S6 notes:

> "there were like multiple steps for the secured Zoom…it wasn't as easy as just click on this button and you can enter my teletherapy space. It was just too many steps for the population I was working with." (S6)

Incorporate interactive training modules within the software to guide practitioners and patients on best practices to maximize security during telehealth interactions. The guidance provided by NIST 1800-30B – a US-centric standard– serves as a foundational starting point for constructing robust telehealth platforms [18].

5.5 Policy Recommendations

As the adoption of telehealth services continues to burgeon, regulatory frameworks must concurrently evolve to adequately address the nuanced challenges introduced by this digital transformation. While HIPAA has traditionally acted as a cornerstone in healthcare data protection, with technology-agnostic requirements, the advent of telehealth demands specific refinement [65, 77]. The integration of more explicit telehealth-centric clauses can elevate the overall efficacy of this regulation. Detailed guidelines are needed for delineating the recommended practices for virtual patient interaction. This can span aspects like maintaining visual privacy, ensuring session confidentiality, and utilizing secure communication channels. From our work, we see an over-reliance on systems, thus periodic security audits for telehealth platforms are needed. By ensuring they align with the stipulated security standards, it becomes possible to preemptively identify and rectify vulnerabilities. Addressing the constraints of the Office for Civil Rights (OCR) is equally paramount. As the entity tasked with overseeing compliance, fortifying its capabilities can significantly augment the enforcement landscape [61].

The initiatives such as the Audiology and Speech-Language Pathology Interstate Compact (ASLP-IC) are commendable as they foster a consistent standard of care across states [8]. Amplifying this approach can involve the creation of a unified cybersecurity and privacy standard that professionals must adhere to, regardless of the state they practice in. The development of a collaborative ecosystem could allow professionals to share their telehealth experiences, challenges, and insights. A peer review mechanism can help disseminate recommended practices and novel solutions across the community.

5.6 Patient-Related Concerns and Recommendations

As the telehealth landscape continues to evolve, a prominent issue emerges from people accessing services from unregulated or uncontrolled environments. Such scenarios inadvertently introduce a plethora of security vulnerabilities that remain challenging to circumvent. Even though consent documents can apprise them of these associated risks and furnish a legal safety mechanisms, relying solely on these documents doesn't inherently bolster security or privacy in real-world applications [23]. Providing educational resources is pivotal to navigate this quandary. But it is not merely about creating materials; it's about crafting comprehensive guidance tailored for diverse patient profiles. Let's delve deeper into the potential facets of this approach: Interactive, easy-to-follow online tutorials can be designed to guide patients through the steps of setting up a secure environment. This could range from securing their WiFi networks, such as enabling virtual private networks, to understanding the basics of end-to-end encryption.

A concise, printable checklist can ensure that people using telehealth follow a standardized protocol before initiating a telehealth session. This can include actions like finding a private location, ensuring their device's software is updated, and checking the security settings of the telehealth application. After patients undergo a telehealth session, prompt them to provide feedback regarding their security experience. This could inform areas where the educational

materials might need refinement. The realm of cybersecurity is constantly evolving. Thus, it is essential to provide patients with regular updates about new threats or security measures. An automated monthly newsletter or notifications within the telehealth platform can serve this purpose effectively. Different patients may face diverse challenges based on their locations, tech-savviness, and the devices they use. Offering guidance based on specific scenarios can make the advice more actionable and relevant. By incorporating these facets, we can empower people using telehealth to take charge of their security and ensure that telehealth services remain both accessible and secure.

6 FUTURE WORK AND LIMITATIONS

Our work offers invaluable insights into the privacy and security concerns and perceptions of allied healthcare practitioners regarding telehealth. It is important to note that all participants in our study were audiologists and speech-language pathologists actively engaged in private practice settings. This deliberate selection ensured a comprehensive grasp of the distinct experiences and challenges these professionals face. Moving forward, our research will expand to include a broader spectrum of healthcare experts. Additionally, the experiences of patients remain critical. Hence, in our future research we will incorporate patients' perspectives, recognizing their essential role in shaping telehealth interactions.

While our qualitative study provides rich insights, certain inherent limitations must be acknowledged. A primary limitation stems from generalizability concerns. Our sample consisted exclusively of audiologists and speech-language pathologists in private practice, which allowed an in-depth understanding of this group's perspectives. However, the findings may not generalize to other allied healthcare professionals or those in non-private practice settings. Future studies should incorporate a wider range of participants across various allied healthcare disciplines and practice types to determine if the themes hold true more broadly. Additionally, our sample exhibited some skewness in gender distribution. This disproportionate gender distribution could introduce potential bias, although it is reasonably representative given. Still, incorporating a more balanced gender mix could reveal differing viewpoints. Furthermore, qualitative research relies heavily on participants' memories and willingness to share openly. Biases such as selective memory, recency effects, attribution errors, and social desirability biases may shape participant responses during interviews. Observations and surveys could complement interviews to mitigate some biases. Overall, our findings establish an important foundation for future research to build upon through broader, more diverse samples, mixed methods, and longitudinal tracking of telehealth privacy and security perceptions among allied healthcare professionals.

7 CONCLUSION

The telehealth paradigm in allied healthcare, particularly exemplified by audiologists and SLPs, poses intricate challenges concerning data privacy and security. We conducted an extensive qualitative analysis involving 20 healthcare professionals spanning audiologists and SLPs over six months. This study shows critical nuances in privacy and security, accentuating the exigency for bespoke solutions tailored to address its unique complexities particularly

from the providers' perspectives. Our findings shed light on a diverse spectrum of views regarding the robustness and credibility of existing technologies, trepidation surrounding privacy breaches and security, as well as the subsequent patient behaviors towards the providers. Notably, participants expressed that the pressures of their primary medical duties sometimes overshadow the imperative nature of patient data confidentiality. This often results in the inadvertent relegation of data security and patient privacy significance, constraining their ability to suitably address these issues. Based on our study, we advocate for the implementation of both secure and user-centric telehealth systems. Complementing these with rigorous training modules could potentially diminish the supplementary burdens borne by healthcare practitioners.

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A   INTERVIEW QUESTIONS

The following is the interview script and the semi-structured interview questions asked to the participants:

Thank you for agreeing to participate in this study. We will be asking you some questions about telehealth services. We appreciate your time. We will record this conversation and please let us know if you have questions or concerns.

A.1   General Telehealth Context

- In the last year, estimate the percentage of your sessions that were done via telehealth and in-person.
- For what services do you offer telehealth?
- When did you first begin to offer telehealth? Please describe your experience in the decision and implementation of beginning to offer telehealth.
- What factors did you consider as you decided into choosing this technology(s)?
- Have you received any training regarding telehealth? If yes, who provided the training and what type of training have you received in this regard?
- What training, if any, have you received related to HIPAA security and privacy?
- In what ways, if any, does security and privacy of PHI factor into a telehealth appointment?

A.2   Telehealth Procedures & Execution

- What roles do various staff members play in a telehealth appointment?
- Do you have a specific room or location where you conduct telehealth appointments? If yes, describe the room/environment where you conduct telehealth.
- If no, where do you conduct telehealth appointments? What aspects or factors goes into to choose the location for the telehealth appointment.
- How much of it does it involve patient privacy? [Followup to the previous question]
- What technology(s) do you use during telehealth appointments?
- How reliable is the technology used during telehealth appointments?
- Describe the process involved with a telehealth appointment. Can you explain details regarding the login procedure for telehealth appointment connection.
- When you setup the appointment what information do you take from the patient and where do you save that information?
- Explain in detail how you use different features of the telehealth technology(s) during the appointment with the patient.
- Explain in detail how you maintain communication with the patient following an appointment?
- What kind of information do you exchange through these communication channels?
- For a hybrid structure, how do you navigate between the in-person and the virtual aspect of the telehealth?

A.3 Security & Privacy

- For what aspects of telehealth systems do you feel confident and secure? Do you have any privacy or security concerns about the telehealth services?
- What features would you like to see added to your telehealth systems? What concerns do you have regarding the telehealth services?
- What concerns have patients expressed to you about the telehealth systems?
- Anything else you would like to add.

A.4 Demographic Questions

- Gender
- Area of Medical Expertise
- Highest degree
- Years of Experience: Medical
- Years of Experience with Telehealth
- Current Role in Your Organization (e.g. clinician, owner, staff)
- Gross revenue of your practice in 2021 and 2022?
- Total number of full-time staff in the practice?
- How many patients are in your database?

B CODES

Table 2: A snapshot of the correlated open codes and themes generated for thematic analysis of the analyzed responses

Theme	Open Codes
Importance of telehealth	telehealth is needed, telehealth is better than patient abandonment, telehealth is better for some patients, telehealth is better for some services, telehealth in rural communities, prefer telehealth over in-person, patient choice telehealth or in-person, get caregiver to help with telehealth sessions, reasons for choosing telehealth: fulfilling a need, reasons for choosing telehealth: don't need to see patients in-person, reasons for choosing telehealth: patients' aggressiveness towards providers, reasons for choosing telehealth: prevent illness, reasons for choosing telehealth: providers personal safety, reasons for choosing telehealth: limiting the commute, reasons for choosing telehealth: cost savings, reasons for choosing telehealth: no distraction, reasons for choosing telehealth: necessity, reasons for choosing telehealth: efficient time management, reasons for choosing telehealth: convenience
Training	telehealth training, HIPAA training, educate/support patients
Limitations of telehealth	payment differences in telehealth, admin help, older adults prefer in-person, patient worries: effectiveness of telehealth, payment differences in telehealth, usability issues in telehealth, adapting in-person care to telehealth, change attitude of providers against telehealth, concerns about connectivity, difficulties of setting up telehealth, keeping attention of patients, lack of resources, patient worries: patient usability concerns, populations who had a hard time transferring to telehealth, provider concerns about telehealth, telehealth not suitable for all patients, telehealth on its own is difficult or impossible, time constraints to learn tech, vulnerable populations
HIPAA and Legal Implications	BAA, HIPAA compliance, eavesdropping in-person
Privacy and Security Considerations	as secure as in-person, data security on the internet, don't care if patient is not in private location, don't know how secure it is, don't trust anybody, don't trust tech provider, help from spouse, I do patient care not cybersecurity, I don't know whether it's two factor, I would think more about security if I were in a different field, importance of privacy, insecure behaviour, keep up with security news, No problem with tech, No/limited information taken during telehealth, Not familiar with all features of tech, Not important for patient to be in private area, Not important to be hacked, Not my area of expertise, Not saying patient names, nothing is 100% secure, past practices vs now, patient doesn't worry about telehealth, patient in private setting for telehealth, patient security behavior, patient worries/patient security concerns, patient worries/privacy, patient care more about health than privacy, positive security and privacy feeling, privacy and security assumptions, privacy and security conscious, private setting, provider security concerns, reasons behind choosing tech: security/privacy, security implemented, trust people making the decisions, there's only so much we can do about security, uncertainty about security, unconcerned about privacy and security, vetted by some department, we do the best we can to safeguard data privacy and security, We don't really talk about private information, worries about personal privacy, Zoom attacks stories ∎

HAVE YOU HEARD?

Three Teams Advance to Final Round of ADA Student Business Plan Competition

ADA is pleased to announce that three teams have been selected to advance to the final round of the 2024 ADA Student Business Plan Competition:

- Team 1. Marisol Rodriguez, Nova Southeastern University; Kaitlyn Hrouda, Nova Southeastern University

- Team 2. Gabrielle Norton, University of North Carolina

- Team 3. Sydney Mingle, University of North Carolina; Darla McDonald, University of North Carolina

"Based on the business plan proposals developed by these teams, the future of private practice audiology is very bright," said Stephanie Czuhajewski, MPH, CAE, ADA's executive director. "These students have worked incredibly hard to make it this far into the competition and I look forward to seeing how they take their business plans to the next level!"

The ADA Student Business Plan Competition finalists will receive an all-expense paid trip to the AuDacity Conference at the Gaylord Texan, September 5-8, 2024, in Grapevine (Dallas), Texas where they will present their final business plans in person. The Grand Prize Winner/Team will receive a $5,000 cash grant to be used to advance business objectives and enhance business and leadership skills. Business plans are judged on the following criteria: creativity, feasibility, completeness, cohesiveness, and professionalism.

For more information, visit https://www.audiologist.org/students/current-students/business-plan-competition. ADA would like to thank Stearns Bank for its generous support of the 2024 ADA Student Business Plan Competition.

Maryland Audiologists Successfully Advocate to Align Audiology Practice Act with Their Qualifications and Training

On October 1, 2024, Maryland SB 795 and HB 464 will be enacted, making Maryland the most recent state in the union to fully align its audiology practice act with the education, training, and qualifications of audiologists practicing in the State.

ADA members Drs. Jana Brown, Briana Bruno Holtan, Melissa Segev, and Alicia Spoor led efforts undertaken by the Maryland Academy of Audiology (MAA) to draft the legislation, provide testimony, information, and resources to secure support from legislators, and to engage stakeholders from various agencies and organizations to accomplish this long-anticipated achievement.

The bills, which passed with overwhelming bi-partisan support, make it clear that audiologists are authorized to "evaluate, diagnose, manage, and treat auditory or vestibular conditions in the human ear" in the State of Maryland. The newly minted law, which goes into effect on October 1, 2024, also makes other important updates to Maryland's statutory definition of the Practice of Audiology to include and codify the following:

- Prescribe, order, sell, dispense, or externally fit a sound processor to an osseo-integrated device for the correction or relief of a condition for which osseo-integrated devices are worn.

- Prescribe, order, sell, dispense, or externally fit a sound processor to a cochlear implant for the correction or relief of a condition for which cochlear implants are worn.

- The conducting of health screenings.

- The removal of a foreign body from the external auditory canal that is not impacted to the point it requires anesthesia.

- The removal of cerumen from the external auditory canal that is not impacted to the point it requires anesthesia.

- The ordering of cultures and bloodwork testing as it relates to the auditory or vestibular conditions in the human ear.

- The ordering and performing of in-office nonradiographic scanning or imaging of the external auditory canal.

- The ordering of radiographic imaging as it relates to the auditory or vestibular conditions in the human ear.

Read the full bill text here: https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/hb0464

"Modernizing the audiology practice Statute in Maryland to finally reflect the level of education and training of Doctors of Audiology allows licensed audiologists, especially in rural areas, to provide evidence-based care to patients. Additionally, this new law will reduce the burden of office visits necessary for a patient to obtain appropriate diagnoses and efficient treatment" said Jana Brown, Au.D. Dr. Bruno Holtan stated "Beginning in October, Maryland audiologists will be able to better care for patients and collaborate with physicians. This Statute change harmonizes audiologists with the other clinical doctors in the state. In addition, more adults will be able to access hearing healthcare treatment with the new insurance coverage for hearing aids."

"Because of these audiologist 'AuDvocates,' Maryland is now the lodestar for the rest of the country," said Jason Leyendecker, Au.D., ADA President. "MAA's efforts to square the practice of audiology with their audiology practice act demonstrate the critical role that state associations play in advocacy for licensure issues. Every audiologist should belong to their state association—and if their state doesn't have a professional audiology association, they should start one."

As a reminder, ADA provides a $100 discount off its individual membership dues for audiologists who belong to their state association, and $300 off practice membership dues for practice owners who belong to their state association. ■

Medicare and Medical Necessity for Audiologic and Vestibular Testing

BY KIM CAVITT, Au.D.

As the audiologist is the rendering provider on the claim and the physician order is no longer required in every situation, it is the responsibility of the audiologist to determine and document medical necessity. Also, where it is required, a physician order does not guarantee medical necessity, no matter how it is written. When ordered, the testing needs to meet the criteria outlined in section 80.3 (B) (https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/bp102c15.pdf and (E).

In order to document medical necessity, a comprehensive case history/review of systems is warranted and should be documented in the medical record. This medical history could be obtained using a form provided to the patient as part of the initial intake paperwork and outlined in the audiological evaluation report. Per Medicare, 'when the medical record is subject to medical review, it is necessary that the record contains sufficient information so that the MAC may determine that the service qualifies for payment. For example, documentation should indicate that the test was ordered, that the reason for the test results in coverage, and that the test was furnished to the patient by a qualified individual".

If the audiologic and vestibular testing meets the criteria below and the information is documented in the medical record, this testing should be covered by Medicare and Medicare Advantage. Per Medicare, "if a physician refers a beneficiary to an audiologist for testing related to signs or symptoms associated with hearing loss, balance disorder, tinnitus, ear disease, or ear injury, the audiologist's diagnostic testing services should be covered even if the only outcome is the prescription of a hearing aid". The criteria for coverage include:

- "Evaluation of suspected change in hearing, tinnitus, or balance;
- Evaluation of the cause of disorders of hearing, tinnitus, or balance;
- Determination of the effect of medication, surgery, or other treatment;
- Reevaluation to follow-up changes in hearing, tinnitus, or balance that may be caused by established diagnoses that place the patient at probable risk for a change in status including, but not limited to: otosclerosis, atelectatic tympanic membrane, tympanosclerosis, cholesteatoma, resolving middle ear

infection, Meniére's disease, sudden idiopathic sensorineural hearing loss, autoimmune inner ear disease, acoustic neuroma, demyelinating diseases, ototoxicity secondary to medications, or genetic vascular and viral conditions; THIS IS THE CRITERIA FOR ROUTINE MONITORING OF HEARING, TINNITUS and BALANCE.

- Failure of a screening test (although the screening test is not covered);

- Diagnostic analysis of cochlear or brainstem implant and programming; and

- Audiology diagnostic tests before and periodically after implantation of auditory prosthetic devices".

Most audiologic testing will meet these criteria for medical necessity, just not all. Some examples where it may not meet the criteria:

- Testing for the sole purpose of fitting or modifying a hearing aid. For example,

- Routine, annual testing that does not meet the criteria outlined above (as there is ZERO evidence on how often an individual should be assessed and NOT afforded an allowance by the US Preventative Health Service).

- Reassessment used as a sales tactic to encourage replacement (this is VERY, VERY common).

- Reassessment to program or reprogram a hearing aid in the absence of any of the criteria listed above.

- Testing required by a state for dispensing replacement hearing aids in the absence of any criteria listed above.

If the audiologic or vestibular testing is medically reasonable and necessary per Medicare guidelines and the patient has Medicare Advantage, the Medicare Advantage plan must also cover the testing. If your practice is out of network for the Medicare Advantage plan and medical necessity was met, your practice can only collect the Medicare Limiting Charge for Medicare covered items and services. When out of network, providers should not accept assignment on the claim. You cannot collect your usual and customary fees for covered services.

It is also important to note that audiologists cannot opt out of Medicare, enter into private contracts with Medicare beneficiaries or charge their usual and customary rate for Medicare covered items and services. We are subject to mandatory claims submission provisions. This too is clearly outlined in Chapter 16, section 80.3. Medicare states: "if an audiologist charges or attempts to charge a beneficiary any remuneration for a service that is covered by Medicare, then the audiologist must submit a claim to Medicare".

Also, Medicare clearly indicates, in Chapter 16, section 90 (https://www.cms.gov/regulations-and-guidance/guidance/manuals/downloads/bp102c16.pdf) that they do not cover routine items and services, especially if related to fitting or modifying a hearing aid (Chapter 15, section 80.3(C): https://www.cms.gov/regulations-and-guidance/guidance/manuals/downloads/bp102c15.pdf). Some Medicare Advantage plans may cover limited routine testing. This will vary plan by plan and may involve third-party, hearing benefit plans. In healthcare, which you can note in section 90 of Chapter 16, most routine "testing" in healthcare are screenings. Hearing screenings are not covered by Medicare.

When a health plan or hearing benefit plan indicates that medically necessary hearing or vestibular testing cannot be billed to the parent Medicare or Medicare Advantage plan for coverage as it is inclusive to a hearing aid benefit, it is recommended that the provider seek the guidance of the parent Medicare Advantage plan as well as legal counsel that specializes in health care law. It is important to determine the legalities and compliance of health plan terms and conditions in light of your other managed care commitments. ∎
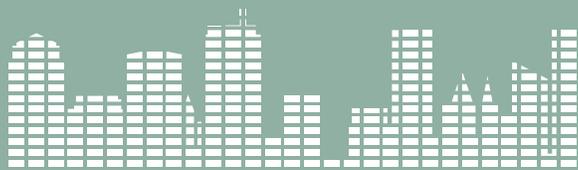
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CONFERENCE AGENDA

YOU IN?

THURSDAY, SEPTEMBER 5, 2024 – PRE-CONFERENCE WORKSHOPS	
8:00 AM – 3:00 PM	**Clinically Efficient and Financially Viable Implementation of Vestibular Diagnostic Services In Private Practice** (Requires a separate fee during registration). Speaker: Rob Allen, Au.D.
	Audiology Success Blueprint: Learn How to be More Productive, Feel Less Alone and Increase Team Unity. This workshop requires a separate registration at dB Coaching Group. Hosted by dB Coaching Group
	Gold Circle Music Audiology Class. This workshop requires a separate registration at Sensaphonics. Hosted by Sensaphonics Speaker: Michael Santucci, Au.D.
	Cerumen Management Workshop (Requires a separate fee during registration. 24 person limit. First come, first served.) Speaker: Rita Chaiken, Au.D.; Jiovanne Hughart, Au.D.

THURSDAY, SEPTEMBER 5, 2024	
3:15 PM – 4:45 PM	**Technology Update** Speakers: Andy Bellavia, Steve Taddei, David Kemp
4:45 PM – 5:00 PM	**Break**
5:00 PM – 6:00 PM	**FEATURED KEYNOTE SESSION Auditory Wellness: How Audiologists and Persons with Hearing Loss Can Assess and Optimize Auditory Well-Being** Sponsored by CareCredit; Speaker: Barbara Weinstein, Ph.D.; Moderator: Frank Wartinger, Au.D.
6:00 PM – 7:30 PM	**Opening Reception in the Exhibit Hall**

FRIDAY, SEPTEMBER 6, 2024	
7:00 AM – 8:00 AM	**Breakfast in the Exhibit Hall**
8:00 AM – 8:30 AM	**President's Address** Speaker: Jason Leyendecker, Au.D.
8:30 AM – 9:30 AM	**Featured Keynote Session: Soundtrack of Silence** Sponsored by Entheos; Speaker: Matt Hay
9:30 AM – 10:00 AM	**Break in the Exhibit Hall**
10:00 AM – 11:15 AM	**Featured Keynote Session: In-Tune: Communicating Clearly and Ethically about Hearing Loss and Cognitive Decline/Dementia** Sponsored by Signia; Speaker: Jan Blustein, M.D., Ph.D.; Moderator: Brian Taylor, Au.D.
11:15 AM – 11:30 AM	**Business Plan Competition, Presentation 1**
11:30 AM – 12:30 PM	**Lunch in the Exhibit Hall**
12:30 PM – 1:45 PM	**The Intra State: The State of State Advocacy in Audiology** Speaker: Deb Abel, Au.D.; Jana Brown, Au.D.; Nikki Kopetsky, Au.D.; Natalie McKee, Au.D.; Moderator: Shruti Kulkarni, Esq.
1:45 PM – 2:00 PM	**Business Plan Competition, Presentation 2**
2:00 PM – 2:30 PM	**Break in Exhibit Hall**
2:30 PM – 3:45 PM	**Into the Fray: Federal Advocacy Workshop** Speaker: Stephanie Czuhajewski, MPH; Mike Merola; Alicia Spoor, Au.D.
3:45 PM – 4:30 PM	**Business Plan Competition, Presentation 3, Deliberation & Awards**
4:30 PM – 4:45 PM	**Break**
4:45 PM – 6:00 PM	**Member Meeting & Happy Hour**
6:00 PM – 7:00 PM	**Reception**

SATURDAY, SEPTEMBER 7, 2024	
7:00 AM – 8:00 AM	**Breakfast in the Exhibit Hall**
	The Inside Scoop: CCMC Benchmarking Study Results Sponsored by Phonak; Speaker: Deanna Serrano, M.S.
8:00 AM – 9:30 AM	**Innovating Tinnitus Treatment** Speakers: Tish Ramirez, Au.D.; Emily McMahan, Au.D.
	Diagnosis and Intervention of Vestibular Migraines Speakers: Andrea Gohmert, Au.D.; Kevin Franck, Ph.D., MBA
	Developing Your Brand in the Community. Pilot Results of Sound Marketing Strategies Speaker: Alyssa Ricevuto, Au.D., MBA
	Concurrent Session 4 Speakers: TBD
9:30 AM – 10:00 AM	**Break in the Exhibit Hall**
10:00 AM – 11:30 AM	**Crafting Team Unity Without Losing Your Mind** Speaker: Amy Badstubner, Au.D.; Kari Dermer, Au.D.
	Lean IN: Talking to Patients and Families About the Link Between Hearing Loss and Cognitive Decline Speaker: Jan Blustein, M.D., Ph.D.; Barbara Weinstein, Ph.D.
	Influencing and Engaging: Marketing Strategies Speaker: Katie Armatoski, Au.D.; Chelsea Treseder, MBA, Pivot
11:30 AM – 12:30 PM	**Lunch in the Exhibit Hall**
12:30 PM – 2:00 PM	**Innovations in Speech in Noise** Speaker: Matt Fitzgerald, Ph.D.
	Incentivization: Legal Issues and Employee Compensation Speaker: Brandon Pauley, Esq.
	Instruments of Change: Music Audiology can be Music to your Ears Speakers: Michael Santucci, Au.D.; Frank Wartinger, Au.D.
	Intelligence Remastered: Using AI in Your Practice Speakers: Amol Nirgdukar; Adam Locker, Au.D.
2:00 PM – 2:15 PM	**Break**
2:15 PM – 3:45 PM	**In-Depth Discussion on Managed Care** Speaker: Erin Downard, Au.D.; Ron Gleitman, Ph.D.; Carrie Meyer, Au.D.; Moderator: Melodie Maerz, Au.D.
3:45 PM – 4:00 PM	**Break**
4:00 PM – 5:30 PM	**Insights on Imaging** Speakers: Walter Kutz, M.D.
5:30 PM – 6:30 PM	**Closing Reception**
SUNDAY, SEPTEMBER 8, 2024	
8:00 AM – 11:00 AM	**Workshop** Speaker: TBD
	In and Out of Network Workshop (Free to attend registration required. 50 person limit. First come, first served.) Speaker: Kim Cavitt, Au.D.
	Inner Ear Therapeutics: A Pharmacology Tutorial for Audiologists (Free to attend but registration required. 50 person limit. First come, first served.) Speaker: Colleen LePrell, Ph.D.

THANK YOU TO OUR SPONSORS!

Study 3 Dunedin Multidisciplinary Health & Development Study, New Zealand

- Following the lives of 1037 babies born between in 1972 and 1973
- Seeks to answer questions about how people's early years impact mental and physical health as they age
- Data is used to inform New Zealand's national government policy decisions on aging

Study 4 Kauai Longitudinal Study

- Following the lives of a multi-racial cohort of 698 children born on the Hawaiian island of Kauai in 1955
- Examining differences in vulnerability and resilience and a goal to identify protective factors within the children, the family, and the cultural and caregiving environment across the lifespan

Study 5 Chicago Health, Aging & Social Relations Study

- A study of 229 Caucasian, African American, and Hispanic men and women who ranged from 50-68 years of age at baseline, beginning in 2002
- Analyses of demographic factors, health, cognitive function, loneliness, and social contacts

Study 6 The Baltimore Healthy Aging in Neighborhoods of Diversity Across the Lifespan

- An interdisciplinary, community-based, longitudinal epidemiologic study examining the influences of race and socioeconomic status (SES) on the development of age-related health disparities among socioeconomically diverse African Americans and whites in Baltimore.
- Adults aged 35-64, followed since 2004.

Study 7 Harvard Grant Study

- Study began in 1938 by following 238 men enrolled at Harvard, since then the study has expanded to include thousands of individuals from diverse backgrounds.
- Still following the original 238 men through college graduation, marriage, war, parenthood, life crises, and old age – and collected a wide range of data about the men's physical and mental well-being

Now to the unifying conclusion of these seven longitudinal studies. Although eschewing alcohol and cigarettes, eating a healthy diet, staying physically active, and emotional and financial security are important components of a good life, they are not the main factors. Rather, the answer can be summarized in three words: Relationships, relationships, relationships! It is the power and need for human connection that helps us live a good life as we grow older. As the current director of the Harvard Grant Study, Robert Waldinger, MD, says, "Loneliness kills. It's as powerful as smoking or alcoholism." In other words, it is the absence of these human connections that often leads to social isolation, depression, poor quality of life, and even premature death. What profession is better equipped to help an aging population (re)discover, and then lead, their best life than audiology? You can think of each patient seen in the clinic as having their own red dot like the one shown in Figure 1. The job of the audiologist, through their in-take interview and assessment process, is to understand what goes inside that person's red dot.

A Good Life

Figure 1. Each patient has their own red dot.

By virtue of the time we spend with patients, trying to understand what is inside their own red dot, audiologists are uniquely equipped to be a driving force behind healthy and successful aging. As Figure 2 illustrates, the kernel inside the red dot are all the components of thriving relationships: human connections, communicating, interacting and conversing with others. Things that audiologists restore through their assessment and treatment approaches.

As the research suggests, the secret of a good life as we age really is as simple as having and maintaining relationships with other people. No doubt age will remain a hot topic throughout 2024 – as it has in our clinics for decades. Audiologists certainly don't add years to people's lives, but we sure can add life to the years that people have left. ■

Figure 2. The kernel of a good life as we age are human connections and the ability to communicate and interact with one another.

HEADQUARTER'S REPORT

Continued from page 7

1. Eliminate the physician order requirement to improve patient access. Patients will have direct access to audiological care, reducing wait times and out of pocket costs.

2. Enhance continuity of care by enabling audiologists to be reimbursed for all of the Medicare-covered services that they are licensed to provide, including therapeutic services.

3. Reclassify audiologists from suppliers to practitioners so that they can be better deployed within the Medicare system. This would allow Medicare beneficiaries to access audiology services via telehealth.

Advocacy in Action

Advocacy is not a one-time effort but an ongoing commitment. Your involvement is key to success. Here's how you can contribute:

- **Stay Informed:** Keep up to date with legislative developments and the Academy's advocacy efforts through our newsletters, webinars, and advocacy alerts.

- **Educate Your Community:** Raise awareness about the importance of audiology services within your community. Host informational sessions, collaborate with local organizations, and use social media to spread the word.

- **Engage with Legislators:** Build relationships with your state and federal legislators. Share your professional experiences and the impact of audiology on patient lives. Personal stories can be powerful tools in influencing policy. Use the QR code to go to the advocacy page and link to Congressional Connect

- **Donate to the Eric N. Hagberg Advocacy Fund or the ADA PAC Fund:** Use the following QR code to ensure that ADA has the resources it needs to amplify your voice on Capitol Hill and across the nation!

AuDvocating for AuDiology at the state and federal levels will ensure that audiologists are able to provide the highest standard of care to patients—and that patients have ready access to the hearing and balance services that they need. Thank you for your help! ■

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ADA
ACADEMY *of* DOCTORS *of* AUDIOLOGY®
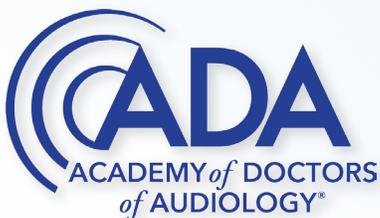
Designed specifically with audiologists in mind. It was created with input from audiologists and the ADA.

The ADA Business Card is already being utilized by your fellow ADA members and we're excited for you to be next.
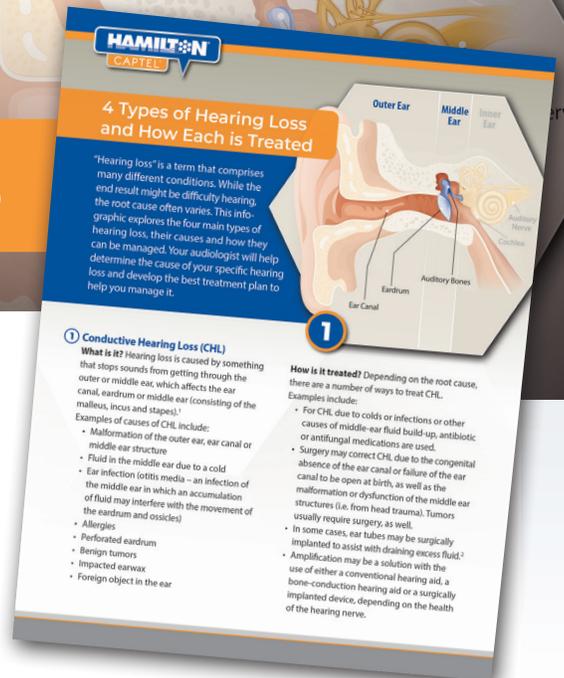
4 Types Of Hearing Loss

A useful infographic from Hamilton® CapTel® designed to assist hearing healthcare professionals in educating patients on the four main types of hearing loss.
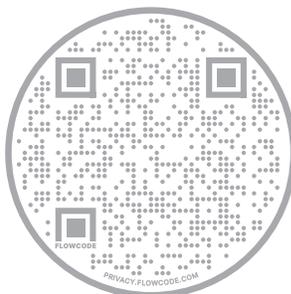
Get the Visual Aid at HamiltonCapTel.com/ADA924

Academy of Doctors of Audiology®
1024 Capital Center Drive, Suite 205
Frankfort, KY 40601

SADA
STUDENT ACADEMY OF DOCTORS OF AUDIOLOGY

The purpose of the **ADA Student Academy of Doctors of Audiology (SADA)** is to serve the varied needs and concerns of student and emerging graduated members of ADA. SADA members have access to exclusive student resources, ADA's mentoring program, eligibility to participate in the Student Business Plan competition at the annual AuDacity Conference, and can help set the direction of ADA student initiatives.

Get involved today! Visit audiologist.org/sada for more information.