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The Impact of Aging, Hearing Loss and Cognitive Burden on Health Literacy on Older Adults

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Lisa Rickard: Welcome, everyone. Thank you for taking time out of your busy schedules to participate in this webinar on a topic that is very important, I believe. My name is Lisa Rickard, and I am Assistant Clinical Professor in Audiology at the University of Maryland, and my primary responsibility is the clinical education of our doctor of audiology students. I do also teach one undergraduate and one graduate class. Over the past several years, I've also become very interested in the topics we will be discussing today. Specifically, how untreated hearing loss in older adults affects cognition, social well-being, physical functioning, health literacy, and just overall quality of life and healthy aging.
These are the objectives that I hope to address today. We'll look at the correlation between hearing loss in older adults and cognitive decline and discuss the factors that research suggest is responsible for that correlation. We'll also look at how hearing loss affects health literacy and how poor health literacy affects overall health outcomes. I also hope to share some very practical information with you on how to recognize hearing loss in the individuals that you treat and give you some tips for improving provider-patient communication. And then we'll also discuss the HLAA, that's the Hearing Loss Association of America's Guide to Effective Communication and discuss how this document can help you to improve your communication with your patients who are hearing impaired. And finally, we'll also touch on some of the hearing assistive devices that can help with this provider-patient communication.

So let's get started. Attention to age-related hearing loss has grown significantly over the past several years. It's among the top 3 most common conditions affecting older adults after heart disease and arthritis. And as the population ages, the incidence of age-related hearing loss will increase as can be seen from this graph from Goman & Lin. According to this graphic, over half of those in the 70-79 age range have significant hearing loss and 80% of those over 80 have significant hearing loss. We're defining significant hearing loss as hearing thresholds of greater than 25 decibels. Just to give you a reference, hearing thresholds from 0-20 decibels are considered the normal range. So a 25 decibel hearing loss is considered a mild hearing loss from a purely descriptive point of view, but the functional implications of even a mild loss can be significant for older adults.

As you also see from this slide where mild loss is indicated in blue, and moderate hearing loss is indicated in orange, the degree of hearing loss worsens as well as the prevalence as we age, which is likely to increase the detrimental effect of hearing loss on day-to-day communication.

So no doubt our population is aging. Over the next 30 years, the percentage of the population in the United States over 65 is expected to double. And the percentage over 85 is expected to triple. Older adults are living longer but living longer isn't the only thing that we should be concerned about. We have to also think in terms of healthy aging and maximizing an individual's potential and quality of life for as long as possible. And this is important on a personal level, of course, but it also has huge implications from a public health perspective.

And as we learn more about the correlation between hearing loss and cognitive

decline, age-related hearing loss can no longer be considered just a benign condition of aging. Now, few would argue that even a mild hearing loss in a child should be addressed, but as we learn more about the negative consequences of hearing loss in adults, we must also address the implications of hearing loss in older adults regarding healthy aging, quality of life, and cognitive decline.

This graphic from Dr. Frank Lin's work, he's at Hopkins, Johns Hopkins, depicts how hearing loss impacts all these components of healthy aging. For example, avoiding injury. Hearing loss is associated with increased falls in the elderly, and that's a rather huge public health crisis. Physical mobility and functioning as evidenced by decreased walking speed and accelerated decline in physical functioning is possibly due to increased social isolation, just less willingness to participate in activities. Health resource utilization and reduced health literacy, which I'm going to address later, can lead to increased hospitalizations and readmissions, increased mortality and morbidity, and just poor overall health outcomes in general.

So today we're going to address specifically how hearing loss is correlated to cognitive decline, but it will become apparent that hearing loss impacts these other components of healthy aging which in turn impact cognition. So none of these components exist in a vacuum, all are interrelated.

So what are we learning about the link between age-related hearing loss and cognitive decline? Results from numerous studies have demonstrated the significant correlation. And again, much of the work that I cite today is from Dr. Frank Lin at Johns Hopkins University in Baltimore. He's an otolaryngologist, but he's also an epidemiologist, and he's extensively studied this correlation between age-related hearing loss and cognition from both a personal and public health perspective for years.

How is hearing loss related to cognitive and physical functioning? Well, intuitively, one might expect some common pathological process such as vascular anomalies, glycemic hypertension or diabetes or neurodegenerative processes such as those seen in dementia or Alzheimer's Disease. Somewhere along the auditory nerve pathways or in the primary auditory cortex that might explain this correlation. However, there have been large epidemiological studies that have controls for these common pathological factors and still a strong association between hearing loss and dementia is seen. So as of right now, no common pathological or physiological process has been identified.

Over and above any common pathological or physiological process, researchers have suggested that there are likely 3 mechanistic pathways that are accountable for this correlation. But how do we think hearing loss and cognitive decline is related? Again, numerous studies have suggested models, but I think Dr. Lin's work does a wonderful job of summarizing much of the research that I have read so far. And these 3 mechanistic pathways are highlighted here in yellow.

The first idea is that hearing loss leads to an increased cognitive load on the brain, meaning that if the cochlea in the inner ear is constantly sending a very garbled signal to the brain, which is what happens when we develop hearing loss, the brain had to rededicate cognitive resources, brainpower if you will, to constantly deal with and understand that very degraded auditory message. And possibly, that cognitive load in turn leads to a detriment in other higher-level cognitive abilities, such as memory, attention, executive function. Struggling to encode and decode a garbled message every day all day results in very effortful

listening. The brain must constantly redirect resources to help with hearing, which is encoding the message, and understanding, which is decoding the message. So again, if the cochlea is constantly sending a very garbled signal to the brain, the brain has to rededicate resources to deal with that message. And we have a limited pool of resources for memory and cognition and attention and executive function. So thereby, this just puts this extra constant load on these resources.

The second idea is that hearing loss may directly lead to changes in terms of brain structure and function. We're seeing a lot of studies now across a variety of different data sets that hearing loss can lead to structural changes in the brain with faster rates of atrophy in the lateral temporal lobe which handles sound processing. fMRI shows decreased language driven activity in the primary auditory cortex and that makes sense given the garbled signal that's reaching the auditory cortex. What's also seen on fMRI is that other areas of the brain are recruited to help with hearing. Specifically, fMRI has shown activity in the prefrontal cortex which is so important for higher-level processes such as memory, attention, executive function. These structures are being recruited to help with hearing this garbled message. So if areas in the prefrontal cortex are recruited to help with hearing, that's going to take away from the functions that the prefrontal cortex is normally responsible for.

The third idea is related to the observation that hearing loss directly contributes to social isolation. Older people with hearing loss are not as likely to be engaged with people around them. They're not as likely to be engaged in social activities. And therefore, they just may become more sedentary, less physically active. We've known for a long time that social isolation is a risk factor for cognitive decline and dementia. It's known to be a predictor of morbidity and mortality in older adults. It also affects health behavioral pathways such as smoking, poor diet, lack of exercise. It affects psychological pathways such as one's self-esteem, self-efficacy, coping mechanisms, and just an overall sense of well-being. And research has shown that social isolation can also affect physiological pathways such as immune system function and increased inflammatory processes possibly due to an increase in stress hormones.

So although a common physiological pathway, like microvascular disease, Alzheimer's, neuropathology, has not been found in the auditory nerve pathways, these pathologies certainly exist with or without hearing age, sorry, with or without hearing loss and just become more common as we age. So hearing loss and the way it impacts cognition as we just described, may act as kind of a double hit or a second hit on the brain.

So as discussed so far, we believe there is a correlation between untreated hearing loss and cognitive decline, but up to date, no concrete, longitudinal, randomized, controlled studies that can prove causation to answer whether treatment with hearing aids or other hearing assistive devices, prevents or delays cognitive decline. There is currently one very large study underway, but even though we haven't proved causation, it does make sense to think that treating hearing loss with hearing aids or other devices may help to reduce some of the cognitive load and effortful listening that we just discussed. People who are able to communicate more effectively may also be more willing to engage socially by mitigating some of the effects of social isolation and reduced physical functioning due to a sedentary lifestyle.

However, despite all that, there's still a very low rate of hearing aid adoption. Only 15% to 20% of those people who would benefit from hearing aids, even in

countries where hearing aids are fully funded by socialized medicine, choose to wear hearing aids. So it can't be totally because of cost factor, which is real here in the United States. Barriers to hearing health care often center around issues of affordability and accessibility in addition to the negative stigma that's still attached to hearing loss. For example, affordability, even an entry-level pair of hearing aids, can cost, start at about $2,000, and the cost just goes up from there.

Accessibility, the current gold standard model of hearing health care, requires clinic-based testing and fitting and multiple visits to a hearing health care provider over several weeks. And this can be challenging or even impossible for those with already limited access to health care resources. We have to ask ourselves, is this gold standard of hearing health care delivery the only way to go? Are there ways to deliver quality, evidence-based, more cost affordable hearing health care via a more patient-centered or community-delivered approach? We need to consider alternative models of hearing health care delivery, and there are people who are doing this.

And still, there's an awareness or a lack of awareness, and understanding about the impact of untreated hearing loss on the issues that we're discussing today. There's still a stigma, and people still just think, oh well, it's just a consequence of aging. Everybody loses their hearing as they age. So hearing loss, although a normal consequence of aging, becomes much more interesting and important when taken in the context of cognitive decline, public health issues, and healthy aging.

Another area that I'd like to touch on today is just the concept of health literacy. And in 2010, the Healthy People and Institute of Medicine in their report entitled Health Literacy: A Prescription to End Confusion, defined health literacy as you see here on the slide. Individuals need to be able to obtain and process and understand basic health information and services in order to make appropriate health decisions.

Health literacy, we can think about it in 3 skill areas. Print literacy, we're all kind of familiar with that, we all know that we're to be delivering print materials to the individuals that we serve that are provided certainly in the individual's native language, but also written at an appropriate reading level. Numeracy is another area of health literacy, the ability to use quantitative information. Can the individual understand take 1.5 teaspoons every eight hours? It's very difficult for some people. But today we're talking about aural literacy, specifically, the ability to speak and listen effectively.

So who's at risk for reduced health literacy? The Institute of Medicine identified several populations that are at risk for low health literacy. And if you look down over this list, certainly, the population that we're discussing today, elderly, untreated hearing loss, who might also have cognitive decline and other sensory disorders such as low vision, are at great risk for low health literacy. These conditions certainly do not exist in a vacuum. So an individual might have several of these risk factors for low health literacy.

The effects of low health literacy can be profound. Much research, as I've said, has been done regarding the relationship between inadequate print literacy and poor health outcomes. But unfortunately, very little research exists on the impact of untreated hearing loss on health literacy and health outcomes. Likewise, there's a dearth of research on how intervention, being via hearing assistive technology, affects health literacy and outcomes.

In 2017, PubMed literature research by Cohen, et al, published in the Journal of the American Geriatric Society, reviewed for studies of physician-patient communication with older patients. A total of 409 papers were identified in the initial search. Of those, 67 articles ultimately were included in the review, and only 16 studies, fewer than 24%, even mentioned hearing loss as a factor in the quality of physician-patient communication. Of these 16, only 3 reported on the possible association between hearing loss and the quality of physician-patient communication. And only 1 of those included a temporary intervention, via a very simple device that I'm going to tell you about later, to assess whether clinician-patient communication could be improved with the use of some very simple assistive technology.

So, clearly, research on the quality of provider-patient communication has overlooked a very common and remediable deterrent to hearing loss through quality provider-patient interactions. An earlier review by Berkman, et al, published in the Annals of Internal Medicine in 2011, searched articles identified through MEDLINE and CINAHL and ERIC in order to determine if low health literacy is related to inadequate use of healthcare or health outcomes and increased costs. And this review of 96 articles found that low health literacy is associated with poor ability to understand and follow medical advice and poor health outcomes. Of note is that none of the studies, none of these 96 articles, examined the relationship between hearing loss and health outcomes.

On a more positive note, in a recent paper in JAMA Otolaryngology Head and Neck Surgery, published in 2018, a team from the University of Michigan recorded that older adults with hearing impairment who wore hearing aids were less likely to have gone to the hospital emergency room in the past year. And this may simply be related to the fact that they were able to hear and understand and follow the treatment recommendations made by their health care provider. I provided the references to all of these studies at the end of the presentation.

So what do we do? We've established that hearing loss is present in anywhere from 50% to 80% of the population over age 70, and in about 25% of those in their 60s, and only 15% to 20% of those with hearing loss who would likely benefit from wearing hearing aids, do so. We've established that untreated hearing loss is correlated with cognitive decline and just negatively impacts healthy aging and quality of life in general. We've discussed that untreated hearing loss likely negatively impacts health literacy, which in turn decreases patient understanding and compliance with health care provider recommendations and negatively impacts health care outcomes.

The Hearing Loss Association of America produces a wonderful guide called Guide to Effective Communication which we're going to discuss in a bit more detail now. And it's a multi-page document, so I have included the link here so that you can download the entire document if you'd like. And here is HLAA's definition of effective communication.

So the HLAA Guide to Effective Communication in Health Care is divided into two sections. A guide for patients and a guide for providers. And their document, the Communication Access Plan, seems to be the cornerstone of both sections. The CAP, Communication Access Plan for Patients, encourages our patients to be proactive and advocate for themselves thereby fostering more self-efficacy in their ability to manage and live with their hearing loss. And patients ideally would bring a copy of their completed CAP to each appointment or provider and ask that it be placed in their medical record. Providers may want to ask their patients

to fill out a CAP ahead of time and then review it with the patient. If it's filled out ahead of time, it may be already scanned into the electronic medical record. The provider can review the chart and be prepared by identifying any aids or services that might be needed such as listening devices, interpreter services.

Maybe the patient already has hearing aids or other devices. The provider won't be caught off-guard and can review some of the communication tips that we're going to discuss in a minute. The Guide for Providers also includes information on legal and regulatory responsibilities. It does have a copy of the Communication Access Plan and explains in more detail how it can help providers manage and ensure effective communication. And it gives a very detailed explanation for all the different types of services that you might need to engage for your patients, different types of interpreters, for example. And it also breaks down information for staff working in a variety of settings. So inpatient settings, outpatient settings, emergency departments, radiology departments. That type of detail is provided.

We know when we have effective provider-patient communication, all of these facets of healthcare are impacted. Certainly, patient safety is improved. Patients' decision making is more -- they can make more intelligent and informed decisions. They're more likely to adhere to treatment and medication recommendations. And in general, they're just overall more satisfied patients. Their self-efficacy is heightened, and there are overall better healthcare outcomes when there's good communication between providers and patients.

I might add, under the area of increased patient satisfaction, I believe that when we are able to communicate effectively with our patients and feel that we've made treatment decisions together and they're well-informed and our patients are able to comply, be compliant and adhere to the recommendations, I believe that we are happier providers as well. It's a better way to practice our specialty and reduce burnout which we know can happen in medical professions.

I guess the first step as providers is to recognize that an individual might have a hearing loss. Now here are some red flags that you might look for that might indicate an individual has a hearing impairment. Hearing loss is invisible and patients do not always disclose that they have a hearing loss. And this might be due to denial. Some don't even recognize a hearing loss or denial is a very strong factor. There still is a negative stigma attached to hearing loss. They may feel embarrassed by their hearing loss, or they just may fear being treated differently.

It's important also to recognize that hearing loss may present as something else. You might think that your patient is suffering from some cognitive decline which is inattention or ambivalence. When in fact, they may have a hearing loss. And rather than focus on the hearing loss specifically, we need to learn to recognize it and then address the communication needs of the patients.

his is a copy of the Communication Access Plan and it's way too tiny, I get that. But if you download the document that I provided the link to the Hearing Loss Association of America, you'll get a much better look at this. So essentially, it's just asking the patient to identify that they're hard of hearing or deaf or if they have low vision. It's asking them to identify what they might need from us as a provider. Some type of a Pocket Talker, which is a personal listening device, maybe a caption phone, maybe an interpreter. It's asking how they want to be spoken to or identified in the waiting room. Not from a HIPAA standpoint, but maybe they want a vibrating pager because they're concerned that they're not

going to hear their name being called and that's going to cause some embarrassment. Finally, it asks them to identify how they want to be contacted. I think we're all pretty used to this last section, just again, because of all the HIPAA guidelines that we're operating under right now. So I encourage you to download the complete guide and take a look at this Communication Access Plan and consider using it in your own practice.

So these are some tips that I use every day with my patients who are hearing impaired, and I think that they're also appropriate for those who have cognitive impairment with or without hearing loss. As much as possible, these tips will allow us to have clinical discussions directly with the patient and not to address a family member, a friend or caregiver and ignore the patient. Of course, sometimes, we still need to enlist the help of family members and caregivers if the patient can't communicate or understand. Of course, all within HIPAA guidelines. But just to follow up on some of the tips that you see here, reducing background noise is critical. I think we all recognize even if we have normal hearing, that it becomes much more difficult to hear and understand speech when there's background noise present. And that's just because most background noise is a broadband signal that just tends to wash over the very important high-pitched components of speech. The high-pitched components of speech are softer by nature, but they're also critical for speech understanding. The lower pitches let us know that something's there, but the higher pitches give us clarity. And if those high pitches are just masked over by background noise and the individual has hearing loss, it's going to become really difficult for them to understand what we're saying.

Lighting is critical. You want the lighting to be on your face as the speaker. It allows the patient to see your face, and we all lip-read or speech-read whether or not we realize it. Having lighting behind you is just going to obscure your face and can cast shadows. We ideally want to make sure that the patient can see our mouth, which is very difficult in this COVID area when masks are not optional. And I'm going to show you some mask options, those that have clear plastic over the mouth area, that are very easy to get a hold of now. And, finally, you just want to be aware of how you're speaking. You want to speak just a little bit more slowly and clearly and just a little bit louder, but you don't want to exaggerate any of these things, as speaking too loud or too slow just causes distortion.

Here's a few more techniques that you might use with patients who are hard of hearing or even -- yes, with patients who are hard of hearing. So the concept of clear speech and chunking are very important. Clear speech is really what I just mentioned a moment ago, just a little bit louder, a little bit slower, a little bit more clearly, but not overly exaggerated. Chunking is a really good technique whereby you chunk together ideas, and I can give you an example of that. If you want to order a CT scan for your patient and then you'd like to see them back in two weeks to go over the results and develop a treatment plan, you might chunk those ideas like this.

Mrs. Smith, I'd like to order a CT scan. And then I'd like to see you back in two weeks so we can go over the results and develop a treatment plan to address your concerns. You've kind of chunked together ideas rather than one long run-on. Okay, so I want to get a CT scan, see you back in two weeks and we'll talk about it. That's just one long run-on sentence. Try to get into the habit of rephrasing rather than just repeating if your patient does not understand what you've said. If you say something and they say what and you repeat the same thing, and they say what, and you repeat the same set of words, it becomes very frustrating and possibly it's just that combination of words. So you may want to

think of a different way of saying it.

Inform your patient when you're changing topics or context. So Mrs. Smith, I want to go over what the test results showed. And then you do that. Okay, now I'd like to shift to discussing what we might do about this. So, again, you just kind of clue them in when you're changing topics. I teach my students about the method of explicit categorization and basically, it's just what I described. You tell your patient, first, I'd like to go over the test results with you. And then we can relate these test results to what you described to me, to what your concerns are. And, finally, we'll discuss a treatment plan to address this. So you kind of set up some expectations for how the appointment is going to unfold, and kind of give some structure to the appointment so they know what to expect.

Ideally, you want to use visuals as much as possible, possibly diagrams or physical models that you might use to explain. You should teach-back to encourage questions and to ensure that your patient has understood. So ask them, so Mrs. Smith, what's your understanding of what we talked about today? Often in my clinic, I'll have an individual come in alone. Although I prefer when a spouse or communication partner comes along for the hearing test, that doesn't always happen for a lot of reasons. So if I test somebody's hearing and I go over all the results with them and what my recommendations are, I might say to them, okay, Mr. Smith, now when you go home today and your wife says what did she say, what are you going to tell her? Again, it's just gauging their understanding. And, of course, you want to provide clearly printed instructions or plan written at an appropriate level and ideally in the patient's native language.

I just want to switch now to some actual devices or tactics that you might use. This is just a picture of the clear masks that are available. You can get these on Amazon. You can get them probably at any medical supply company. But visual cues are critical to communication for those with hearing impairments. 55% of communication is visual. And of course, traditional masks just block our faces and prevent the ability to see facial expressions and emotions, to catch visual cues on the lips. And miscommunication is just a major cause of medical errors and can be prevented. So consider at least keeping some of these clear masks in your practice.

Patients may come to you already wearing hearing aids, and modern hearing aids are actually pretty amazing. Most hearing aids now have wireless connectivity to remote devices such as a cell phone or even a remote microphone so people can stream phone calls into their hearing aids. You may see a patient come in with a little remote mic like I've pictured here. The person in the bottom left of your screen has the microphone clipped onto his lapel and that mic is paired via Bluetooth, or 2.4 gigahertz, to an individual's hearing aids. So the sound is being delivered directly from that person's mouth via the mic to the individual's hearing aids. We really have the ability now to pair or to stream wirelessly from any Bluetooth-enabled device directly into a patient's hearing aids. This is really important now in the -- now that we're all doing a lot more telehealth.

If an individual doesn't have hearing aids, a little device like this -- this is the Pocket Talker that I mentioned earlier. It's ideal for one-on-one conversation or even a small group. Maybe you're talking with a patient and a family member. And, basically, it's just going to amplify the sound that's closest to the listener while reducing interference from background noise. The individual wears a headset, maybe a set of earphones like you see here, or maybe an earbud, and the provider speaks into the microphone on that little transmitter that you see.

There's a clip on the back of that transmitter so you can clip it onto your lab coat or lapel. The dial on the side increases or decreases the volume of your voice. And these are available, again, on Amazon, of course. Or I've also provided the link to a catalog, Harris Communications. This is a company that provides extensive resources to all kinds of devices for all types of sensory impairments. Low vision, hearing loss, dexterity issues. So if you have a patient who has some type of sensory impairment, you might want to take a look at this catalog.

This Pocket Talker that you see pictured here is not wireless, so you are tethered to your patient via a cable from the earphone to the transmitter. These are not expensive. I just looked this morning on Amazon. A Pocket Talker is about $140. If you can't be physically tethered to your patient, for example, if you're a physical therapist and you need to move around the room or stand behind your patient, there are wireless Pocket Talkers and other wireless options. And again, I looked on Amazon this morning. The wireless devices are slightly more expensive, I saw some nice ones in the $160 to $180 range. So they're a bit more expensive, but of course, if we think in terms of improving provider-patient communication and outcomes and quality of life and reducing replication and cost and errors, it kind of behooves us to spend a little money and keep some devices like this on-hand.

Here's a couple of examples of individuals using Pocket Talkers. You see the woman on the left is speaking to her patient. She's got a wired Pocket Talker. He's wearing the headphone; she's speaking into the microphone. And on the right, I couldn't see a cable, so the image on the right I believe shows an individual with a wireless system. So she can move about the room. Some of these devices have a range of, you know, 80, 90 feet.

There are all types of options for telephone communication. Again, we're doing a lot more telehealth. Sometimes this is done via a videoconferencing or Zoom, so if an individual has a hearing aid with wireless connectivity, they can stream directly from their iPad or their computer. But if they're not computer users, they may use a captioned phone. And this should be suggested by their audiologist. That would not necessarily be your responsibility. If they don't have an audiologist, if they don't wear hearing aids, I just wanted to make you aware of this product. There are many different models, but CapTel is a captioning service provided as part of a federally funded program regulated by the FCC and it's designed specifically to help individuals with hearing loss access telephone communication. It's provided at no charge to the individual, and I've included the link there to the CapTel website. There are different models available. On the top right you see a large print model. There are models that have large buttons. There are some that have touchscreens. So the individual chooses an appropriate model. It used to be by going to a center where they could play with all these different models. I'm not sure how they're handling it now. But once the model is chosen, a representative from CapTel comes to your home, sets it up for you, teaches you how to use it. The patients that I've recommended this for, all CapTel needs is some documentation from me that the individual does, in fact, have a hearing loss.

So these are just some devices that you'll see used commonly, and I encourage you to take a look at that Harris Communications catalog and think about some low-cost ways or devices that you might keep on-hand as well as using some of those communication tips and strategies that I mentioned.

Just to summarize what we've talked about today; hearing loss is one of the top 3 conditions affecting older adults after heart disease and arthritis. Untreated hearing loss negatively impacts healthy aging and quality of life and has

consistently been linked to an increased risk of cognitive decline. Several models suggest that the correlation between hearing loss and cognition is due to increased cognitive load, changes in brain structure and function, and social isolation.

Untreated hearing loss has a negative impact on health literacy which results in reduced compliance with medical recommendations, inadequate use of healthcare resources, more hospital admissions and readmissions, the increased cost and duplication of services, and just poorer health outcomes overall. And the Hearing Loss Association of America's Guide for Effective Communication and Healthcare was created for patients and providers. It provides information and resources and tools to help improve communication in medical settings and helps patients ask for and get the services that they need.

And I have included, as I said, a pretty extensive reference list that has references for all the studies that I spoke about today in case you want to take a deeper dive into any of this. So I thank you for your attention and for your interest in this very important topic. And I believe now we're going to open it up to a few questions. I'm going to see if I can access these questions.

Sarah Chart: Thank you, Dr. Rickard. Just a reminder, at this time, if you do have any questions, please enter your questions by the instant message box located at the bottom left-hand side of the webcast player.

Sarah Chart: I'll begin with a question asking what does Medicare cover for hearing problems?

Lisa Rickard: Okay, that's an excellent question. Medicare will cover the cost of a hearing test if the individual is perceiving a change in hearing. Medicare does not cover anything for hearing aids, which is unfortunate. Most insurance companies do not cover hearing aids unless you're fortunate enough to have insurance or even if your Medicare secondary insurance is through some large entity. For example, Federal Employees Retirement Plan. Or I work for the State of Maryland, essentially, and I will have, in retirement, health -- hearing health benefits. But generally, insurance does not cover hearing aids, which is unfortunate. It's one of the reasons why researchers are trying to prove causation rather than just a correlation between hearing loss and cognitive decline or falls in the elderly. Because if they can prove that treating hearing loss reduces falls in the elderly or delays or prevents cognitive decline, then insurance companies might be more willing to reimburse for hearing aids. Because the US insurance companies spend billions every year to treat falls, traumatic brain injury secondary to falls, to treat cognitive decline, dementia, Alzheimer's. So if it can be proven that treating those at least mitigates some of the effects of hearing loss, insurance companies might be more willing to consider reimbursement. I hope that answers your question.

Sarah Chart: Thank you. I have another question here asking, do you have any additional suggestions for those of us that are case managers and manage members by phone? So any recommendations that can improve communication with members over the phone?

Lisa Rickard: Yes. So you might want to look into what's available. I don't know where you are. Like the CapTel program is a federally funded program, so you might look at that website. Because all you have to do is certify that the individual has hearing loss, vision loss, and they would be able to get a caption telephone where your communication with them would show up on the screen. So that may help. If an individual isn't interested in something like that, if they can get a very good quality

speakerphone, even someplace like Best Buy, and if they put the phone on speaker, that can help. Because they're hearing the signal through both ears, which is the way we hear best, rather than holding the receiver up to just one ear. Those are some things that I suggest to my patients. Even my patients who wear hearing aids, I suggest, if possible, to just put the phone on speakerphone. You get that binaural signal.

Sarah Chart: Good recommendations, thank you.

Lisa Rickard: Does that answer the question?

Sarah Chart: Yes. A question here on frequency loss or changing of hearing loss, asking, are there certain types of frequencies that are hard to hear even with a hearing aid?

Lisa Rickard: Yes. So, generally, the higher frequencies are the first to decline with age-related hearing loss. Those would be phonemes like S, SH, TH, F. Those high frequency similar sounds are often the first to go. Unfortunately, those are the sounds that are critical for speech understanding. So the lower pitches, the vowel sounds, ah, ooh, ee, those are louder by nature. They usually don't decline as early, and they give us a sense of the presence of speech, but it's the high pitches that give us the clarity. And, unfortunately, those go first. So an individual, something that you might hear all the time is, I know you're talking, but I don't catch what you're saying. They don't know if you said sit or fit or chat or that. Now, that's why it's important maybe for them to have visual cues, because a lot of these sounds of speech are visible on our lips. And also to use context. So if I -- a person can see me and I say, please sit over there and I point to the chair, they're going to be able to figure out just from the context of the conversation, oh, she said sit, not fit. Believe I would not have said fit over there. So, yeah, the high frequencies are the first to go, the most fragile, and the most important current digital hearing aids can do a very nice job of just amplifying those pitches where a person needs amplification. So hearing aids now have multiple bands. If you think of like a graphic equalizer on a stereo, we can manipulate which frequencies are amplified and how much. So we can do a lot with even a more basic hearing aid. Not everybody needs to spend $6,000 on a pair of hearing aids. I hope that helps.

Sarah Chart: Yes, thank you. And another question here regarding individuals with dementia and asking if there's any -- if you have any suggestion for individuals that have dementia who have difficulty wearing hearing aids or losing their hearing aids or not wanting to wear them?

Lisa Rickard: Yes, yes. So not wanting to wear them is certainly a problem, but in terms of individuals who are prone to losing their hearing aids, which is unfortunately very common in group living situations or dementia care units, we can get something called Otoclips. So imagine the device that you wear that's for your readers, your reading glasses, that are clipped to your glasses. There are also such devices for hearing aids. So we can just place the little loop around the hearing aid and then clip it onto the individual's clothes. And oftentimes we'll clip it in the back, like on their collar in the back, so maybe they're not even aware that it's there and will be less inclined to pull it out. But even if they do pull it out, it will just fall and hang from their clothing, it won't be as easily lost. Yeah. It's a real problem in group living or memory care situations.

Sarah Chart: Yes. Well, thank you. And I have a couple of questions -- I know we're close to the top of the hour, so I'm just going to pull one more question here. I think these are both a little bit related. I have a question here on balance and falls. Could you

briefly explain why hearing loss leads to falls? And also, any recommendations for balance?

Lisa Rickard: Right. So people who have untreated hearing loss are more prone to falls. And the reason is likely because we really need 3 systems to keep us balanced. We need our vestibular system in our inner ear. So sometimes the things that affect the cochlea, the hearing, the organ of hearing, also affect the organ of balance. We need our inner ear. We need our vision. We need our visual system to keep us balanced. And we also need something called proprioception. So the information that we get from those long motor neurons in our legs and such. So a lot of the individuals that we see have multiple or concurrent disabilities. So if I have someone who has untreated hearing loss and they also have some vision problems, maybe macular degeneration, and they also have diabetic neuropathy in their feet, they're not going to be nearly as aware of their position in space. If they have an asymmetrical hearing loss, they're not going to be able to localize sound. I just saw a patient like this the other week. He had diabetic retinopathy and had to have one eye removed. He had peripheral neuropathy in his fingers and his feet. He was obese. He had very poor physical functioning because he just had a very sedentary lifestyle. And he had significant hearing loss. So he was at greatly increased risk at losing his balance in the home and not being as aware of his position in space and falling.

Sarah Chart: Yeah. Well, thank you. And we are at the top of the hour, and I appreciate this presentation very much. This has been very informative. Thank you for sharing your knowledge with us all, and it is very much appreciated. As a reminder to everybody on the call, we do ask you to complete the post-activity materials which are now available. In order to receive your continuing education credits, a reminder that those materials must be completed by no later than October the 22nd. On behalf of OptumHealth Education, I would like to thank Dr. Rickard for her participation in this activity. I would also like to thank Health Care Transformation, UnitedHealth Group Alliances for their support of this activity. If you do have any additional questions, please contact us at moreinfo@optumhealtheducation.com. Thank you again for joining us, this concludes today's webcast.