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Ear-to-Brain:
The Role of Cognition in Evidence-Based Audiology
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- [Announcer] Hello everyone, and welcome to today's webinar titled Ear To Brain, the Role of Cognition in Evidence-based Audiology presented by Cognivue. We are so pleased to welcome today's presenters, Dr. Heidi Hill and Dr. Kim Cavitt. And with that, I'll hand things off to you, Dr. Hill, to get us started.

- So first of all, we'll start with our disclosures for Dr. Cavitt and myself are listed here. And our learning outcomes for this course. After this course, learners will be able to discuss available evidence regarding the brain's role in hearing and communication, discuss the role of cognition in real-life communicative environments, and describe the value of a functional needs assessment, including cognitive screening, to enhance audiologic patient care. Right. So I just wanna start off with where we are currently because if we're talking about making changes, I think it's really important to talk about where we are and why we wanna make a change. And so, let's just highlight the where we are in hearing healthcare today. We know that 20% of the US population has hearing loss, it's about 48 million Americans.

And yet only 17% have gotten the help that they need. We've known this, we've known this statistic. My whole career hasn't really changed a whole lot despite all the different efforts that we have made thus far. When we look at age, those over 70, only 30% are getting the help that they need. And those between 20 and 60, only 16%. I don't know what happened between 60 and 70, there wasn't a statistic there for that. And then when we look at the severity of loss, you know, the severe hearing loss category, this just breaks my heart that we have almost 25% of people aren't getting the help that they need. And moderate hearing loss, 60% are getting the help that they need, which is astonishing to me.

And then those with mild hearing loss, less than 4% are getting the help that they need. And when we think about the John Hopkins research, we know that looking at this categorically it's a five time, three time, two time greater risk of dementia and cognitive decline, so this is really incredibly alarming that this is still going on today.

And there was a survey done recently by seniorliving.org that asked people, patients, seniors who had hearing loss and didn't treat it, why? And when you look at this, almost 57% thought that they could manage without getting help, without hearing aids. Now, knowing what I know about ear to brain, that the relationship between cognition and hearing, that is alarming to me that I just feel like that statistic, those patients don't understand what that means.

And of course the second category is they're too expensive. I actually think it would be lower than 38% because I think if you feel like you can manage without them and the price tag is high, then you definitely will think they're too expensive. Interestingly enough, the title for this article was more than 6 million older adults avoid hearing aids because of cost. Wider availability and awareness of over-the-counter hearing aids may help millions of seniors. And that may be true, we definitely need to help more people, but I think a better title to this really should have been more than 9.9 million older adults avoid hearing aids because they do not understand what managing without hearing aids is costing them.

Now, of those who do get hearing instruments, this is a sad statistic. This does not come from my clinic, it's much higher than this, but overall 40% of those with hearing aids are not deriving optimal benefit. And this is a variety of things, certainly PRO-MIC measurements or the lack thereof has quite a bit to do with this. But I also think our approach in ideology has a lot to do with it because our approach has really been for just looking at the peripheral system, and just compensating for that with hearing aids. And that is not deriving adequate benefit for a lot of our older patients because there are three fundamental processes important for hearing well and understanding speech.

Of course we have a peripheral auditory system, which is the interface between the acoustic environment and our brain, it detects and codes the signal. But where we haven't spent a lot of time or energy, or talking to patients, or educating patients about is that there's a central auditory system that modifies and analyzes that signal. And

then we have cognitive processes that enhance perception, gives understanding of content, and storage of information. So successful rehabilitation really needs to be based on the entire auditory system ear to brain, and it needs to be individualized. Again, there's just no cookie cutter approach to this, there's no one size fits all, we need to really be looking at our individual patient in front of us and assessing the entire system, cochlea cortex, and then combining that with individual lifestyle and goals.

So I use the iceberg, this is really where we've lived in hearing healthcare. We have really only been focused on the surface of our patients, that's the peripheral auditory system. We are missing a huge part of the auditory picture though, when we're only doing traditional hearing tests. And when we do traditional hearing tests, we only focus on hearing aids. And again, to repeat myself, that strategy is not yielding adequate benefits for a lot of our patients. And that's really what drove me over the last several years to start looking ear to brain, to start incorporating more central testing, to be looking at cognition because there's a whole lot more going on under the surface, and that's why some patients aren't doing well because with their hearing instruments, once they leave our office.

You know, we did our hearing test and put hearing aids on them, and they're still struggling because cognitive process isn't central, out of the central auditory system play a huge role in listening in the real world in complex environments. So that's why so many of our patients would sit in front of us and be like, "hey, the hearing aids are great in here, but as soon as I walk out there, it changes. It just changes." And that's either, I didn't have a good understanding of what was going on beneath the surface, or I didn't educate my patient about what was going on underneath the surface. I gave them realistic expectations, I told them about acclimating, I did all those things, I'm really good at counseling, but I wasn't doing an adequate job of really assessing by looking at functional communication abilities, which is cognitive processing, sound detection, sound recognition, sound localization, and speech, and communication, and noise, and really giving the patient an experience where they understood also what

was needed for those to be able to have functional communication ability outside of the office.

And management looks different, it isn't just hearing aids, I don't focus just on the hearing aids. But it is a part of what we do, it's a huge part of what we do, and I become a much better fitter. I was really good before, I do a lot of PRO-MIC measurements, I was a trainer for a hearing aid manufacturer for some time, I love technology, but now I fit even more precisely based on evidence-based research about cognition and processing in hearing instruments. I also fit many more assisted devices, especially remote microphones, utilizing communication strategies and auditory training. So this is really going... It does, it gives us better function, or it gives our patients better functional communication outcomes once they leave, and a better expectation besides just me telling them things, their focus was still on hearing aids.

And when they didn't do well outside, it was still the hearing aids. Whereas now they have a better understanding of the entire auditory picture. So this is a patient who I recently saw who had hearing aids, who he was fit somewhere else using a traditional model. And this is him talking about and comparing between a traditional model and more of a functional communication needs assessment model. So, like I was asking like this experience versus your last hearing aid test, tell me like the differences.

- Oh, the difference is really that was primitive compared to this. They just touched the surface, you know, they didn't get into any of the causes or affects, you know, and that's really what people want. I mean, I wanted the hearing back too, but I found it informative and I was happy. I mean not happy, but glad to hear that the reaction that my life has taken to not been able to hear. Being at one of the restaurants that the family-

- [Heidi] Yeah.

- All of us and-

- [Heidi] Probably Olive Garden, maybe?

- Yeah.

- [Heidi] And you couldn't hear anything?

- No, it wasn't Olive Garden.

- [Heidi] No?

- It was when we were all lined up. And anyway, everybody's having a good time, and I couldn't hear a thing that anybody was saying.

- [Heidi] Right.

- Yeah. Yeah and it really... It just bugs me that I've got all this time and they could have...

- [Heidi] It's finding the right person, right?

- Oh, it's finding the-

- [Heidi] And the right weight.

- The right business.

- [Heidi] Yeah, the right way of doing things.

- Yeah, yeah, yeah.

- [Heidi] Yeah.

- In depth, not just touching the surface of it.

- So there it is, that kind of goes with my iceberg slide. I hope that everybody could hear that okay. So, it's really about understanding that our auditory systems' a two-way street. We have bottom-up processing from our ears to our brain, we have top-down processing from the brain down, and there's an interaction at different levels of our auditory system. And we really need as audiologists to have a good understanding of how this works so that we're able to make use our clinical expertise, and make better decisions for patients, and better counsel our patients. And Kim, I think that this is where we're gonna kind of maybe share this slide a little bit 'cause I added-

- [Kim] Yes.

- I added to it. So you might be like-

- [Kim] Yes.

- what is that doing there?

- No, and no problem. And I wanna really give credit where credit is due for this slide. I forgot to add on the citation, but it's in your reading list. This is really from an article from Shen and Souza, where they really talk about implementing cognition into the audiology practice. And really cognitive processes, there's a lot of things going on in our ability to hear, and understand, and listen to speech and language. It's executive functioning, that you're trying to control lots of different things in your brain all at one time. And the impact that audition has on that executive functioning skill, it makes it

hard, especially if you possibly have underlying processing issues, which are separate, but can be working parallel, especially in an elderly mind, it makes it an ability to focus on a single speaker when there's multiple speakers going on.

That working memory, that ability to retain the information, you hear something, you process it, but then can you retain enough of that information in that working memory in order to respond appropriately. And again, that impact on audition is taking those problems and parsing them out in complex sentences. Being able to distinguish like these fine intricacies in the English language, and that increased cognitive load of how hard it is to listen when you're hard of hearing. Processing speed, again that your brain cannot process as fast as the signal comes. I used to always tease my mom, my mom native Spanish speaker. And she would say over time that she couldn't understand Spanish as well as she got older because the language moves so fast, and she was hearing impaired.

So that's kind of acts, it makes it hard to understand certain things when things are moving, when the conversation is moving fast and there's a lot of competition involved. That general sequential reasoning, the ability to take multiple things and reach a simple conclusion based upon the situation and all of the information that's all coming in at the same time. Inhibitory control, that's the capacity to involuntarily inhibit or regulate just automatic responses that come from our body. And again, our knowledge of vocabulary, our knowledge of speech and language all comes in, all of these things are working all at the same time to understand speech and process speech. And that's where we need to start to dig a little bit deeper in how we evaluate these things.

And then it should impact how we create a care plan. So Heidi, would you add anything there?

- I would say, you know, a few other things turn-taking, decision-making, attention, all of you know, there's so many things. Of all of these like executive functioning, and

working memory, and processing speed to me are really the ones that I relate the most with the patient for, hearing and noise, and hearing in the real-world. So if they have poor executive functioning, working memory capacity, processing speed, they're gonna have a really, really hard time no matter what those hearing aids do, no matter what the algorithm is set to do, no matter how new the technology is, those things are gonna continue to be challenging for them because they don't have those cognitive abilities to be able to do the things that Kim just talked about.

- And I used to tell my patients 'cause I was an implant audiologist and a lot of this comes out of my implant training and focus of why I feel the way I feel about this. And reading Souza's work and knowing Pam as I do because of my Northwestern affiliation. And not to name drop, but her writing really changed my perspective on all of this because she really showed a practical utilization of why this is important to everyday clinic. We had read a lot before about theory, but her work just puts it very much to practice. Same as the work out of the Cochlear Center and Dr. Lin, it really makes it practical, and that's why I feel like we really need to take this into account.

But again, in the whole... I used to tell my implant patients to finish that story, that I could put a million dollar device on your ear. And we're still sending the sound that that device amplifies, or modifies through a damaged system. We're still sending it through a peripheral and central system that isn't working perfectly. And there are things that we're going to have to do outside of this widget to really retrain that system to function better.

- And Kim, to add to that, we can tell patients that. But I think when you've assessed cognition and you've assessed some central processing and/or speech and noise testing, you now have data to talk about with them.

- [Kim] Right.

- You now are having a conversation about it. It isn't this, I'm just gonna tell you this and you have to believe me thing, it's just, it's more defined for the patient, they understand it much better.

- It's objective.

- [Heidi] Yeah.

- It's objective

- The results of changing my approach into doing more of a functional hearing assessment or functional communication assessment is it has significantly contributed to an increase in hearing aid adoption. So remember at the beginning, when we had the slides about 3.4% of people with mild hearing loss are treating their hearing loss, that has gone like to a hundred percent in my clinic especially because now those patients... Patients don't wanna manage without any more when they start to understand how our auditory system works and the importance of you know, I don't wanna be messing up my neural, or you know, I don't want neural reorganization, I don't wanna be messing up any of that. I don't wanna be depriving my brain of information and be putting a load on that and to be contributing to my listening effort, my exhaustion, and all of those things.

It's increased motivation for my patients to see an intervention.

- I wanna jump in for Heidi for just something because she's too nice to say this, so I will say this better, and I've known Heidi for many, many years. When she's talking about increasing adoption, there is not been one moment of fear-mongering in her conversation to her patients. She has not one time said, "if you don't get a hearing aid, you're gonna get dementia." "If you don't get a hearing aid, you're gonna be more cognitively impaired." There's no fear-mongering in these conversations in the least,

she is just showing them how difficult without amplification or treatment. Let's put the widget on the side, treatment of retraining the brain, auditory rehabilitation. She's just showing them how without that they're going to continue to struggle.

So it's not about telling them that they're going to get some really life altering disease, we don't have the data to substantiate that we can prevent dementia or cognitive decline. So I wanted to jump in 'cause you're not... I wanna give you all sorts of credit there 'cause there's no way she's ever said that .

- [Heidi] Never.

- [Kim] Never

- It's not about scaring people, it is a hundred percent about educating people.

- [Kim] Yes.

- And that's why we as audiologists have to understand all of this cognitive hearing science, and the neural networking. Understanding cognition for me has been data, I wouldn't wanna be without anymore. And it's not just cognition, it's really doing a whole functional hearing assessment, but it keeps me insight to how to best treat and achieve patient goals, more precision in how I counsel patient. I mean, it completely changes the conversation with patients, more realistic expectations for the patient. And again, I was really good at counseling patients before, but now patients get it. It's not just me telling them stuff anymore by better compliance and I have better patient outcomes as a result of all of this. And I have outcome measures to share with the patient, and these are the things patients want, patients are looking for, and you heard it in that video testimonial that it's important, patients want the information.

- All right Kim, it's back to you.

- Okay. So it's really important that the cognitive screening become part of our everyday life. We wanna ask people about their cognitive status, we wanna measure their speech, and their speech and noise, there measure their communicative abilities using standardized inventories. Again, I love... I actually love Costco. Costco does an inventory on everyone. And so I always tell audiologists that if you're not doing inventories, and if you're not doing real ear, Costco out performs you. And they actually take those inventories seriously in their process. We need to screen for cognitive decline as allowed by state law, and I'll talk about the state stuff in a minute. And you wanna refer people who perform poorly. You need to have a referral network of where you can send patients who based upon whatever screening you do in a communication functional needs assessment, that you have someone who understands that you've worked with that, understands that role in connection of whatever the failed screening is and hearing or balance.

And you wanna offer an auditory rehabilitation program that focuses on listening and cognitive skills. There are some amazing... One thing if we look at in the history of audiology, there's one thing that no matter the decade, no matter the focus, auditory rehabilitation has always produced better outcomes and better satisfaction always, from when audiology was founded on auditory rehabilitation in the 1940s. So we really need to be focusing on auditory rehabilitation. Some questions about scope. Do you have the ability in your scope to screen for things like depression and cognition? You, your national association does not get to interpret this, the state does, and you want this interpretation in writing. I can tell you that right now the Academy of Doctors of Audiology has reached out to all 50 States and nine territories, and is trying to gather a database of the screenings that we might have in our skillset and repertoire, or services like evaluation and management.

Can audiologists in these states perform these things? I can tell you that an audiologist can not do a cognitive or depression screening in every state. I can tell you that an audiologist in every state can't do evaluation and management. I can tell you that an audiologist and every state can't even do cerumen removal. So the moral of the story is you need to find out whether or not, if it's clearly indicated in your licensure law, like it is in mine in Illinois, you can do it. If it's not, you don't just get to assume that you can, you need to make an inquiry in writing to your licensure board, and have them give you a determination back.

If your licensure board will not, which we're already finding out some will not make that determination, that's when you get an attorney and you have a healthcare attorney interpret that for you. There is a defense called advice of counsel, and that can be they're interpreting a law, that's what attorneys do. And that would be your next step to get that based upon again, what your communication and functional needs assessment looks like, what screenings are you doing? And are they in your scope of practice or not?

- So, to Kim's point earlier, can intervention delay cognitive decline or dementia?
Unknown. There is never been a full-scale randomized controlled trial of treating hearing loss to determine efficacy for reducing risk of cognitive decline and dementia. That is ongoing right now, it is called the achieved trial. What we do know and what we can tell patients, and this is what I tell my patients. I do know that treating your hearing loss and hearing aids can reduce cognitive load of processing degraded sound, provide increased brain stimulation, and improve social engagement, which are all good, important things.

- And improving social engagement also decreases isolation.

- [Heidi] Yeah.

- Which is fantastic. I don't want that cute guy in your video to be isolated from his family.

- I know whether it was Olive Garden-

- [Kim] He's so cute.

- or somewhere where they lined up. I don't know where they were. I keep trying to figure that out.

- No. Okay, so now let's talk a little bit about a communication and functional needs assessment. Heidi uses the term functional needs assessment, fine term, I only don't use that word.

- No, no, no. I use the term functional hearing assessment.

- You use functional hearing assessment, thank you. I don't use functional without communication or hearing because that means something else in healthcare, but whatever you call this, this is kind of what my version is kind of always been. And I just wanted to walk through this, you wanna assess their chief complaint and the history of their chief complaint. That is typically really accomplished through a comprehensive case history. You might, I would be one depending on what the patient's chief complaint and why they're coming in, which would be triaged at scheduling. We might do a complete review of systems and review all, all 14 body systems, or 18 body systems. I get the number of PHI and body systems confused.

You would wanna review the typical diagnostic test results. Air, bone, SRT, the SCIM, may be emittance if it's medically necessary, maybe OAEs if it's medically necessary, whatever is medically necessary. You wanna perform MCL, UCL, and/or acceptable noise level testing. What is their tolerance? What is their comfort? You need to perform

speech and noise testing. Speech and noise testing should be a routine part of any evaluation that's going to result in you creating a care plan. You might do unaided real ear. Again, in my old life, if I had an ear that was surgically altered, or very small, or collapsing, or we'll call the use the word funky, I might've done unaided real ear to help give me some guidance on how to best couple.

What's the best coupling mechanism of amplification to the ear? How do you best couple it? Is it an embedded receiver? Is it a RIC? Is it a traditional ear mold? Is it an insert? Is it a dome? What does that look like? You wanna really dig deep into this case history and hearing handicap inventories with the patient and their communication partner. You want to do more listening. I would have taken a lot of information in in a written case history that they would have brought in with them. This isn't something that I'd be sitting and asking them questions, I would have had an extensive case history they did before they saw me. And then we would go over the highlights of this, but you wanna know about their lifestyle.

I used to ask what is your typical day? Their cosmetic desires, you wanna know that out of the gate. Psychological medical, educational, emotional, and vocational impact of their hearing loss on their life, and any financial limitations they might have. And this is probably a good time for me to say there's also no data to substantiate from that's peer reviewed and double-blind studies that can substantiate the outcomes of a high-end hearing aid versus a hearing aid that meets minimal requirements. So I always feel like it's my responsibility to find something that meets the patient's needs as affordably as possible, and that might not always be high-end,

- Now, I'll say Kim, on the inventories and the questionnaires. This is really where it starts for me making connection for the patient real-world. That's where I start to assess what's happening out in the real world, how is this impacting you? And there's a lot of really great tools to do that.

- Yeah, in some ways I always took a truly standardized inventory, like an HHI, or an AFAB or, a SAC, or any sort of... Typically the HHI or an AFAB were... But I would always turn it into a COSI. Like how can I take these very limited questions and turn them, personalize them, which is what the COSI kind of lets you do. And again, then you were really... But be a listener. What I find from audiologist is for a profession about hearing we're really bad listeners, we wanna do a lot of talking about technology, and about features, and about all of that. I'm telling you from experience patients mostly don't care, they came for your expertise, they want to tell you their problem and for you to give them solutions.

I might screen for their dexterity, they're again standardized tests of dexterity. I also used to have product there that they could, is it a battery as a recharger? Size? can the handle a RIC? You might look at dexterity, screen for cognition. You might screen for auditory processing using a quick dichotic test. And you again, if we're looking, if we're practicing to our fullest license, I would also screen someone for a falls risk. I'd be asking questions about have you fallen one or more times in the last year, or two or more times in the last year, or once with an injury. And if they said, "yes," I would be screening for falls risk as well. And then you're going to counsel them on all of this, but you're going to do it in a way, and this is where Heidi, I want you to jump in.

You're really gonna do it in a way that it's not where you're going through an audiogram with them, or you're going line by line through something, you're creating a big picture view of their communicative and vestibular abilities, and kind of walking through what that means to them in real-life. And present those treatment options that are based upon the things they told you, and then discuss potential otologic medical, or medication management needs and make those appropriate referrals. And have your care plan not begin and end with a traditional hearing aid. Maybe it is an OTC because I'm telling you there are people right now, out there in the world that the OTC is the best option for them.

That is better than anything we can deliver because they don't have a \$3,000 problem, they have a \$300 problem. We could deliver an OTC, but that's what we need to start to be open to. Peace apps or assistive listening devices, including FM, roger mics. Roger mics especially to really start to include that in the conversation. Ear protection, we are horrible at focusing on ear protection. Auditory rehabilitation, really having a true, true rehabilitation pathway that goes along with whatever technology pathway we follow. Tinnitus management, really now we're not just turning the feature on a tenant on a hearing aid on, true tinnitus evaluation and management. And then auditory prosthetic devices, getting people when they're younger into implants, instead of them just continuing to struggle with traditional technologies when the implant was the best option.

And then really delivering this both verbally and in written communications that they leave with. When was the last time we left a physician's office and we didn't leave with a visit summary or care plan? That's what we need to start doing. And then you would take an ear mold impression if again, you're proceeding and you need that. We've given you some links on different cognitive screens, these links were active like four days ago, but, Cognivue, the beauty of Cognivue compared to the others. And not just because we're representing, I'm telling you practically, I have done a lot of MoCAs and a lot of Mini-Cogs in my life. And I would tell you that they're both time-consuming and biased by me.

That is what makes Cognivue great in that it gets rid of a lot of, not all, but a lot of bias. And it's something that the patient can do themselves and doesn't involve us. And so, again, not as time consuming into our visit, it can be done beforehand or separately, but you have links to all of these tools available to you 'cause they're all fantastic. There's a lot of data on MoCA, on mini cog and on Mini-Mental State. They're probably-

- [Heidi] So.

- the most commonly used.

- I would of those, I don't remember whose it was, but the recommendation is really to identify, my own cognitive impairment, sooner rather than later. And they're not all sensitive to mild cognitive impairment. So of the ones on here that would be Cognivue, MoCA and SLUMS.

- Yeah, and some aren't sensitive at all to executive function-

- [Heidi] Mm-hmm.

- like Mini-Mental State isn't sensitive all to... If executive functions the issue, it's really not gonna measure it, the MoCA will. but, the MMSE isn't. Also, here's some great inventories just on a little bit of a side note and there's a group, working through on audit audiology quality measures through the Audiology Quality Consortium. And so we've had to do a deep dive into these hearing handicap inventories because we are creating quality metrics for audiologists to start to measure that the outcomes of our treatment using these inventories. And so this is really the most comprehensive list of these tools that's available. We've again, deep dive into the tools that are the most standardized and validated. Auditory processing screenings.

You can look at things like the SCAN-A, dichotic digits, psychotic sentences, or pitch pattern sequence are great in isolation tools to screen for cognition. I mean of processing. So if you have a patient based upon their case history, and they maybe do great on a Cognivue or a cognitive screening, but it doesn't tell the story, your traditional audiogram doesn't tell the story about their issues, especially in noise. You might again want to take a look at screening for auditory processing. My master's thesis way back in the 80s was on this. I did all of these procedures then, I don't think I

didn't do the scan, but the others were in my study. And, 80% of patients over the age of 60 had some degree of a processing disorder.

And again, here's where you can get those tools, have them available. Here's a great piece from Audiology Online, the 20Q, I'm a big 20Q fan, I should be like the pompom girl of 20Q. Acceptable noise level tests, there's a great tutorial, and Frye actually has created a great kind of step-by-step guide of how you can kind of do it, that is the most comprehensive I've seen. So I have those links there as well. And then speech and noise test, the QuickSIN, Words in Noise, which is what they use at the VA. AZ Bio, just an amazing tool. And if you can still find it, and because it is a very challenging speech and noise test is the HINT.

If you wanna really challenge someone, there's the way to go. And, everyone who knows me, knows that I'm the insurance girl. So how do you operationalize this? So communication and the functional needs assessment, which is a diagnostic procedure can really be captured from a coding standpoint in one of two ways. Using 92700, which is in the unlisted procedure code, you would then bill that to the insurance electronically, the insurance is going to... And anytime you use 92700, I should, indicate you can collect payment at time of visit. The patient would sign if they were traditional Medicare, an ABN, if they were Medicare Advantage, private insurance or Medicaid, they'd sign a Notice of Non-Coverage, you could collect payment.

If you bill, they will ask for additional information after the fact. You would then send them a copy of your report slash care plan and a little descriptor on your procedure. And then what we're finding still is that insurers pay about 20% of the time for that. You can also build an evaluation management code as allowed by state scope of practice. So ENM codes is what physicians, nurse practitioners, physician assistants used to capture their evaluated visits. Not all audiologists can have in licensure to be able to evaluate and manage. So you would need to have that in licensure in order to be able to do that and access that code set. ENM codes are not covered by Medicare

if provided by an audiologist, and are not covered by most insurances, some do, but not most.

And again, this could be something private paid, ABN would not be required here 'cause it's statutorily excluded, but you would need a Notice of Non-Coverage. So cognitive screenings, I'm gonna get on a soap box, cognitive screens and auditory rehabilitation should never be inclusive to a third-party hearing aid dispensing program, they should always be separate, they're diagnostic in nature. What Heidi is doing is not a hearing aid examine and selection. What I did was not a hearing aid examine and selection, this is a diagnostic test because the outcome may, or may not be traditional hearing aids. These charges should be separately billed and reimbursed by the patient, or their parent insurer, they're not related to the sale of a hearing aid.

Again, Medicare doesn't cover cognitive screening, communication functional needs assessments, or ENM services provided by an audiologist. Heidi do you wanna take the reading list or do... Oh, I'll start here 'cause you'll come in at the end. We put together a reading list and we've really tried to think about the research that's the most translational, the most practical that can really tell you, not just about the science behind it, but how to apply that into your practices. There's also some fantastic 20Qs, I just love 20Qs. And someday, if you all see me, I'll tell you my 20Q story, it was like someone told me there was no Santa. Literally 20Qs, like I had to take a step back, but I love them so much.

There's also some great webinars on Audiology Online that can walk you through how the cognitive and aging process, so that again, this is all about establishing a solid foundation on cognitive and hearing science, the science behind this before you really start to implement these things in your practice. And now we're back to Heidi.

- It looks like I'm like oh, don't put me on camera. I was adjusting the GoPro at the time. So, anyway. You went up and saw an audiologist a couple of years ago, do you

feel like the experience today is different than that experience, or about the same, or hard to tell?

- Oh, it's 10 times better.

- How so?

- More comprehensive. Some a little more attention to the detail. Actually being able to experience what it would-

- Yeah.

- feel like here. And, you know, I mean I'm discussing things that make me anxious and I'm feeling a lot more relaxed just discussing them and doing the tests. Whereas, you know, in the other one I left there feeling even more anxious just because they didn't do any.

- 'Cause they didn't do anything. Sorry. So this is a patient who came in and he had seen an audiologist in a big clinic here in town. Great audiologist, I know them so they didn't do a bad job, they just... But it was traditional audiometry, right? So he came to me two years later and when I asked him, "you know, why didn't you do anything a couple of years ago?" He said, "well, it was way too expensive, you know, \$6,000. I can't do that." And so, cue in that cost is a big issue for him, and I did the functional hearing assessment. I did do some central processing, and because he had good cognition, not too much of a high frequency hearing loss, just a little bit.

And we did this... I did my whole functional hearing and he was just like, "oh my gosh, this is amazing." I didn't talk about technology with him. and what do you wanna do? And he's just like, "what do we need to do?" I didn't have to go over much. My office manager went over cost options and he's like, "oh, I wanna do this one." And he points

to \$6,000 hearing aids because he had an experience, and he understood things more and he was listened to. And so he would have been one of those patients that would have said, "oh, I didn't treat my hearing loss because of cost." In fact, he was, when in actuality, he just didn't have the experience of knowing how valuable this was for him.

- You lead right into it. Warren Buffett once said, "cost is what you pay, but value is what you get." And that's perfect, you lead that we need to provide people with value. And sometimes we're just not doing that in this very traditional delivery model that is 50 years old.

- Well, and I do wanna say you cannot fit. I gotta say you can't fit a square peg in round hole. You're gonna have to change some of the way that you're doing things, you're gonna have to change some of the time that you elect for this. But in the end it's worth it, you got higher compliance, better help rates, patients who get it, and you don't have to keep struggling and doing readjustment, after readjustment, after readjustment, and then just a great word of mouth. So it's gonna take some change.

- It's gonna take some change. And again, you can charge patients privately for this. Heidi, you charge privately, right?

- I do.

- I used to charge privately, I know tons of audiologists who charge privately all over the country, in rural, urban, private practice, major academic medical centers. It can all happen, it does, it's all about change. And about learning the right... Building a good foundation on it. So Heidi, should we start on questions?

- Yeah. There's one.

- [Kim] Okay. Okay.

- There's one in there, I think it's more for you than me.

- Okay, can I elaborate or go into further detail of a communication functional needs assessment 92700 versus a hearing aid exam and selection? Well, Imma go right there. It's not a hearing aid exam and selection, we're not necessarily going to talk about make some... It's not, and Heidi jump in, it's not around this device. Again, it's about creating, still evaluating, I think that's what I would say. A communication and functional needs assessment is still... Or Heidi's functional hearing assessment is still an evaluation, you're still gathering information in this. We're not talking about makes, and models, and styles, and features. We may-

- I don't even talk about those things anymore.

- [Kim] No, do you demo?

- I don't. Well I do, it's part of my functional hearing assessment that not only do I demo, but I'm doing speech and noise tests, and I'm looking at a lot of the things with before and after right then and there. And yeah, I don't talk about features, models a little bit maybe.

- Just to get the style.

- [Heidi] Yeah.

- Probably, yeah.

- But, yeah that's and I'm not selecting brand, we don't talk about, in fact, we don't talk about price, my office manager does that.

- Well, and again, kind of along this is about the code. This is not... I had a conversation, I'll give a great descriptor. Communication functional needs assessment is something you're still evaluating people. And let's say that patient wants to go home and think about it before they proceed with a hearing aid as a treatment option. If they came back, then we would be doing a hearing aid exam and selection at that point. Because I don't have any more evaluation that I need to do, any more diagnostic work that I need to do. Now, we're just talking about the product at this point. We're not doing anymore evaluation, a communication functional needs assessment is an evaluation of the whole patient.

A hearing aid exam and selection is about picking the right widget, that's the difference. And I, if I did a communicational functional needs assessment anymore now that I have learned so much more about it, I would never have it be billed with a hearing aid exam and selection, or assessment for hearing aid code 'cause it's not about the hearing aid. Okay, now you can go on Heidi.

- All right, we're cheering handicap inventory, do you like best for most patients to be used before each audiological evaluation? I personally, well Kim, what would you-

- I like anything in the HHI, AES family, I think it's a great starting tool. I might have someone, but I would say in my case, that it's not a great tool for post, so I would probably a patient who was going to be proceeding with amplification, I'd probably also do an AFAB, or an IOI.

- I use a couple that aren't on your list.

- [Kim] Okay.

- I utilize the SSQ12 and EHHQ.

- Okay.

- Those are the ones that I personally use, and I go more into depth into those in the CogniHear training that I'm gonna have coming out about why I pick those and how I use them.

- Right. We'll have to add that-

- [Heidi] Right.

- into our... We'll have to add them to our QBCR list.

- To your list, yes definitely. All right, how long do your appointment's assessments take? Mine take, I take two hours. But you could get that down to an hour-and-a-half.

- Does that include your audio though Heidi?

- [Heidi] That's everything

- Okay, okay.

- That's beginning to end-

- [Kim] Yeah.

- they're ready to move on. Two hours, but I don't know how anyone could do a functional assessment, communicational needs assessment in an hour, I think that would be really-

- I think you could if the audio, if everything audiometric, air, bone, emittance, whatever that is is done separate. I think you can do the rest of it in an hour-

- [Heidi] Yep, oh for sure.

- To your point that. Yeah, yeah, I agree with you. I think 90 minutes is the... 90 minutes if you're including the audiometric, basic audiometric testing is the shortest.

- And then, I'm actually doing a fitting with PRO-MIC measurements and reassessing in that two hour appointment, that's why it takes so long.

- [Kim] Yeah.

- All right, how do you present the need for cognitive screening, and how would you respond to a patient reluctant to measure cognitive function? I don't call it a cognitive screener at first. Because of the way I utilize it, I'm utilizing it to gather data about cognitive processing as it pertains to their hearing in the real-world. So that's how I present it. You know, you're gonna do a measurement that's gonna tell us how you hear, or how you're brain is processing in areas important for hearing, especially in noise. That's how I present it so-

- I would, I use it to help people that both... Because I actually think that APA screening and cognitive screening you can put in the same bucket. I use the term communication a lot, that we need to do a deep dive into why you have the communication difficulties you have. We're just, we need to further evaluate why you are struggling so much, I wanna be able to help solve your issues and I need more information to get there. And I never talked about any of what the end goal of it was, I would just like I'm doing more tests to do a deep dive into the why. And people are like okay . I mean, just okay. I can't help you, and I would just say I can't help you without more information.

- Exactly. Yeah, all right. Next one we answer, on average how much time are you scheduling? We kinda already tackled that one.

- Oh, somebody asked about do you, about regularly scheduled follow up appointments. How do you bring it in to that situation?

- Oh, I didn't see that one. Oh, like an already a current patient? How do I bring in doing a functional communication needs assessment or-

- Well, I think or the cognitive screening.

- [Heidi] screen-

- I actually know what they mean by that. So this is what I would do if I had a patient that was struggling, that my real ear is great, but my speech and noise is still awful, and that they're handicapped are still not great. I would then say, "you know what? I feel like we need to do a bit more evaluation to learn more about your why. Why things are still not working for you. See, I wouldn't do cognitive screening on every patient, I would have my inventories and in a communication needs assessment, I'd have my inventories and my test results and their case history tell my story, and I would guide me accordingly. Same with an existing hearing issues, or if I'm hitting target, but they're still really struggling, we've gotta find out why.

- I would do the same, I'm also really just educating my current database on the connection between hearing and cognition, and letting them know that there's measurements available as well. But I would do the same as Kim just said. Although, it is a form of cognitive assessment, doesn't the patient need to have acceptable cognitive function to do the Cognivue? I've had patient, it's pretty telling, if the patient can't do a cognitive screening tool, there's a cognitive problem. So, I have had patients kind of sit there and get a very, very low score and not really understanding, it's very

telling to their family member who is with them that there is a problem going on. All right. I don't know, I think we lost Kim.

Are you back?

- I'm back, sorry.

- I didn't know if I was frozen or you were frozen,

- No.

- Or we got cut off 'cause it's noon .

- Right, so Heidi to go again, I don't know if you heard my old question. You wouldn't do a cognitive screening on someone who has a documented diagnosis of Alzheimer's or dementia would you?

- No.

- [Kim] No, okay. I think that answers that question.

- Yes. But sometimes they don't have a documentation-

- [Kim] Right.

- or you don't know it. And then they're sitting there and sometimes we've done Cognivue and then their spouse or their family member's like, "well yeah, they have a diagnosis of dementia." And like okay, well we went over your medical case history and sometimes they just don't think it's important that we know that, "oh, that has something to do with hearing?" So that has happened.

- And one of the questions asked about scientific articles. Take a look at the reading list. Especially the Shen article does a huge connection, I mean it's all about cognition in audition. That's actually, everything in the reading list is about that, so really take a look at the articles in the reading list, they're all peer-reviewed... The articles are all journal articles in the reading list.

- Here's question, how do you prepare the patient beforehand especially new patients and referrals that there will be a portion that is not covered by insurance. You know, this is really important to get your whole office on board with this. The front to the back, everybody's gotta believe in ear brain assessing and treatment of hearing loss because that's a auditory system. And so they believe in it and it actually sets us apart. And when they explain it, like "hey, great, we're gonna tell you how we're different and unique, and this is how we do things and it's really about understanding how you're communicating and functioning out in the real-world. Well, that's what people want. People want that information about how you're gonna deal with noise and all of those things.

And unfortunately, your insurance isn't gonna cover that portion and here's how much it costs. And that's how we handle that.

- Or this is our standard of care, and this is an especially much easier conversation if you're unbundled. Because you're separating this, the diagnostics, and you're separating your services from the widget. So it's really just establishing that this is our evaluative process, this is how we know we can help the most people. And it's just again, Heidi nailed it.

- Well, and we really put a stake in it this year, you know, if they just need audiometry, that's what we do. We had someone schedule that that was appropriate, but most patients when they're new patients, it's a functional hearing assessment because I

need this information to know how to help you. So this is what we do, this is like Kim said this is our standard of care. All right.

- I think we're onto the nursing home losing their hearing aids.

- 'Cause we did that one. What are the tools you use to assess the risk of patient losing their hearing aids? For example, I have patients living in nursing homes that are a good candidate for Pocket Talkers because they are losing their aids dispensed two months after being fitted.

- Well, I think you need a cognitive screening and a dexterity. I mean, we don't look enough at dexterity. And that's my opinion, I think you might because I think there's and to look at their living situation. It's much more looking at the whole patient and not thinking that a traditional hearing aid's the only solution. My opinion, you need to be screening cognition. Again, if the case history guides you there, and you would screen for dexterity.

- Well, and I'll just give an example of a patient who came in, long time patient with her adult son, and he was like, "you know, she's not wearing them, she takes them out," and he's just irritated. And essentially told me I needed to fix this, and treated me like this was all my fault. And found out she's living by herself, and I could tell cognitively, this was not a good idea. So we got a objector, you know, we did Cognivue, and the adult son got to see, "holy buckets, like mom couldn't even do the task. She shouldn't be living alone, and she can't put her hearing aids in by herself anymore." So this is why family has to attend these, this is why you're looking at that because so often, patients don't know any better than to just blame the hearing aids or blame us.

And so when we're looking at the whole picture of what's really going on and we get the to the bottom of it, then we're better able to help our patients and their families.

What about your patients who are musicians, they can no longer hear music properly?
Any idea for rehab, or for particular manufacturers?

- Can I chime in here?

- [Heidi] Mm-hmm.

- Go to a course that's given by Mike Santucci, or Heather Malyuk, who are experts in musicians, ear protection, and musicians fitting. There are people who really know that musician community, it may or may not be about cognition, but you might need to take that into account. But you also might need to take into account their instrument, their needs, are they are listener, or are they actually a musician? Are they in a band? Are they in an orchestra? There's so much more to that, and the folks at Sensaphonics plus Dr. Malyuk do some amazing things in this space. You really want to get... Right now, you're getting expert advice from an expert in cognition hearing which is Dr.

Hill. You really in the musician world wanna go down the Santucci, Malyuk route, they're fantastic.

- Kim, the next one's yours.

- Okay, this is not coding or billing class, but I'm gonna give you a quick. If you're going to bill a patient because of especially now with surprise medical bill legislation in most states and at the federal level. If you're going to bill a patient for something that might be covered if it's provided by another provider, or that's an unlisted procedure if they have traditional Medicare, red, white, and blue Medicare card you would have them sign a required ABN prior to for the provision of care. If it is a private insurance, Medicare Advantage, or Medicaid, and these are non-covered services, or services that might be covered in another situation like evaluation of management, you would have them sign a Notice of Non-Coverage prior to the provision of care.

- Do you incorporate Cognivue into functional hearing assessment charge or do you have a separate charge? Yes, I incorporate it into because it's part of my functional hearing assessment.

- And there's no code to charge for this procedure separately, there's no code for a cognitive screening. There's code for cognitive assessment that can be used by psychologists and neurologists, but there's no code for a cognitive screening.

- And can we give a range of what an audiologist-

- [Kim] No

- charge?

- No and let me tell you why. First of all, that's not legal, can't talk about price. Second, what is the value of your time? I'm gonna get on a two second soapbox. No-one knows what you need to charge, that is based on you, on what is the value of your break-even plus profit for a window of time for a full time of revenue generating provider. It's your price. Yours. No-one else's price. So you have to establish yours. And I'm sorry if I'm haggly about this, but this is a massive soapbox of mine. You have to know the value of your time. It's not Heidi's time, my time are different.

- Wouldn't frequency range and hearing affect the word discrimination? Sure. But so can cognition, so can central processing. So again, it's looking ear to brain, it isn't just looking at cognition, or central processing, it's looking at all of it. And you know, if a patient has high frequency hearing loss where they're kinda out in the highs then their cognition becomes even more important. So knowing where that is because they've gotta compensate for the fact that they're not getting all of that audibility anymore because we can't give it with hearing instruments. That's just all the more reason to

know where that is, and to know what you need to do to help that patient. Do they need Roger FM, Remote Mic, what are the expectations?

What can they expect?

- Well Heidi, think of the people with a normal audiogram, but they have hearing handicaps. I mean, yeah and some even have word discrimination questions in quiet, let alone in noise. I mean, because there's something going on that's not peripheral, that we need to not just poo-poo, and say, "you need to come back in a year and come see us again." They made that leap because they were struggling, we have to start to figure out why are they struggling? It's all about them-

- [Heidi] And help them.

- And help them. And help them, and it might not be a traditional hearing aid, it might be a Roger Mic, it might be TVer's, it might be auditory rehabilitation, it might be brain retraining therapies. It could be lots things, but we need to start to think that just because peripheral function is normal that they're normal hearing. 'Cause they're not.

- Correct. Looking for an auditory re-up suggestions, haven't had success with patients following through with computer based programs. Yeah, and I think that as we change our approach and we teach our patients more, I think you'll get better compliance, will get better compliance. So I'm in the most excited right now of well, first of all, 5 Keys.

- Oh Dusty's. Dusty's 5 Keys.

- Dusty's is amazing-

- [Kim] Dusty's amazing.

- it's a no brainer.

- [Kim] Yeah.

- Everybody should be getting a book and you should be-

- [Kim] Yeah.

- signing people up for the e-tips. That's the easiest thing possible. You've got-

- [Kim] Yeah.

- A Hearing Wellness Journey Now, which is a great AR online program, you've got Dr. Jill Davis is coming out with Victory, Music... Oh Jill, I'm sorry I forgot what it's called. Victory, Music, something program that she's just releasing that is really exciting that's based on learning an instrument. You have BrainHQ, there is an auditory specific track for BrainHQ, they can sign up under your portal and you can set that. We've got, oh Kim is it Amptify?

- Amptify or you can still find it under cLEAR, which was Nancy Tye-Murray's program, it's really interesting. And I've seen some good compliance from that computerized program 'cause it's kind of games based.

- [Heidi] And then-

- [Kim] She-

- Oh, go ahead.

- [Kim] No, go ahead.

- You know, just speech tracking, teaching them about speech tracking, learning about speech tracking, teaching their spouse how to do speech tracking.

- Even old lip-reading training can be really useful for some people, and to like hearken back into read up on what auditory verbal therapy is. And because that's what you do with the little ones with an implant. Some of those tips and tools are amazing. And there is some great resources in AR, whether it's Nancy Tye-Murray, or Kathleen Pichora-Fuller, or work from John Greer Clark and Chris English. Joe Montano at Weill Cornell, great, great programs. There's some great just were you can learn how to do things in your practice as well. Just really do deep dives in auditory rehabilitation because there's just a lot of great resources out there.

- Do different results on the Cognivue change treatment recommendations and if so, how? Yes, but I would say this more than anything it's about the big picture and using clinical expertise. But yes, if a patient doesn't have performed well in memory, working memory is really important for hearing and noise. So if they don't have good memory, there's and if you read especially the 20 questions with Dr. Souza, that low memory capacity should have a slower compression speed. Not so much compression, not too much noise reduction, anything that distorts the hearing aid's signal if the patient doesn't have good executive function, and/or a working memory capacity, you're gonna have a hard time resolving the mismatch between the changes that you are making to the signal and what they have stored in long term memory.

- And Heidi, I was-

- [Heidi] But I did-

- Oh, go ahead.

- There's no magical fine tuning of a hearing aid to be perfect, you gotta take the whole thing into consideration.

- I've always wondered because of a Lyric is analog, if this is one of the reasons why some people do so well with it because it has that clean not overly processed analog signal. And sometimes with some people you need to make that hearing aid more analog and not have it AI, and filters, and nah. That it's just that the brain can't get through the processing of the product to get to the signal.

- Yep, absolutely. I think you're spot on with that 'cause patients who could wear Lyric, who can wear Lyric really love that sound.

- They really love that sound, and some of its probably that it's deep insertion, but some of it's also that it's probably 'cause it's analog.

- Mm-hmm. Do you have patients who do not want their cognitive results sent to their primary care physician? Yes I do. How do you document cognitive results in your reporting? So I do. I have some patients and initially their cognitive results usually aren't great, and they're of a generation where they are not understanding what this means despite what I tell them because they're just not understanding what this all means. This isn't an IQ test, this isn't a test that tells anybody that you're crazy. Those things that might be, but that's not what this says. And they're so afraid, they're so paranoid that that's really challenging, but it's... Kim correct me if I'm wrong, but if they don't want their physician to have the report, we shouldn't send the report unless you think there's a vulnerability issue.

- Right, unless you think that they could harm themselves or someone else, but I wanna give a but when it comes to HIPAA. The patient would have to actually restrict disclosures because you don't need the patient's authorization for HIPAA to send for what's called care coordination for payment, healthcare operations, or treatment. You don't need a patient's authorization, they would need to restrict that they don't want this disclosure. They would need to literally sign something that says I don't want you to send this to primary care, they would need to acknowledge that in writing because technically, and again depending on your state, you might be mandatory reporter of certain things. If you don't report it, that could be problematic especially if they're in harms way.

- And I have family with them, so it's usually not a problem because they have an advocate with them, which again, it's so important to have family there, just one more reason. That's it. We're done.

- [Kim] Yes.

- [Announcer] Well, thank you guys so much. I just wanna thank both of you, Dr. Hill and Dr. Cavitt for presenting such a great webinar, and for all the attendees for a wonderfully interactive Q&A session. This will conclude today's webinar, so thank you again. And everyone have a great day.

- Thanks guys.

- [Heidi] Thank you.