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Cognition, Audition, and Amplification in 2025 and Beyond

Presenters: Blaise Delfino, MS, HIS, Douglas Beck, AuD

Welcome to today's course, Cognition, Audition and amplification in 2025 and beyond, presented by Dr. Douglas Beck and Blaise Delfino. Before I begin, I do want to point out that these are the learner outcomes associated for this course. So please feel free to review these at any time. They are in your handout and these are the risks and benefits associated with today's event.

This month on Audiology Online, we're celebrating innovation in the hearing industry with our fifth Industry Innovation Summit. Thank you for joining today and we hope to see you in other summit courses which you will find in our course library. We would like to thank our title sponsor, CareCredit, and all of the companies who are participating in the 2025 summit. And now I'm going to pass this over to our presenters. Good afternoon, I'm Blaise Delfino, founder and host of the Hearing Matters podcast and I'm joined with our co host, Dr.

Douglas L. Beck. Doug, it's great to see you today. Thank you, Blaze. It's nice to work with you.

You know, we work together so much off, offline. It's great to do this together online. Absolutely. And this isn't our first, our first CEU recording, is it? No, we've done quite a few.

But you know, hopefully this will be better than the other ones because we're learning every time we do it. Absolutely. Now Doug, this is an event that you and I, while we were speaking offline, very excited to record and here's why. CareCredit released research on hearing healthcare and this is research that really discussed the stigma associated with hearing health care. It discussed different financing options, but also our community members understanding of the impact that untreated hearing loss has on their overall health.

And you and I are going to dive into that today. Of course. This CEU event is called Consumer Choices and Issues. And you know, this is such an important thing because I, you know, CareCredit did interview through, through a third party, about 2,000 people and they were younger people in general, I

think up to about age 60 or so. And they were looking for answers to questions that everybody in hearing healthcare is asking, you know, how do we approach younger folks?

How do we get more people involved in hearing healthcare earlier? How do we protect your hearing? How do we prevent tinnitus and you know, noise induced hearing loss, things like that. So they did a bang up job. And our intention today is to take our work and frame theirs within that framework and then, you know, expand upon it so that we can relate consumer choice to all of These things.

And I want to say Also, you know, CareCredit is not just involved with audiology and hearing aids and amplification and cochlear implants, things like that. They have a broader approach. They're also in dental care, they're in optometry, they're in veterinary care. And I think that they, they change the outcomes for so many people because they avail reasonable pricing programs that make more expensive treatments affordable. And this, this is important for all of us because I can tell you, as you age, your, your need for intervention becomes greater, the costs become greater.

And the number one reason that people file for bankruptcy in the USA is medical healthcare costs. And the vast majority of those people have healthcare insurance. It's ridiculously expensive. So hats off to CareCredit for being involved in this area of healthcare. Dr.

Beck, let's set the stage for our colleagues. The first half of this CEU event. You will be discussing cognition, audition and amplification as it relates to consumer choices and issues today in 2025 and beyond. And then we'll dive a little bit deeper into some of the findings from that care credit research, which is, which is absolutely brilliant. Now, Dr.

Beck, you talk about hearing loss prevalence, and there's an estimate that 22% of the US population has hearing loss. Tell us about this, this national epidemic, if you will. Yeah, it is an epidemic and it's an unrecognized one. Here's how it works. The Global Burden of disease study in 2024, which was

published in urine hearing, they, they actually said 71.88 million people in the USA have hearing loss now.

So we're going to round that to 72 million. And then when you, when you combine that with some of the works from Larry Humes and others who are also published in peer review, you realize that about 90% of those 72 or 73 million people, about 90% of them are above age 18. And then when you say how many of them have mild to moderate loss, that's about 90% of those. So when you do the math on that, so you take 70, 72, and you go times 0.9 and 0.9 again, you get about 58 to 60 million people with mild to moderate hearing loss who are adults in the USA. Dr.

Beck, some individuals might hear, well, mild hearing loss, I'll get by, that's fine. But we know, and the data has shown us that mild hearing loss, a patient who presents with mild hearing loss can be three times at a greater risk for falls. That's correct. That work comes from 2011. It was actually the Archives of Otolaryngology Frank Lin and his colleagues published that, that as you have a mild to moderate loss, your risk for falls increases times three.

Now, the reason for that seems to be your inner ear is of course, your primary vestibular system. And then you have other systems that go into balance and dizziness and lightheadedness. But if we just look at inner ear, we find that as hearing loss increases up to a moderate hearing loss, your risk of falls increases times three. And of course the inner ear is your cochlea, is your hearing organ. And also that is where the vestibular system resides when you think about the semicircular canals and the related anatomy.

So, Doug, you're telling me, okay, mild hearing loss, three times greater risk for falls and other comorbidities. Now, tell us a little bit about the adoption of hearing aids. It doesn't seem as though there's ever been one specific year where the uptick in terms of hearing aid adoption has occurred where 50% new hearing aid users exist in the nation today. Tell us a little bit about this. What are some

of these barriers and how can we improve?

The primary barriers that the FDA identified as they were looking at OTC issues were access and affordability. I think those are certainly contributory, but access right now is pretty good for over the counter hearing aids. I mean, you can get them almost any pharmacy, you can get them at electronic stores, you can get them at some department stores. You can certainly get them from hundreds of thousands, if not millions of locations online. So OTC is out there and it's available.

So access, I think, has been managed. Well, affordability is a totally different deal because, you know, I'll tell you, when we were doing the FTC hearings and the FDA hearings in the 2016, 17, 18 era, I think most of us were thinking OTCs were going to be 100, \$200. Well, as it happens, most of the better OTC products are up to 2,000, \$2,500 a pair. And, and so they're still out of reach when you go back. Susie Orman in 2022 and 2023 stated that most Americans don't have an extra \$500.

So it's still a huge burden to anticipate that somebody would spend \$2,000 on a set of OTC hearing aids, which gets us back to a peer credit scenario, which opens the door for more expensive purchases. Now, the thing is, access and affordability, those are important, and I think those are right. But I think there's another big issue, which is cosmetics and stigma. And cosmetics and stigma in 2025 are just as big a deal as they were many, many years ago. We were all kind of hoping that's gone away. Well, it hasn't.

I think when you look at places where hearing aids are totally free to citizens, like in the UK, in the EU, New Zealand, Canada, Australia, the uptake of hearing aids is about 40%. And that means that 60% of people with hearing loss choose not to get hearing aids regardless of access and affordability because they just don't want to look that way. And the look of hearing aids is still perceived as very negative. There were studies back in the 60s and 70s that showed, here's Doug with a BTE hearing aid, the big beige banana. Here's Doug about it.

And they would ask your age and your iq, right? And what they found is that people wearing those hearing aids, visible BTE type hearing aids back in the day were estimated to be 10 years older and to have 10 fewer IQ points. So that stigma, that cosmetic negative association with hearing aids, is still with us. And I think that that is what OTC hasn't solved. And of course there are inserts like what I'm wearing right now, things like that, but they're not all that attractive, they're not all that convenient, they're not all that good.

The best of those would probably be the Apple AirPods. But you know, as somebody who wears hearing aids, that would be me. And I stream all day long. AirPods last three hours and they're not custom fit like my hearing aids are. And they don't have the flexibility that my hearing aids have, you know, as a starter set to see how would you do with hearing AIDS?

You know, AirPods may be fine. I'm not going to say anything negative. I think Apple's a brilliant company and they make brilliant products. But I think that if you're trying an Apple AirPods to see if you might be a good candidate for hearing aids, that's fine. But if you get any benefit at all, holy cow, imagine how good it's going to be with a prescription hearing aids.

Worlds apart. Doug, we're talking about adoption of prescription hearing technology. There's a plethora of choices that consumers do have today. And when I'm working with a patient and I tell them I'm here to assist you to make an educated decision regarding your hearing healthcare, that's really important. And you and I have talked about that for many years now, that our job as the hearing care professional is to help the patient make that educated decision.

And part of that is, is educating the patient on the difference between hearing and listening. Now, these are two very different things. So, Doug, tell us about the difference between hearing between listening, because this is a lot of stuff to kind of uncover here. It's a lot of stuff. And for consumers, it's a.

It's a difficult bridge to cross. Hearing is just perceiving or detecting sound. That's it. Listening is actually the big lift. Listening is a whole brain event.

Listening means that you have heard or perceived a sound and now your brain is making sense of it. So that involves not just the temporal lobe, but both temporal lobes for ipsilateral and contralateral information. It involves the frontal lobe. It involves your vocabulary. It involves your memory, your short term, your long term, your working memory.

It involves your occipital lobe, particularly in conversation. Right now, I'm watching you on my screen, and that allows me to have visual cues and auditory cues, which are redundant sensory cues. When I have all of that working together, that makes it much, much easier to communicate, to understand the intent of the person speaking. If I just have hearing alone, it's very, very difficult to get by, particularly in a cocktail party, because without vision to give me a redundant cue, it's hard for me to see or to know where to focus, who to look at, who is speaking. When I add in all those sensory cues, it makes it a lot easier for my brain to make sense out of them.

The buzzword there for me, at least as a hearing care professional, was that working memory, because we know that, of course, we're talking about cognition, audition, and amplification working. What is the relationship between untreated hearing loss and cognition? And why is it so important that we as hearing care professionals focus on the hearing part, on the listening part? Different communication assessments. This is an umbrella for us as hearing care professionals.

Absolutely. Yeah. So the point about untreated hearing loss is there's high correlations between untreated hearing loss and cognitive decline in at risk people now who are at risk people. So the at risk people that we're talking about are people with multiple comorbidities, perhaps people with polypharmacy, people on more than five drugs, people who are in lower socioeconomic groups, people

who have greater degrees of hearing loss. These are the people who seem to benefit.

In the Achieve study, they were quite clear. And what they said is this. And this is a quote from. From the achievestudy.org Main results published in the Lancet in 2024 show that in older adults at increased risk for cognitive decline, hearing intervention slowed down loss of thinking and memory abilities by 48% over three years. Now, does that mean that everybody with hearing loss needs hearing aids?

Absolutely not. Does that mean that everybody who gets hearing aids is going to be preventing cognitive decline? Absolutely not. Is there any hearing instrument specialist or audiologist or ENT who has said, wow, you have hearing loss. We have to put hearing aids on you to prevent cognitive decline?

I've never heard anybody say any such thing yet. Yet. You know, it's a big deal. You have publications all over the world say, oh, there's no connection between hearing aids and cognitive decline. You know, yeah, if you take it out of context, there isn't.

But if you keep it in context and you talk about correlation, this is such an important point because audiologists, hearing instrument specialists, ents. We don't confuse correlation and causation. But I know that everybody got up, you know, I. And, oh, it doesn't cause. Nobody said it caused it.

Why are you fighting that fight? But I don't get it. What do I know? Simple country audiologist, but here's what I do know. I'm reading exactly the [achieved study.org](https://achievestudy.org) page.

3 out of 10 main results published in the Lancet 2024 show that in older adults at increased risk for cognitive decline, hearing intervention slowed down the loss of thinking and memory abilities by 48% over three years. That's not a promise, that's not a gift. That's a correlation that many of these people improved by wearing hearing aids. Now, is that the one and only study? No, no.

There's the study out of New Zealand that showed that when you have a group of people. That's the enhanced study, Doug. That's the enhanced study. Yeah, exactly. And what happened there at about 125, 150 people who wore hearing aids, about 125, 150 people who didn't.

So you have an intervention group and a control group, or you could say an experimental group and a control group, which is a more standard approach. And what they found is that the people who got hearing aids did not decrease at all. And the people who did not get hearing aids decreased in some of their cognitive abilities over three years. Now, that study was done at about the same time as the Achieve study. Then you have the study out of Bordeaux, France, by Dr.

Amiva and her colleagues. This one was published by, I want to say 2015, might have been 2014. They followed over 3,000 people for 25 years. And what they said in the end result was the people who wore hearing aids looked just like people with normal hearing 25 years later. The people with hearing loss who did not wear hearing aids, they declined over the 25.

Is that. Oh, no, there's a bunch of studies. And so nobody's saying that hearing loss causes cognitive decline. Nobody's saying that. What everybody seems to be saying is that untreated hearing loss in at risk people puts those at risk people at greater risk for cognitive decline.

And we have to keep talking about that and we have to keep informing our patients about that when we're dealing with the right patient, because it's a correlation, certainly not causation. And it's an important part of their understanding of what's going to happen to them, what might happen to them and what might not happen. When we talk about hearing aids with patients, do we talk about social isolation? Well, why? Well, does everybody who wears hearing loss no longer have social isolation?

No. Does everybody with hearing loss that's untreated. Do they all have communication problems? No, they don't necessarily. Does everybody with hearing loss have anxiety or depression?

No. These are all correlations, and that's how we've always framed it. That's how I've always framed it. That's how most responsible authors frame it. And when you bring this up, Blaze, and we talk about the relationship between audition and cognition, there is a high correlation in many studies that are peer reviewed and published.

And to ignore that is folly. A lot to uncover there. But I want us to discuss listening disorders without hearing loss. And growing up myself in a hearing household, my father specialized in auditory processing. Right.

You know, I've known about Dr. Jack Katz pretty much my whole life and, and the big books and, and all of that, but, you know, and, but also my background in speech language pathology, and especially when I was in my school rotation, second year of graduate school, working with some of the students who did present with auditory processing. And there's been some articles that have been released, low level amplification, fitting those individuals with auditory processing disorder with hearing technology, again, low gain. What we're doing is decreasing that listening effort. So I would love for you to unpack all of that.

Listening disorders without hearing loss, you know, central auditory processing disorder, subclinical hearing loss, kind of bring us through and down that road. Doug. So subclinical hearing loss is the more medical term, and I love that. And that's the one that I use. I don't like to say listening disorders because it Confuses people.

But a listening disorder could be as easy as difficulty understanding speech and noise, difficult. A listening disorder could include auditory processing disorders. A listening disorder could include dyslexia. So a listening disorder, generally we're talking about those types of things, but they don't mandate that the patient has any hearing loss at all. Now let's talk about auditory processing disorders

in particular and Jack Katz, who I love and Jack was my mentor.

I spent six years studying under Jack. How this works is that most children with auditory processing disorders have no hearing loss whatsoever. And so what we do in most school situations, educational situations, is we give them auditory trainers or an FM system. So the question is, why do we do that? We do that to improve the signal to noise ratio.

We're not really trying to make things louder, although we do. What we're trying to do is we're trying to just make it easier for the brain to focus on the primary signal. So we use these tools, FM systems, digital remote mics, auditory trainers, in order to improve the signal to noise ratio so the child's brain can train to what it's supposed to pay more attention to. When we talk about low gain hearing aids for these situations, this isn't a novel idea we've been doing, the military's been doing it for a long time with people who have auditory complaints, subclinical hearing loss, but they don't have any discernible hearing loss on an audiogram. Dr.

Christine Roop has published quite a bit on this. I've published quite a bit on this with Jeff danhour. Back in 2019, we had a peer reviewed paper showing 26 million Americans have hearing difficulties and speech and noise problems with no discernible hearing loss. And then we had a paper that I was the lead author on, but I had 24 co authors. I think it was 2018 or 2019 in the hearing Review where we talked about fitting people with amplification who have no hearing loss on an audiogram but have hearing and listening complaints.

Those complaints, when we just dismiss them, we're not really helping the patient. The patient says, I have difficulty, they come in, we have normal hearing. And this is all best managed through best practices. When you look at AAA best practices, ASHA best practices, IHS best practices, they all say you should be doing a communication and listening assessment. So that might be the International Outcomes Inventory, the cosi, that might be the afab, that might be hhi, hhia, because that identifies

where they're having difficulty and where they're not.

All three of those Best practice statements say you should be doing speech and noise. Only about 15% of hearing care professionals bother to do that. It's probably the single most important test you can do. I don't really care that much about their pure tones once we have a diagnosis. What I care most about is how are they getting along in the real world.

You know that functional assessment is critically important to me in managing patients because you can have. And every hearing care professional uses this example. You'd have 10 people with the exact same audiogram, and yet you know, we're going to fit them 10 different ways based on what you know their goals and objectives are and based on what they think is a comfortable hearing aid output. So we don't fit all 10 people the same way because they have an audiogram. If we did that, then OTC would reign supreme because you could just put in an audiogram and you're done.

This is why the hearing care professional is so important to this because we can assess the individual goals, objectives, and we can do so much more than best practices. I always think that it's very important to do extended high frequency amplification. We've got an upcoming podcast on that in the Hearing Matters podcast. We'll probably be broadcasting that in February or March. And when you look at the literature on extended high frequencies, it's almost embarrassing that we've known how important these things are for 40, 50 years now, and yet it's still not part of clinical practice.

I think we, we have to do clinical best practices that identifies patients who have listening disorders or subclinical hearing losses. Because if you don't do that, those patients are all invisible to you. And you're going to tell them, oh, you don't have a problem. You're within normal limits. Many, many problems associated with that.

The normal limits that most of us use are 25 dB. And that's just ludicrous. I mean, it should be 15 decibels. When you, when you go back 100 years, people 19, 26. Fletcher said, the outer limit of normal, you know, is 15 dB.

When you think about Miriam Downs, 40, 50 years ago, Miriam said anybody. And she was speaking about children. She said any child with more than 15 decibels of hearing loss needs to be treated. When we say treated, remain amplified. Doug.

Something that you are incredibly passionate about. No screenings, conduct full comprehensive audiological evaluations. The only screening that you are really behind is of course, I'm as well that newborn hearing screening right now we do not hear and, or listen in tones. Right? Pure Tones.

When you hear the tone, click the button or raise your hand. So if we are not conducting speech noise testing or these communication listening assessments, we really have no idea how this individual is able to communicate. And how often. Doug, have you heard? Okay, well, Doug, they're normal on an audiogram, but I still struggle.

If we're not conducting otoacoustic emission, extended high frequency, and speech and noise, are we just saying, sorry, Mr. And Mrs. Smith, I can't help you? I mean, there has to be a better way. And I love that we're talking about this because it's all about cognition, audition, amplification.

And if consumers have all of these choices today and we as hearing care professionals have the ability to help them within our scope, sure, we can do that. Well, the question is, why would anybody do less than best practices? How many of the people watching this video want to go see a dentist who does not practice best practice guidelines, according to the American Dental Association? How many people watching this video want to go see an optometrist who does not practice the American Academy of Optometry best practices? Doug, we're now going to dive into some of the research findings from the

CareCredit research study, and I want to really kickstart it this way.

When I was in private practice in Pennsylvania, that's when you and I were first connected. Right? And I would always share with you the different community outreach initiatives that we hosted, whether it be lunch and learns, whether it be workshops, things of that nature, because we know hearing healthcare is community based and all of our colleagues on here know that, and they implement that same model. So with the CareCredit research, we had consumers and audiologists. The sample size of the consumers, 2001 individuals, and then the sample size for the audiologists was 26.

Now, consumers were surveyed online and the average length was about 12 minutes. So we know that hearing is a concern, but not enough to take action. And I want us to dive into a few of these verticals today when, when we find that hearing concerns voiced by some consumers, underpinned by need for increased prevention education. Yeah, okay. As hearing care professionals, we've been educating our community, but have we been doing enough?

So how can we get better and how can we influence this? A little bit more positive, if you will. So a big part of this is understanding that presbycusis, which is the hearing loss that often accompanies aging, is not normal. Presbycusis is common, but it is not normal. And many, many docs, many physicians will say, you have normal hearing for Your age.

That's nonsense. There's no normal hearing loss. There's common hearing loss that's called presbycusis. There's hearing loss associated with damage from noise, from ototoxic drugs, from head trauma, from leaf blowers, from ATVs, from motorcycles, from music. All of these things add up over time.

It's kind of like radiation. I hate to say, but Dr. Lieberman, Dr. Charles Lieberman @ Harvard wrote about this amazing evolutionary understanding of hearing loss. Generally, all of us in hearing

healthcare have been taught you look for outer hair cell damage.

You look for pure tone indications that the patient has hearing loss. That happens way after you've got synaptopathy. So synaptopathy is the damage to these neurons. And let's keep in mind that you could lose about 50% of of your auditory neurons and have a normal audiogram. My interpretation of what Dr.

Lieberman is saying is that as auditory neuropathy occurs over years, over time, over decades, some people are going to complain about tinnitus, some people are going to complain about hearing loss. It's hard for us to differentiate those because they may actually be the exact same thing. In fact, my writing colleague and my dear friend Dr. Keith Darrow talks about hearing loss and tinnitus are the same thing. They're different manifestations of synaptopathy.

And I tend to agree with that. I think by the time we diagnose hearing loss in a patient, they already have significant synaptopathy. And it's more or less. And we don't have exact numbers. This is a new theory, this is a new understanding of how hearing loss occurs.

And so, and so nobody has exact numbers on this. But I do think the chapter, it's called Noise Damage and Hidden Hearing Loss. Cochlear Synaptopathy in Animals and Humans. And it's chapter 11 in a brand new book, it's a 2025 book called Hearing Loss the Fifth Edition by Sadloff and Reed. So I would recommend reading that chapter.

I think it's brilliant. So now let's get back to what can you do to actually prevent hearing loss? Well, the easiest thing is don't expose your ears to extraordinarily loud sounds. And the question right, how loud is too loud? If you're wearing headphones, you're listening to music, and you cannot speak to the person next to you in a normal voice or it's too loud.

And that's, that's the only guideline that I'm aware of that anybody can actually use in a meaningful way. So if you're at a restaurant, you're at a cocktail party, you're on a train, you're on a boat, you're. You're on an airplane, and you're using headphones, and somebody is talking to you, and you can't hear them. It's too loud. Doug.

The consumers had reported in this CareCredit research study that they were familiar with foam earplugs, but might not have used them or may use a substitute. So tell us a little bit about that and what we can learn from this data. Well, this opens up a whole discussion on hearing protection devices, HPDs, and we have a brilliant podcast with Elliot Berger. Elliot is a Master's of Science and Ms. Degree, and many of the older audiologists will recognize his name.

Elliot is very, very famous in preventing hearing loss. Anyway, so what. What Mr. Berger talks about is foamies are great. They're wonderful.

And they're almost never inserted correctly. The way. The correct way to do it is you have to squeeze it really, really tiny. You roll it in your fingers, tiny, tiny, tiny. And you have to really push it in there far.

And then, you know, you should notice a change in your voice quality and your voice loudness. You should have difficulty understanding people next to you because you should be getting at least 20 decibels of attenuation. Now, I fly a lot, and I see the guys out on the tarmac with these things sticking out of their ears. You know, they're out to here, and they wonder why. Why do I have hearing loss?

Right. They look like Shrek. Yes, you. Well, like Shrek. Yeah.

I mean, yes, you are wearing it, but you're not wearing it correctly. So. So the people on the tarmac, the people in industry, the people in military, they're taught how to do it. They absolutely are. I have no doubt about that.

But then they don't do it properly, and there's no demerits for not doing it, and they get the choice to wear it or not wear it. So the foamy earplugs, the problem with them is they're not worn in general. They're not particularly comfortable. Most people have no idea how to insert them correctly, and so the compliance is extraordinarily low. Do they work?

Yes, they do. And all you generally need in a loud situation is 15 or 20 decibels of attenuation, and they can provide that. Now, there are headsets that can provide that, and there's all sorts of things that can provide that. But. But the key is compliance.

And I have to say with screenings, you're right, I don't, I don't like audiologists or hearing care professionals of any sort during a screening. Because we're the professionals. We do the comprehensive audiometric evaluations which are recommended by AAA and ASHA and ihs. We have to do it right. If a school nurse wants to do a screening, I have no issue with that.

They're trying to help. They're trying to be helpful. Great. But here's the problem. Even if you're lucky enough to have a screening in elementary school or kindergarten or something like that, then you're not followed up.

I mean, you're, you're screened and you're, it's either pass or fail. If you fail, they recommend you see an ENT or an audiologist or whatever, that's fine. But if you pass, you, the presumption is you have normal hearing throughout your entire school career. And that's so not true for so many people. Probably 15% of children in public school, about 15% have hearing loss.

Now everybody jumps to, oh, it must be noise induced from wearing AirPods or wearing, you know, something too well. Or now that we're aware of this, we're looking for it more. So we're finding it. It doesn't mean there's an uprise. It means we've discovered this.

We don't know that it's caused by video games or what. We just don't know. There are some small studies that have indicated, yes, children who listen to stuff too loud for too long develop hearing loss. That makes perfect sense. But it doesn't mean that when we say 15% of children in school have hearing loss, it doesn't mean that that's necessarily the cause.

Another good example of this, when you think about Suzanne Pno, my dear friend, she is a hearing instrument specialist and she now has two cochlear implants. She got all through school with hearing loss pretty much undetected. And then she started wearing hearing aids and eventually cochlear implants. And you see that with Nashley Brogan as well. Nashley made it all the way into college with very significant hearing loss because somebody screens you maybe in kindergarten, first grade, if you pass, it's presumed everything's fine.

Well, I'm not saying I don't know the diagnosis for either of the people I mentioned, but you can, you can hear their stories at thehearingmatterspodcast.com. The point is that in the USA, when you're screened at birth, you could have absolutely normal hearing. And then nine months later, you could have very significant hearing loss. There are, there are things that happen all the time.

Very common cytomegalovirus CMV. With CMV, children can be born absolutely normal with regard to their hearing and pass an immediate screening at birth. And then a year later, five years later, 12 years later, that cytomegalovirus may manifest and cause significant hearing loss, which is not screened annually for children in the public school. So what do we do about those? Well, you know, each state has its own rules, each district has its own rules, and money's really super tight.

I don't know how to pay for this stuff. But, you know, school nurses don't even exist in every school anymore. Those days are kind of over. So I don't know how to do that. I really don't know how to recommend it.

But I do think that this is part of the beautiful thing about tele audiology is that, you know, you can do some, some reasonably accurate tests at home with appropriate tools and with appropriate education. You know, if mom or dad spends half an hour, an hour learning to do a screening, maybe they can do it. Screenings are not really meant for children. But if nobody else can do it and your child has no other access, maybe an online screening would be a good indication that further evaluation is needed. Or I'm not so worried now because my child passed.

Again, those screenings are not meant for pediatrics and I'm not recommending them. I'm just throwing ideas against the wall that maybe somebody could develop a pediatric tool that would be delivered through telehealth or that might be available online for children that would incorporate, you know, things that, that would be much more reliable than press the button when you hear them. In fact, for pediatric patients, one of the most important things you can do is the Ling6 sound test, which moms and dads can do. And it was meant to be aided versus unaided to make sure the hearing aids are working. But Jane Medell and her colleagues extended it to more sounds.

And it's very, very clever. So if you look up Jane Maydel, it's called LMH test. Those are sounds that every child needs to perceive in order to have normal hearing. So that's a good thing. Moms and dads can learn more about.

And I've written, I think I have a paper or two. If you put, go to Google, put in Douglas Beck, comma Jane Maydell M A D E L L, you'll see lmh. That's what you're looking for. Those are the, the sounds that every child has to hear. Doug, the CareCredit research study, again we have to give credit to them, pun intended, because this study absolutely gets the conversation going, not only internally as an industry, but now externally.

So we have this information. What can we as hearing care professionals do to reach our community members to raise awareness of the importance of, of protecting your hearing, of treating your hearing loss? And consumers will say, you know, Dr. Beck, Blaze, the cost of the hearing aids is a barrier to entry and CareCredit is a wonderful way to manage that barrier. Doug, as we conclude today, we want to just briefly discuss OTC affordability and accessibility.

Yeah, tell us a little bit about that. Where are we? We've talked a little bit about this, but give us best hits of 20, 25 and what you expect to see. Well, I think OTC, for those who don't know, it's been legal now for just over two years and you know, it's, it's fine. I don't know anybody who's actually opposed to it.

OTC is appropriate for some people and, and some people are going to benefit from it. The thing you have to watch out for is OTC is not appropriate for everyone and in fact it's not appropriate for many people. So if you have self perceived mild to moderate sensory neural loss, meaning an inner ear loss, then it might be appropriate for you. If you have conductive loss, meaning a mechanical blockage of the ear, it could be atresia, it could be wax, it could be a broken eardrum, it could be those three little bones, the malleus, incus, that are disarticulated. It could be a lot of things.

If you have a conductive loss, if your doctor told you you have a conductive loss, you're absolutely not a candidate for otc. If you have central loss, and again, these are subclinical hearing losses that we're talking about, you might be a candidate for otc, but you can't diagnose yourself. You need to see somebody, a hearing care professional, a licensed hearing care professional in your state who could do the entire best practice protocol to say your hearing is normal, you are having difficulty in noise. You could try otc, or you could try a prescription hearing aid, or you could try a pocket talker, or you could try an airpod, you know. But if you have subclinical hearing loss, you can't tell that yourself.

You need to see a hearing care professional. And again, it's not trivial. It's 26 million people in the USA who have subclinical hearing loss. Now, as far as who is not an appropriate candidate, there are red flags that are issued and the FDA has doubled down on them, which is great. So if you have any fluid coming out of your ear, I don't care what color it is, any fluid coming out of your ear, you need to see a professional.

If you have unilateral signs or symptoms, if you have just hearing loss in one ear, you need to see somebody that is not the typical presentation of hearing loss. If you have dizziness, if you have tinnitus, these are things that warrant further professional evaluation. Some people will tell you that tinnitus is normal. Well, it may well be common, but again, it is not normal. When somebody has unrelenting tinnitus, they need to see a professional to find out what's going on and what solutions might be appropriate for them.

We have a lot of solutions that work very, very well. Now people will say, can you cure tinnitus? And the answer is no, you can't. You can manage tinnitus. And immediately most people say, well, if you can't cure it, I'm not interested.

Well, we can't cure diabetes, we can't cure many cancers, we can't cure most things. We manage them medically and management is fine and fair and appropriate and ethical and it works for most people. Most of the time we manage pain. We have people who do nothing but physicians and nurses who are pain specialists. They don't cure pain, they manage pain.

Chiropractors, they don't cure things, they manage things. Physical therapy, they manage things. Optometrists, they don't cure visual issues, they manage them. So when you think about tinnitus and if you say, if you're that guy that says, well, I only want to seek professional care if you can cure it, that that's not a popular option in most healthcare. Generally, we manage things.

And Doug, you and I have talked about this at length. Susie Orman reporting that most Americans, 60% don't have \$500 for an emergency. So tell us a little bit about that. You know. Well, again now, now patients have that ability to pay for prescription hearing aids over time.

Yeah. And that's a good option, you know, if you're going to get over the counter. Hearing aids, you know, there are some that are less than \$200. I don't recommend any of them. I have on my back shelves here eight different over the counter hearing aids that have been sent to me.

Yeah. And you know, I'm not going to disclose who sent them to me, but you can see the manufacturer's guard. But the reason that I don't endorse any of them is because I have worn them and I wasn't impressed with any of them. I wouldn't wear them myself. I do have hearing aids that I wear myself in most days, and they're made by major manufacturers and they're fit professionally.

Why? Because it sounds better. Because I can. I can understand better, because I can manage better. The OTCs that I've tried, all of them under a thousand dollars a pair, I have not been happy with any of them.

Now, I did read some recent reports that there are some hearing aids now that are \$800 a pair that other audiologists are saying are pretty good. So they might be fine, but that's still out of reach of most Americans because, you know, if we have a \$500 rail that's been set by Susie Orman, that you have to be under that for most Americans to be able to afford it, that's a problem. So when OTC comes out, when we have really good products for 3, 4, \$500, then I think it'll be much more affordable. At this point, I'm not seeing it. The premium, the best over the counter hearing aids, you know, they're 1800, 1500, \$2500 a pair.

And the question patients always ask, well, can I just get one? The answer for 99% of you is no, you can't for a million reasons. We'll go into that in a different video. Maybe that'll be another CEU event.

But, Doug, so thank you for discussing the OTC affordability and accessibility, but majority of our colleagues on right now, well, they're fitting prescription hearing aids, right?

Sure. And what is a way in which providers today can differentiate themselves other than best practices? We know all that stuff. That's really important. Custom hearing aids.

Yeah. Now, not just pure full shell ite, itc. What about a RIC hearing aid with a micromold? Well, what that does is, is it introduces the patient to the art and the science, and it shows the patient there's a lot more to this than just, here's your hearing aid and put it in your ear. I will say, when I was first in private practice, sure.

Domes on the end, make sure you do real ear measurement. But after you fit a couple of hundred patients, every ear canal is different. And what's really nice is with a custom hearing aid or custom component, you know, that receiver is in the exact space. So bring me through. You had written a paper.

Yeah, that was published in the Hearing Review. So, one, how can hearing care professionals differentiate themselves? Why this is important for the patient and how this is a way for patients to really see. Wow. Hearing care professionals, there's a lot within their scope and there's a lot that goes into hearing technology.

There is art and science. Three barrel question. It's on you, Dr. Beck. All right, here's the thing.

As a hearing care professional, some of the very best fittings I've ever taken, particularly the last few years, are custom fittings. And I only do that with video otoscopes. Here's the thing. When you're doing a custom fitting, you have to have a video otoscope to get incredible lighting and depth perception. And it's a remarkable thing that you can take a cotton block or a foam, whatever your preference is, and

place that almost directly on the eardrum without any pain on the patient, because your visualization is great.

If you have a video otoscope from 10 or 15 years ago, try the new stuff, you'll be blown away. It's like having a 15 year old car and then you get a new car. Oh, this is so much better. Yeah, well, so video otoscopes are the key. This is not an inexpensive proposition.

Some of these are quite expensive, but they're very, very good. And that allows you to take a deep canal impression, meaning past the second bend. When you do that, you send that to the manufacturer or you digitally send it to the manufacturer, and then the work begins, the real work, because they have to digitize it. They have to figure out on every single one where the microphone, the receiver, the amplifier, the vent, where's all the stuff going to go. They design it specifically for that patient.

And the return rate on these is high. They're probably one third. Now, what that means is the manufacturers don't make a lot of money in custom products. So generally speaking, they don't really advocate them because they're very expensive to make and they take a lot of time and skill in the manufacturing process. Once you have that done, you can create an IIC for many people, particularly those with mild to moderate losses, who have, you know, ear canals that are reasonable for this and that becomes virtually invisible.

They're called IICs, invisible in the canal. Those products, I think, are much more acceptable to most people than behind the ear, because behind the ear has very, very significant cosmetics and stigma issues. In the article that you talked about, it's 2024, it's in the Hearing Review, look up Douglas Elbeck custom, and you'll find it and we take pictures of my ears. And thank you to my wife Vicki, who took those photos. You can't see them.

All you can see is the pull string. Yeah, that's wonderful. They've been out there for five or 10 years now, but they're probably less than 5% of all hearing aids. I like to use those particularly for people who are in public a lot. They're not going to tell you I'm embarrassed wear hearing aids.

But most people I think are. And this is why we see that in countries where hearing aids are free to citizens, 60% say no thanks. It's not that they don't want to hear better or listen better. I think they're more concerned about the cosmetics and the discomfort in having glasses and a behind the ear hearing aid. So I think customs offer a way to differentiate yourself, but it's not like falling off a log.

It takes practice, it takes skill, it takes time, it takes money. These are generally more expensive than instant fit type hearing aids. And again, kudos to CareCredit because they help to make those products available to more people. And I think if hearing aids were less visible, more people would, would be interested in wearing them and would benefit from them. Dr.

Beck, I thought that was going to be the end of the CEU webinar, but that just sparked a lot of questions. Sure. My first is are you saying that people with normal hearing should wear hearing aids? This is a great question. And the reason it's a great question is I don't think everybody understands the difference between hearing and listening.

So people with hearing loss, they need things generally louder because hearing is just perceiving or detecting sound. So that is important to understand people with listening disorders. These might be people with attention deficit disorder, with dyslexia, with auditory processing disorders, things like that. They generally need things to be at a better signal to noise ratio so that their brain can focus more easily on the primary speaker. So when we say should everybody with hearing loss wear hearing aids?

Absolutely not. Should everybody be a candidate? Well, here's the thing fitting hearing aids, traditionally we think of that as hearing loss based. However, think about what we do with children in

the school systems for decades when they have auditory processing disorders, when they have difficulty listening. We have trainers that we use auditory trainers or FM systems or or digital remote mics that we give these children to wear during educational opportunities to improve the signal to noise ratio so their brain can better focus on the primary signal.

So what we know in the USA is in 2019. Dr. Jeff Danhour and I published a paper showing that 26 million Americans have listening disorders without hearing loss. And the VA has doubled down on that. About a year or two ago, they said, you know, 23 million people in the USA.

So it's not just, you know, my publications that have said that. I mean, the, the people at the VA have concluded the same thing. And, and so it becomes important to understand that many people, 23 to 26 million people in the USA, maybe more, have listening disorders without any hearing loss. So the question is, do we do nothing or do we try to increase the signal to noise ratio? Now, when we increase the signal to noise ratio, we can do that a number of ways.

Use a very simple device like a pocket talker. We could use a telecoil, we could use hearing aids, we could use a lot of different technologies, but the easiest and the most convenient is probably an excellent hearing aid fitting using low gain and low maximum output. So we're not going to cause any hearing loss. And you know, the wonderful thing with premium hearing aids now is that you have directional mics, you have beam forming, you have deep neural networks, you have noise reduction, you have all of these collateral technologies that help us to improve the signal to noise ratio, which makes it easier for many people to listen. So am I saying that hearing loss is irrelevant?

No. People with hearing loss should seek appropriate amplification in alignment with their goals and objectives. People without hearing loss who have auditory or listening disorders should work with a professional to determine the best course for them. Oftentimes that will be a hearing aid or a similar product that allows them to improve the signal to noise ratio to make it easier for their brain to focus. Dr.

Beck, how do we determine the best candidates for amplification given normal hearing thresholds?

Okay, so this is an important question. Given normal thresholds, means the thresholds generally are better than about 25 decibels. That's a problem right there because we know that normal hearing should only go up to about a threshold level of about 15 decibels. If you go back 100 years ago, when we first started to say, what is normal detection levels for adults?

And the answer is about 15dB HL. Beyond 15, when we get to 16dB HL and above that, we now have hearing loss. So that's an important distinction. What I recommend clinically is a couple of things.

Number one, extended high frequency testing.

We should be testing at 1012, maybe 14 or 15,000 hertz, because that's where you're most likely to see hearing loss first. Number Two, within scope of practice, we should be doing speech and noise testing on every adult patient, probably on most children as well. But if you look at the American Academy of Audiology, American Speech Language Hearing Association, International Hearing Association Society, they all say that the best practice approach to evaluating patients is to do a speech and noise test. Because speech in quiet that we do in a booth when we do NU6s, CIDW22s, things like that, that is very unrealistic. The patient is sitting in a box with headphones on in quiet and they're repeating easy words.

Say the word went, you know, but that doesn't represent how they are in the normal day to day situation because they're in noise most of the day. And the typical speech and noise as you're walking around in your daily life is probably 10 to 12 decibels signal to noise ratio, maybe up to 15, but, but it's certainly not quiet in the background. So we take these idealistic measures and we try to apply that to people's lives. There are many authors now who are saying, you know, rather than doing speech in quiet as a standard, if limited time, limited money, and you want the most important test, you should probably just be doing a speech and noise test. Now I'm not arguing don't do SRTS and word recognition in quiet.

That is part of 92557 CPT code. That's the standard of practice. We should continue doing that. But I think we should also very seriously consider adding speech and noise testing. That's been advocated since Ray Carhartt and Tillman published in 1970.

That is not a new suggestion. This is already over 50 years old and we're not doing it. Fewer than 15% of audiologists and dispensers do speech and noise testing. But I will tell you clinically it's the single most important test we can do after diagnostics is to see how is the patient functioning. These are functional tests which reflect their daily life, unlike the tests that are done in a sound booth.

Well, Dr. Beck, as always, it is such a joy and a pleasure to talk all things hearing with you. Today we discussed consumer choices in 2025 and beyond. And really to echo you, thank you to CareCredit for making these devices more manageable in terms of payment. So Dr.

Beck, thank you. It's always a joy and a pleasure to speak with you and any questions that our colleagues have, we'll be sure to answer. Thank you very much, Blaze. I appreciate you moderating and contributing to this discussion. And until next time, hear life Story.

All right, that is the end of the session. I do believe we have a few questions, Doug. Let me see. The first one is a user who was hoping that you would be able to talk about the importance of auditory. Auditory training to optimize hearing aid benefit just like any other prosthetic.

Any thoughts on that? Okay, first of all, can you hear me okay, Because I'm at an airport. Yes, I can hear you. You sound great. All right, so auditory training, oral rehab, always critically important.

Giving people a sophisticated piece of technology like a modern hearing aid in 2025 and, and just setting it, you know, one and done. Terrible approach, approach. The very best thing you can do is, you

know, oral rehabilitation and auditory training. Very important. And for oral rehab, I usually recommend Carol Johnson's book, which is absolutely stellar.

It addresses individual and group settings, how to go about doing that. And auditory training depends entirely on the device. But I would look seriously at Jane Maydel's work, and that's a great starting place. You'll find a lot of useful information there. And Maydel is M A D, E, L, L.

Great. Thank you for that. Someone else would like to know if you have a video otoscope recommendation. What do you use for fittings? You know, because they are so expensive.

I. I hesitate to mention a brand name because also that puts me in a difficult spot because some people will say, why didn't you recommend ours? Right, so here's the thing. I would get the very best illumination you can. So there's, you know, you have to try it and you have to get a big screen.

Most of the major manufacturers will work with you. You know, if you use A, B, C, D or E on a regular basis and you say to them, hey, I'd like you to, you know, I need a video otoscope. Can you help me with that? They're all going to say, yes, and if they don't, just call me, I'll take care of them. No, I have no ability.

I have no ability to do that. But, but I do think that they all want you to do the very best you can with your impressions because that's. That makes their job easier. So absolutely, I would reach out to you, the manufacturer you use the most, see what the very best one is. And I would get that.

I would not go for the least expensive because it's such an important tool. Yes, I agree completely. We've got another question that says that if high frequency testing shows hearing loss beyond 8,000 Hz, CAN hearing aids provide significant gain at those high frequencies? Well, so when you're doing extended high frequencies, the primary issue there is diagnostics. You're looking to see, are both ears

symmetric and is there an asymmetry and is there an unusual hearing loss there?

Can hearing aids hit that? Well, hearing aids go up to about 8 or 10,000 hertz, but as you know, at 8 or 10,000 hertz,. You don't have a lot of gain available. I wouldn't. If somebody had hearing loss at just for an example, at only 12,000 Hz, and if they were complaining that they had difficulty understanding speech and noise, I might try to increase the gain at speech frequencies for the purpose of just improving the signal to noise ratio to make it easier for them to process speech.

Will I actually be giving gain at 10 or 12? No, hearing aids can't do that. Hearing aids do go up to 8,000 and 10,000 Hertz in almost all commercially available products. So that's fine. But when you have hearing loss up there, you have to understand there's just not a lot of speech information there.

I think it was wayne staub about 35, 40 years ago who said if you have normal thresholds out to 4,000 hertz, you're hearing 90, 95% of all speech sounds. So there's a couple of questions. There is, can you do extended high frequencies? Do you have the right transducers and can the audiometer do it? Because all headsets can't do it.

And then you have the issue of what do you do with that information? And if the patient is a tinnitus patient, if the patient complains about hearing difficulty or speech and noise difficulty and they have normal hearing, that may be the explanation because, you know, there was a study out of Harvard and I'm blanking on his name, I'll think of it. But it's not a new philosophy, but it's now much more well founded. That kind of tinnitus and hearing loss may well be the exact same thing. They're just different manifestations of degradation of the auditory nerve.

And so this is cochlear synaptopathy that we're talking about. And what we've mean by that is, you know, the eighth nerve is tonotopically or topographically oriented. So the outer fibers get damaged first from ototoxicity or from noise induced hearing loss or presbycusis. And that may be the first sign or

symptom of a patient having tinnitus or having difficulty understanding speech noise or having other cochlear synaptopathy presentations people again with normal thresholds can certainly have synaptopathy and that you may be able to document that and discover that through extended high frequencies. I have a new podcast on the Hearing Matters podcast coming out sometime in February, specific to extended high frequencies.

So send me a note and I'm going to tell you the date that that airs. I'm not quite sure at the moment. We do have one last question, and that is when we. Okay, I'll try. When we discuss what is normal hearing.

Are you referring to statistical norms or impacted difficulty with audibility of any of the speech sound such as f or th? Yeah, so normal hearing goes from you know, maybe minus 10, minus 5 to plus 15, and that's 1929. Fletcher did that work and so that's statistically normal. You know, he said what's plus or minus two standard deviations? And that gets you up to about 15.

As you know, all of our guidelines, it depends who you're reading, right? AOH and S Asha whoever, here's what I would recommend. Zero to 15 is normal, you know, 15 to maybe 30. I think we should start calling that mild. I think 30 to 50, maybe moderate, 50 to 70, moderately severe, you know, 71 to 90, super severe or something in 91 plus.

Profound. I don't. What we need on this is a working group, you know, of people who've really studied it. And I studied it 15 or 20 years ago and when I did, I started quite calling those normal categories. 0 to 25, 26 to 40, 41 to 70, 71 to 90, 91.

But I started calling those categories of convenience. I do not believe there's any science on that. I think it's just somebody adopted those, those definitions and they've stood since World War II. But I think we really need to do a much better job defining that. And you know, there are some people.

Now my friend Franklin, you know, of course it's advocating the hearing numbers idea. And you know, I don't think there's anything wrong with that. But. But in my mind, here's the problem with hearing numbers that when you define hearing loss based on a single number, that's going to be pure tones, you know, pure tone average, 3 frequency, 4 frequency. However you measure that, the missing thing is how do you do it in noise?

Because that is a far more important number to me because you could have zero DB thresholds and have an SNR 50 of six. Well, that's not going to show up on a hearing number or on a pure tone test, but it will show up if you adhere to scope of practice and best practices because you're going to do a speech noise test. And if you're doing that, you're going to find, oh, my gosh, this guy has absolutely normal thresholds, normal detection, but cannot get by at all in noise. And that's actually not unusual at all. Rich Wilson found exactly that.

I think it was 70 or 80% of veterans who had good to excellent hearing failed a speech and noise test. I have no idea what your question was, but tell me the question again. I don't know if I answered it or not. No, I think you did. I think you did.

And that is the last question. And that takes us to the end of today's class. And it was a pleasure to have you back on audiology online. And I look forward to you coming back again and all of the summit events going on throughout this month. And I'm going to end the session now.

All right. Thank you for having me. It's a joy. I appreciate it. Thanks.

Goodbye, everybody.