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Well-hearing is Well-being

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- [Cheri] Good morning and good afternoon to those of you joining us from the East Coast. Thank you for joining me today to learn more around the topic, of Well-Hearing is Well-Being. I think our topic today is timely considering our current health pandemic. In today's world of social distancing and so many of us staying at home, staying connected to our loved ones can be even more of a challenge. And when I think about those individuals with hearing loss, the vital role of hearing well and good communication is so important during these unprecedented times. My name is Cheri Hebeisen, I'm a senior clinical trainer for Phonak based in Dallas, Texas. I have been an audiologist for 20 years, and with Phonak for eight years. And one of the reasons why I'm so proud to work for Phonak is Phonak has a long history of purposeful innovation, and the Phonak brand promises a more fulfilling and a more engaged life with life is on. As research a new evidence is available we have a deeper understanding of hearing loss, its role and impact on people's lives and the significant benefit of hearing rehabilitation. Phonaks innovations have historically been measured in dB gained in improvement, in speech understanding and noise. But now, we are examining deeper benefits of well-hearing across multiple dimensions.

Here are our learner outcomes for today. You all will be able to summarize the connection between hearing loss and well-being. Identify the cognitive, social and physical risk factors associated with hearing loss. And also describe how well-being is connected to well-hearing. As Caitlin said, please type any questions in that Q&A panel and I will be very honest with you, I am not a good multitasker so we are gonna hold all those questions for the end of our time together. So, this slide will come as no surprise to any of you listening today. We know the prevalence of hearing loss increases with age, but should this be accepted as a benign inevitability of age? The impacts of hearing loss are not trivial right? And they do not impact just the individual. We take a little closer look at the market unfortunately, not much has changed despite all the advancements in hearing aid technology. Hearing loss is the third most common chronic health condition in the world but still, we see an alarmingly low penetration rate

of hearing aid adoption. It gets better with a more severe hearing loss 70% for those individuals with a profound hearing loss, but on average, across the board in developed countries, only 25% penetration rate for hearing aid use. Why is that? Think about that for a minute.

And I know all the things that are gonna come into your mind are things you've heard from your patients, from your friends, from your family, from random people, when they find out you're an audiologist. Folks say, "Oh, hearing aids don't work, they whistle, "there's a stigma, they're expensive," et cetera, et cetera, but what is the common denominator of all of those things? What's the foundation? What do they all have in common? No one wants a hearing aid. So reflecting on how we can unlock this market segments and perhaps change hearing aid penetration. This book written by Joseph Coughlin at MIT, holds some interesting learnings about how products and services can be very successful, or big failures with the aging population. Dr. Coughlin is the director of the AgeLab at MIT, he and his team study and quote, I took this straight from one of his TED Talks, "The convergence between technology design, "aging behavior, how to bring innovation to personal lives, "public policy and business."

So let's take a closer look at this. Many of you might be a little more close involved with making those purchasing decisions in your household. And there's a whole field dedicated to understanding why you choose what you buy, what products you like, and what products are okay to buy off brand. For me, that's Kleenex, I've got to have my three-ply super soft tissue from Kleenex, nothing else will do. And you can bet every time I'm at the grocery store, or the market, or something like that, my behaviors are being observed and quite honestly, I give them access every time I scan my app for my rewards program 'cause we like the benefits of that. So, then think about, not only why you buy what you buy, but then how does that product make you feel. Let me give you an example about this and hopefully you'll see the connection with our own industry. So the Heinz Company noticed a trend of older individuals, often with

dentures, buying that single-serve sort of pre-chewed blended foods and they thought, "Huh, there's a need here," so they created a whole product line around this need. It bombed, of course, right? You go into the grocery store and you don't see this senior food in the grocery store at all. Why did it bomb? It's about how that product made you feel. So when we look at the hierarchy of needs, there was certainly a physiological need for this food that was soft and easy for older individuals to choose. But what worn out was that esteem and self-actualization, heck if I can say that word today, but it was how that patient felt when they bought that. So think about that, you're at the checkout line, and you're making small talk, and they see baby food in your cart, no big deal they're probably gonna think, "Oh, you got a grandbaby "coming for a visit," but if you've got this old person food in your cart, now you're suddenly a little bit embarrassed, and probably desperately thinking about something else to talk about.

And Dr. Coughling makes reference to our own industry in a way we've positioned hearing aids as one of the fails. So we've just scratched the surface on beginning to change the narrative around the need for and the many positive benefits of amplification and hearing rehabilitation. We've got work to do. We don't wanna scare our patients or intimidate our patients, but we need to highlight the benefits that amplification can bring to our patients. So we know all the comorbidities associated with hearing loss, many of you might have this very poster in your office. This is an area of so much research right now. We know that untreated hearing loss can have a negative impact on our patient's overall well-being and the connections between hearing and other comorbidities, dementia increased, falls, depression that one hits home for me right now, right as we're all again, staying at home and socially isolating. And we know that patients are living longer, and that we can't ignore this healthy aging. So well-being drives our commitment to hearing.

So we're going to be looking at these different dimensions of well-hearing is well-being, social-emotional, physical, and cognitive areas. We have to have a broader

view of well-hearing leading to well-being. So physical well-being, let's start there. And you all know this right with hearing loss individuals have a reduced awareness of environmental sounds, they're not sensing their environment, they're not aware when someone comes walking up behind them, and they may have to spend more effort to maintain awareness of their surroundings. There can be a decrease in activity level, increased risk of falls, balance difficulties.

So let's look at this physical realm. And we have a whole lot of data around unmanaged, untreated hearing loss and we have the benefit and the knowledge of big data. So these are two studies looking at medical claims and we see untreated hearing loss is associated with a higher risk of fracture, falls, stroke and heart attack 20 to 50% higher, and those folks with untreated hearing loss have greater than 22,000 dollars more incremental healthcare expenses. These are quite and honestly grim statistics.

But, let's take a moment, get our blood flowing. We also all know the evidence around the consequences of sitting too long, so I invite you to stand up if you'd like and take part with me in The Romberg Test. Now ideally this test should be completed in bare feet so, kick off your shoes I give you permission to wiggle your toes, so stand up with your feet together, raise your arms up so that they are parallel to the floor, and now close your eyes, and how long can you hold that position. Are you swaying? Are you toppling? And I sure hope nobody actually falls over. So there are some connections between balance, and hearing, and vision. And we know that hearing loss impacts balance and postural stability. Even a mild hearing loss three times greater for risk of a fall, and falls are the leading cause of accidental deaths and adults over 65. So some grim statistics here but it's not all bad news like this one. We have studies that show the positive results related to hearing aid use and benefit. So this study recruited individuals over 65 years of age with hearing loss, and they tested them in two conditions with two balance tests, The Romberg Test that you just did, and the tandem stance test and they had to do these two tests aided and unaided. And here's the great

news, stability was maintained longer with the use of hearing aids. So this adds support to the notion that senses are extremely inter-dependent. So we see the evidence around physical well-being is that relates to well-hearing and the benefits that hearing aids can provide.

Let's take a look at cognitive well-being. Does hearing loss cause cognitive decline? Boy, that's the multimillion dollar question in our industry and maybe even more so the follow up question, and do hearing aids prevent cognitive decline? Well, there is not a definitive answer. We do know that there's a relationship between hearing loss and cognitive change, and we know that hearing well has a measurable impact on the brain, including the reduction of listening effort, and increased efficiency of learning new things. And I've got some data to share with you today around that listening effort, that ease of listening. So just as we tested your balance, let's do a quick little cognitive screen now. So take out a blank piece of paper if you've got one near you, and a pen or pencil and I want you to draw a clock with the time of 10 past 11, and this is not a digital clock where you're just writing out the numbers. I'll be quiet for just a few seconds. Normally, when I give this presentation I can watch all of you and see when our pens and pencils have stopped moving, so I'll just count to 10 quietly in my head, imagine the Jeopardy music.

So how did you do? Did you get it right? And hopefully, all of you are sharp and mentally agile that this was in fact an easy task, and it didn't take you too much time that you have a circle with the numbers one through 12, a shorthand for the hour and a longer hand for the minutes, and here are some results from actual patients that have taken this task. So this is a test, an actual screening item from the MoCA, the Montreal Cognitive Assessment and if you want a little more information around this, mocatest.org. And cognitive assessment falls within our scope of practice according to Asher and AAA. And when I think about this, I think we as hearing healthcare professionals are uniquely positioned to embrace this in our practices to do a cognitive

screening. We see our patients so regularly, now I know right now, but our offices will be open we'll be seeing patients again, but we have an opportunity to see them and we see them several times a year and often for longer visits than say their primary care physician.

But I will give a word of advice. This is a sensitive topic, so if you decide to get skilled in this area and go to mocatest.org and learn a little bit more about this cognitive screening tool, be prepared on how you're going to discuss this with your patients, how you're going to make referrals, the language, the sensitivity that you need to be aware of when you're discussing this with our patients. I know personally for me, these are crazy times full of stress. But for some of us, we might have a little bit more time on our hands, with clinics slowing down, so maybe some of you are at the office still, some of you are home, so many variations on our life. So this is a great time to to sharpen our skills. I've had many offices say, "Cheri, I'm doing some new things 'cause I have the time," once they kinda cleaned out their offices, they're starting to look at some under line and more foundational processes about their clinics. Anyway, I digress.

So cognitive well-being. There's so much of research around this topic, topic of hearing loss, hearing aids dementia, cognitive decline and this particular is the lens study published in 2011. Part of the Baltimore Longitudinal Study on Aging with 639 participants, they were closely followed, and had examinations repeated every one to two years. And researchers found that the study participants with hearing loss, at the beginning of the study were significantly more likely to develop dementia by the end of the study. And you can see the variation there mild hearing loss two times more likely, all the way up to five times more likely with a severe hearing loss. So of course, the question that pops into my mind and I'm sure your mind. Will hearing aids prevent that? Particularly when we think about that previous evidence of the benefits we have seen on the physical well-being that hearing aids provide. Well, to answer that

question, we're going to need randomized control trials to really draw that cause and effect relationship between hearing aids and preventing cognitive decline. But we do have some conclusions from the Lancet Commission on dementia. The Lancet, if you're not familiar, is made up of a group of very distinguished individuals and organizations from around the globe, the UK, the US, Norway, Canada, Tel Aviv, Australia, France, the list goes on. And they met to consolidate the knowledge, and all the information, and the huge strides that were really being made in this field of dementia, and what we could do to determine, in to determine I should say what we can do to prevent and manage dementia, because they identified that dementia was going to be of great concern and the incidence was only increasing and really was gonna be a global health care concern, I hate to use the word pandemic 'cause we know what that's like right now.

There were 10 key messages from the Lancet commission and this is the one that gets me so excited. Number two was be ambitious about prevention. Now, let me talk you through what you're seeing on your screen there. So this is the graphic with the findings from the Lancet commission and identifying birth, and early life and there wasn't a whole lot that can be done about that. Where you're born, level of education, that sort of sets. And at the end of life, there's not a whole lot that we can do there either, but highlighted there and blown up on the right side of your slide is the midlife. And these were the modifiable risk factors to prevent cognitive decline. And what was the number one biggest modifiable risk factor? Hearing loss, above even hypertension, and obesity. So this is where we live, this is our skill set, we can do something about this is audiologists, this is our area of expertise. So take that message to heart. Number two, the Lancet Commission's key findings be ambitious about prevention. And here is another positive indicator. This is a test of episodic memory as an aspect of cognition and this was a longitude study of 2040 participants that were evaluated every two years, from 1996 to 2014. And the use of hearing aids changed the trajectory of cognitive decline. So what you're seeing there is that red line before the individuals

got hearing aids, remember, this is longitudinal, so they have all the data, and they can evaluate it after the fact, and then that red vertical line is the point where they got hearing aids, and you can see the blue line, that trajectory changed, it's not as steeply declining towards cognitive decline as it was before. And these results had the author's go so far as to conclude and you see this quote right there on your screen, "Providing hearing aids or other rehabilitative services "for hearing impairment much earlier "in the course of hearing impairment may stem "the worldwide rise of dementia."

So put that together with the Lancet commission. Great news for us as audiologists be ambitious about prevention, we can have positive outcomes and alter the poor cognitive trajectories, we can alter that. And here's another study with a positive take home message, and the end game is right there right in the quote up at the top, cognitive decline associated with age related hearing loss is probably preventable by early rehabilitation and increased opportunistic screening for the elderly, elderly goodness I'm tongue twisted this morning. So good news there, but lemme break this down for you and let you see exactly what you're looking at. So this was an English longitudinal study, looking at cognition, hearing loss, incise, social isolation, and how those three are interconnected and interdependent. And we know hearing loss is associated with higher social isolation, which of course then has a negative association with cognition. But what the authors found was the individuals using hearing aids, that association between social isolation and cognitive decline was not found. So they were able to sort of break that triangle, that loop, if you will, of negative effects of hearing loss, and social isolation and cognitive decline.

So I would caution you, let's not use these studies as fear tactics or high pressure sales, but really, let's educate our patients, and challenge and change that narrative around hearing aids, because this is something our patients want, they want to be mentally agile and alert and hearing aids can be the vessel that maintains their cognitive well-being through well hearing. Again, we don't wanna scare them, but we

want to inform them because this really is beneficial to them and something that they want. So let's look at performance measures of hearing aids specifically to brain activity. And this is a study done with Phonak hearing aids, asking the question, does the use of these sound cleaning and noise reduction, ease cognitive load and reduce listening effort, and how can we measure that objectively?

So this is an EEG study, using a 26, no 24 excuse me electrode array, the participants wore the cap, you've got that visual now, and brain activity was measured across the alpha-band. So, let me take you through these results. So, two conditions, high signal to noise ratio, low signal to noise ratio. So that high signal to noise ratio is an easy condition a very positive favorable signal to noise ratio, and then within those conditions, you see stereo zoom and real ear sound. Stereo zoom is our ear-to-ear communication, so that we can narrow the beam former and improve speech intelligibility. Real ear sound is essentially an omni-microphone, we call it real ear sound because we are recreating the pinna effect because the microphone is no longer located at the top of the ear, and it's not located down the ear canal, but above the ear at the top of the pinna so we've recreated that, real ear sound that pinna affect. So think, red hot, cool blue, so when the brain is working hard, it is red hot. So you can see in stereo zoom, when we have the narrow beam former, we see a whole lot more of those cool blues. And in real ear sound, we see more of those yellows and oranges coming in, even in that easier environment of a positive signal to noise ratio. But look over here on the left, excuse me the right side of your screen in that harder condition with a poor or a low signal to noise ratio and look at real ear sound when our patient doesn't have the benefits of a directional microphone and noise cleaning, look at all those yellows, and oranges and even red in the alpha-band which is squared off for you there as compared to so much more of those blue, cool blues with stereo zoom.

So this tells us that we can make a difference in listening effort and that cognitive load that our advanced technologies do make a difference for patients. And moving into our

last area, social-emotional well-being. Social engagement has become an area of increased interest in healthcare, everybody is looking at this and the relationships between social interactions, and social integration, and what those results are with health outcomes. If any of you have read the book by Dan Buettner, hope I'm not mutilating the pronunciation of his last name, "Blue Zones." Then you'll recall his findings around the importance of relationships for longevity in good health and when older individuals have value, and respect, and purpose and they have a network of friends around them that was identified as one of those key things that lead to the outcomes of longevity. So not only do we look at social and emotional activity, but another area of interest is what the effect of hearing loss has on the ability to detect emotional cues and speech. So here's another research that was given word recognition scores to individual, so it was a two part task, they had to identify the word, but then they had to assign which emotion the speaker was using, happy, pleasant surprise, sad, disgust, fear, neutral or anger. So, let's do this ourselves, keeping you engaged today. So I'm going to play the recording and I want you to number one, identify the word, but then the emotion that the speaker was using, here we go.

- [Recorded voice] Say the word calm.

- [Cheri] Well.

- [Recorded voice] Say the word calm.

- [Cheri] Caitlin, are you there? Could you perhaps help me out where my audio file is not playing.

- [Recorded voice] Say the word calm.

- [Cheri] There we go we got that. I'll repeat that one more time, oh, it did play I'm seeing some comments. Sorry, if you had to listen to it 25 times as I kept clicking there, I didn't hear it initially. So this task was done with native English speakers and the results indicated that individuals with hearing loss, were significantly poorer at identifying these emotions. And so I think to myself when I was back in clinic, that some of those arguments that my patients came in and told me about that we thought were just around miss hearing the words, but it also might have been because the individual with hearing loss was missing the tone, the emotion associated with hearing loss.

So let's look at the effects of hearing loss and rehabilitation on social and emotional well-being. There's lots of evidence illustrating the negative impacts of hearing loss and we've shown you that on that list there. So perhaps when I think about all the negatives there, less involvement in social activities, greater loneliness, less engagement and social participation, and on and on the list goes less availability of social support, the breakdown of those intimate spousal relationships, less income, greater unemployment and how scary is this one, of course, the miscommunication during medical care. But then when we review and look at the effects of hearing rehabilitation, that there's more involvement with social activities, less loneliness, folks are more engaged, improved relationships, so there's some real benefits here and I think about perhaps there's an opportunity to incorporate some of these positive effects of hearing rehabilitation, not just at the individual level, but maybe a group rehab situation in your clinics where you recently fit individuals with hearing loss, get together, and you facilitate a conversation, maybe you start about just basic good communication skills so that they can grow competent in their hearing instruments and have these positive effects of hearing rehabilitation. So just another way to incorporate this into your practice and think about some changes you can make in that narrative.

So looking at the evidence around mortality and social relationships, this is a meta-analytical review of 148 studies with over 3008 participants and when you look at the results here, let me highlight that for you. Social relationships are more important than exercise, obesity, and alcohol consumption and you see those much lower on the last. Social integration and social support are understood to have such a strong connection to well-being, and we know that hearing aid use, improves communication, improves relationships, and improves our motivation to maintain those robust networks of social connections. How many times have your patients come in with a loved one, a spouse, family member, and they've said, they don't wanna go to the party or the dinner because they're not gonna be able to follow the conversation and understand. So we know that hearing aids make those changes that we saw on the previous slide and see here, so they are such a profound influence on our social and emotional connection to our overall well-being and to mortality rates.

So looking at our own technology in this area of best outcomes and social and emotional well-being, looking again at our technology for noise management. So this is looking to see what changes happen when a user doesn't have to work so hard to listen and communicate, and are those changes measurable. So what we saw here was individuals using stereo zoom again, that's our ear-to-ear communication, where we narrow the beam former, to give better speech intelligibility scores. We see those users were 15% more active in the conversation. So this was a conversation led by a moderator for over an hour and they were videotaped and then all the data was reviewed, so not only were they participating more, this was another really good finding that the users were more relaxed, they weren't leaning forward, straining to hear or that classic putting the hand behind the ear, copying the ear. We've all seen this in clinic. I know once I turn on hearing aids, when I'm programming, suddenly the patient just sort of sits back in their chair, and they relax, and you can see this on their face, then when the technology is working.

So this is probably one of my favorite areas of this well-hearing is well-being is this social and emotional, we see this so robustly every day in clinic, when we put hearing instruments on our patients and they come back and they say to us, "You saved my marriage, I'm still able to keep working," that they're accepting the invitations to go back out, that they're not so socially isolated. And again, when I think about our current health situation, our jobs as hearing healthcare professionals is to reach out to our patients, make sure that our patients are connected, that they're not feeling that isolation. We know that comorbidity of depression and all the stress and anxiety in our current environment, I truly do encourage you to reach out to your patients, see how you can help them and what we can do to lead to their overall improved well-being through well hearing and family matters.

All of this evidence around the importance of social interactions, for well-hearing and well-being. It's just not about the individual. I encourage you to incorporate not just your patient, but those individuals that are most important to your patients in the appointment. We often say two years are better than one but when we think about family matters, four years are better than two. So Family-Centered Care really makes a positive difference in hearing aid use adoption, lower return rate, we have those statistics. when the whole family is involved and motivated, it really does ensure the positive outcomes, make sure everybody is on the same page that what our goals are. And those loved ones can often be the reminder, the catalyst to make sure that our patients are wearing their hearing aids and adjusting to them and they can support each other, and really, when you're not there remind your patients the importance of the benefits of the technology 'cause often sometimes the loved ones see those changes before our patient sees those changes. So our focus just isn't the ear.

Although we know Phonak has such a long history of innovation, in terms of connectivity, directionality, and so many products, and we only wanna bring products to market that are beneficial to the patient. But our focus goes beyond that, our focus

goes to not just the individual, but those people and environments that are most important to the individual with hearing loss, which of course, is Family-Centered Care. So if that's something you don't know a whole lot about and again, when I think about these changes, that you may find yourself with a little bit more time on your hand to sharpen some skills or to develop new skills, that Family-Centered Care helps develop a shared understanding and shared responsibilities for treating the communication difficulties that both parties have. Because we know that hearing loss just doesn't impact the individual, it impacts everyone around them and taking that Family-Centered Care approach is so valuable for our patients. And there's also value in it for your practice, we also have evidence around higher purchase rates and lower return rates when you incorporate the family 'cause again, it's the family and those loved ones that see those changes and the benefits of amplification very soon. So a broad perspective for the hearing care of the future, incorporating social and emotional, physical and cognitive well-being. Well-hearing is well-being.

So I challenge you to adopt and integrated, personalized, outcome driven approach to patient care. Think about what messages you're giving patients and your family, when we go back to the beginning of our time together, what is the messaging around hearing aids? And how do hearing aids make people feel? And we've begun to change the narrative I think specifically, about Phonak Marvel's black of a new Virto Marvel 312 that really blurs the line between a hearing aid and some sort of an ear bud. So we wanna have options to our patients, we wanna educate them and enhance your narrative with all the knowledge that you have gained today, let's make hearing aids something patients wants because they see the benefits of amplification that go well beyond the detection of sound. So together with your help, we change lives. But now together with your help, we need to fill the rest of our time together. I guess I moved a little bit too quickly through those slides. So please don't be shy, I would love to hear your questions, and your comments about some of this data, what you're seeing in your own clinics, and if this really rang true with you in terms of the cognitive decline,

the physical well-being, and the social-emotional aspect of this. I know for me, it really does. So I enjoy this topic that's not so product centric, that thinks about our profession is what we can do is hearing health care professionals that we can do to further our field.

So we did have one question come in, what was the answer to that audio clip? And it was, in fact, disgust was what it was. But you can see it's kind of hard to tell between the anger and the disgust there.

And we have another question that has come in, thank you so much for these questions. What research gaps do you see in the hearing aid industry research that might help patients pursue hearing aids in the clinic? Ah, that's a good question. I will tell you, that's a tough one. The first thing that pops into my mind when I think about research, and what might drive patients into your clinic is to see the benefits of amplification. And one way Phonak is trying to do that is to answer the question around, do hearing aids truly prevent cognitive decline? We see the relationship, the correlations, but is it a cause and effect relationship? So Phonak is sponsoring a five-year longitudinal study called the achieved study, which has three sites across the country and only one is coming to mind right now because it's in my geographical area territory the University of Mississippi. And it's a blinded study where participants have two different options of treatment, they're randomly assigned there and we're trying to get funding, we're coupled with the NIH on this so that they can reverse as well. So we have that data, but they get randomly assigned to whether they get hearing aids or if they go through a protocol about healthy aging and to see what the outcomes are. So perhaps that will drive some more patients into your office in the long-term, the short-term that is a challenge.

And then I have a question around what percentage does medical claims falls happen? And I don't have that data. A data that I shared today was around the increased risk of

falls with degree of hearing loss looking year over year. So with that mild loss a two times more increased risk, three times with moderate, and five times with severe. And we have a question around talking more about cognitive load, this is really a topic that gets me excited as well, and I'm blanking on one of the original studies but I'm sure we could Google it and have lots of resources at our fingertips in today's world, but the concept of cognitive load is, each day as we wake up, think about our bucket of energy and tasks require our effort, our brain, our cognitive abilities, and as we go through our day, we use up some of those resources that bucket starts to empty. And with hearing loss particularly, when our brain is working so hard simply to detect the sound that is depleting those resources so much sooner, and some even say, puts those with hearing loss already in the negative if you will, but their bucket isn't as full when they wake up each morning. And I'm sure many of you have probably seen this in your own clinic, I have a personal example of a former boyfriend's mom that came for a visit and I would notice when I would see her first thing in the morning, when she was having her morning coffee, she was sharp with her wits and her comebacks and if somebody mumbled something under their breath, 10 feet away from her, she responded she was on it. But by the end of the day, when the whole family would gather together around dinner, you could just see on her face, she was sort of wiped out, she was mishearing things, she wasn't responding. And the good news there is, I did get her amplification it took a little while again, because patients don't want this. But when I talked to her a little bit about these behaviors and changes that I was seeing, she embraced it and the outcomes have been so positive.

Okay, so we've got a couple of questions now coming in. Can you clarify the answer for an exam question? Certainly, medical claim data. Let me just take a look at this, give me a second to read this. Yeah, so medical claims data pertaining to unmanaged hearing loss demonstrates hearing loss to be associated with what percentage higher risk of fractures falls stroke and heart attack, 25th to 50% is that increased risk? And let me scroll through these questions again, make sure I haven't missed anything.

What are your favorite patient questionnaires for families? That is a great question and quite honestly, Krista that I do not have an answer for I've been with Phonak eight years and as I'm not in clinic pulling these resources and looking at actively, I would really encourage you to reach out to your colleagues. When I give this presentation in person it's always a little more intriguing because we get to hear about best practices from some of our colleagues. So I'm gonna toss that one back out to you, or if anybody is brave enough to put an answer over in the Q&A I would love to hear what you are using for questionnaires around the family. And you could probably look specifically at our Family-Centered Care resources on Phonak Pro. I'm drawing a blank at the moment, as I said, if we have a specific questionnaire there, because our Family-Centered Care really incorporates your own case history and asking the family member to give their opinion and to really facilitate those conversations, not so much a questionnaire.

And do you recommend we start doing Romberg Tests on certain patients? I personally cannot give you that recommendation, I can tell you what I am seeing in some clinics across the country or my geographical region is some clinics do require particularly those in hospital in larger EMT settings to do a risk fall assessment. So if it's something that your clinic looks at in terms of balance, then it might be something you wanna incorporate into your practice. For somebody that is in a more traditional private practice driven by hearing aid sales, this may not be of great impact to your practice and what you would do with that if you're not able to follow up with any sort of treatment on balance and that sort of thing.

And we have a question, do you have favorite intake resources to use with families when first seeing a patient is follow up after providing amplification? I think some of those outcome measures where you can do pre and post measures are very beneficial, and I'm feeling so blank-brained right now that the names of these questionnaires are

not coming to my mind. Oh my goodness, the one about hearing aid benefit PFAB or something like that, the cozy is another great one. I was always really partial to cozy when I was in clinic because it was really a little more open ended where the patient and you discuss together what their goals were, what were the environments that they wanted to hear better and that you identify those together and then when they come back in for that follow up appointment, you can say have we met those needs and address those concerns. And this really plays right into another topic that is near and dear to my heart and that is Roger Technology, because often so many of our patient complaints center around performance and noise. And we saw the research today, the great benefits of stereo zoom technology with reduced listening effort and how that affects the brain and cognitive load. But hearing aids work in what I like to call that communication bubble that three to five feet, and when noise levels get to be beyond 65, 70, 75dB, which patients are in all the time, not right now but they will be again, we're gonna be so excited to come together in our communities, and families, and friends again. But if you can identify situations where patients are having difficulty, and you can identify that and see that they're not making benefit, but making progress towards it. This is a great time to have the discussion around Roger Technology and what that can provide for our patients.

Any more questions coming in, it looks like we finally hit a little bit of a lull. I sincerely appreciate you giving us your time today. I hope this was useful and I hope you really think about changing that narrative in that conversation in your offices, because this is what it's about right there on your screen, changing lives. I know that's why I became an audiologist to improve someone's life for the better specifically around well hearing. And as a young clinician 20 years ago, I really had these blinders of it just being about the ear and the auditory system. And now, as I have grown up in audiology, I see the importance of our field again to overall well-being in so many facets of our patients lives. So thank you for the work you're doing out there every day for our patients. I

appreciate you, and your work, and efforts out there on the front lines every day. So with that, thank you for giving us an hour of your day today, and I'll link--