Cochlear Care Consensus: Expert Guided Care Recommendations

Presenters: Rene Gifford, PhD, Terry Zwolan, PhD, Weston Adkins, AuD

I'm pleased to be sharing the stage today with two people who really don't need any introduction, but I'll do it anyways. Today we have with us Dr. Renee Gifford, who is the chief of audiology and research at Hearts for Hearing, and Teres Wolin, Dr. Terry Zwolan, who is the senior director of medical affairs here in Cochlear North Americas. My name is Weston Adkins. I'm an audiologist by training and I am a senior clinical care project manager here in Cochlear North Americas. Our agenda for today, we're going to talk through the evolution of cochlear implant care over time.

We'll start at the very beginning and see kind of where we've come over the past 40, 50 years of cochlear implant care. Next up is to talk through the cochlear care consensus, the why, the what, the how. And then number three, we'll be reviewing some of the key statements and next steps. Learning objectives for this. After the course, participants will be able to describe how and why we developed a cochlear care consensus.

And after the course, we'll be able to list at least three of the prioritized consensus statements and then describe essentially the benefits of the cochlear care consensus recommendations to clinical practice.

In everything we do here at Cochlear, we always start with our mission, which is to help people hear and be heard. I think that's something that's really shared across the industry. And so I love that that captures that in the context of the cochlear care consensus. We really want to maximize every individual's performance with their cochlear implant while being able to treat as many people who need our technology as possible. So that's the framework of the cochlear care consensus, and it will hopefully help us achieve our mission of helping people here hear and be heard.

Here are financial disclosures and here's a disclaimer. And we're going to kick us off straight away with the learnings from 40 years of Cochlear implant, of aftercare. So, Terry, take it away. Thanks so much, Weston, and it's really my pleasure to be here, especially joined by Renee, to kick off the Cochlear consensus. And we'll provide you with information that we believe will help you provide even better care

to your cochlear implant recipients.

So we're going to start by taking you back about 40 years. And in the 1980s, the clinical trial for the Mini 22, which I was really fortunate to be part of imposed a recommended test protocol for programming evaluation, inpatient follow up. The appointments were lengthy and frequent. Actually, we were trailblazers. We didn't know how often patients needed to be seen.

We weren't even really sure what those appointments should. Should consist of. If you've heard some cochlear lectures, you've probably seen that picture on the top right. That's Richard Dahl working with one of the very first mini 22 recipients in Australia. And when I left the University of Michigan, one of my patients shared this picture with me.

That's me down on the bottom right. I'm on the right, she's on the left. It really dates it, but I like showing that. We did have color photography back in 1984, 85. So it's not quite so ancient.

But let's move on and show you some of the differences because we feel as though the CARE has evolved so much. In about 1986, that care model required patients to return nine times. The first year, our activations honestly lasted eight hours. We would book eight hours for one patient. We would see them back the following day for an additional four hours.

We would then see them at one week, 1, 2, 3, 6, 9 and 12 months and all those appointments for about two hours. So we spent about 26 hours with each patient the first year. Now, Renee, I know you're younger than me. Were you exposed to these lengthy activation appointments of eight hours? I was, but I was.

So I was in training. And I remember the very first time I had a cochlear implant placement and they told me we were going to be with the child all day long. And I remember thinking, what are we going to do

for eight hours with this child? But we really needed the time. As you were, as you were suggesting there Terri.

Absolutely, absolutely. And the time flew by and it was necessary. They were long appointments, but they were necessary. And. And so as we've evolved, we're trying to look at things and how do we change as times change.

So if we look at some of the differences between back then and now, one of the big differences is programming. So because we only utilize bipolar stimulation, we had to measure thresholds and comfort levels for every single electrode, which was really time consuming to program. The processor took about two minutes to download, but it took 20, 20 minutes to erase. So if you didn't get it completely erased and you were at the end of the appointment, it MEANT you were 20 minutes off on your next appointment because you had to re. Erase that eeprom.

Well, we fast forward to today. And we've got wireless programming, we've got immediate downloads, we've got monopolar stimulation. We can utilize interpolation. We can use things like population mean that get us to that individualized programming so much faster. It still lets us individualize the mapping, but we're just doing it so much faster.

If we look at the equipment that we had, our patients had one program in a very large processor, but it only held one program. And they didn't have access to volume. They had control of over sensitivity on a dial, but that meant with only one program, anytime their hearing changed, they had to come back to the clinic. And that meant another lengthy appointment. We, we had to redo all of their measurements or even just turn it up.

They had to come back to do that. If we look at today, they have access to four programs. They can make changes in their app, they can do troubleshooting. They don't need to go back to the clinic every

time they have an issue with their equipment. And really, the third difference is recipients.

Our recipients were so deaf, they had a really hard time communicating. Those appointments were a struggle. We had to write notes all the time. They couldn't really communicate very well. And if we fast forward to today, our patients present with a lot more hearing.

They've got shorter durations of deafness. So out of the gate, they're hearing much better. So they're so much easier to communicate with. And so all of these differences have really made it possible for us to adjust that care model from those early days. And so what we've seen.

I was fortunate to be part of a recent group where we surveyed clinicians, like all of you, to find out what kind of care is constituting your current care models. One of the things we looked at in this manuscript was number of appointments. We alluded to nine appointments back in the 80s. Well, we got a little bit better by 2014, where we were seeing patients an average of eight times. But shout out to all of you, you've decreased that down to about six appointments based on this survey that we did in 2025.

We still need to continue to ask ourselves, or could we reduce that even more, and would that be better for patients in the care that they receive? The only other thing I'll mention about this study that really stood out to me is that clinicians previously would spend a vast majority of their time seeing implant patients. And what we saw in this study is that clinicians are spending about 25% of their time doing CI and about 75% of their time doing other specialties that tells us that clinicians have less time to devote specifically to cochlear implants, to develop protocols, to look at their care models and things. So we really believe that this cochlear consensus will help delineate and provide you with some guidance based on these experts and how they're doing things to help you streamline the care that you're providing to your patients. So as we move on, I'll ask you to think about in your care model, what's next?

How do you maximize patient performance by looking at the care that you provide. And we're really hopeful that you'll take some of the tips and suggestions that have come out of this evidence based consensus that I will hand over to Renee so she can tell you all about.

Thank you, Terry. Thank you for setting this up so well. I love working with you and presenting with you together. This is great. Thank you all for joining us today.

And many of you might be thinking, okay, we've trimmed our appointments, right? We are improving our efficiency in our clinical workflow. So why do we need this? What's really the point here? And so that's what we're going to explore now.

So of course we know that there, we all know for those of us who are working in clinic, that we have so many demands, right? So many things that we need to be doing within the time that we're here. And we have this cumulative patient model where these patients that we've seen over the years, they don't go away, not in a bad way. It's just that we have to continue seeing them for the long term, for the maintenance care or the phase of their care. But we know also there's this population of patients out there that doesn't even know about cochlear implants or even if they did know and they wanted to get in to see us, we are then not going to have the resources and the time available to see what all of these patients out there that really need this technology.

Additionally, as Terry mentioned, that so many clinicians these days for which is great, are multispecialty. So meaning that you're not spending 40 hours a week working specifically with cochlear implant patients and cochlear implant, the cochlear implant population. And so what that means is that we have even fewer amount of hours in our week to spend with this specialty population. And, and we still know that there are all of these patients out there that need this technology that are not even able to get in to see us because of the fact that we are so booked and we're booked out for such a long time with our existing patients as well as the new referrals. And finally, of course, we know our clinicians are

really looking for these streamlined tools or these guidance that's evidence based that will help them with their clinical care.

And of course, ultimately the goal is we want to make sure that our patients achieve their own maximum auditory performance that they can, and we want to use the evidence to get them there, but also to know when it's time to let them go out on their own and come back, should there be any additional concerns with that. So this whole process and this consensus, it was developed with clinical practice guidelines in mind, as in combination with clinical consensus. So let me delineate those two different. They're very different concepts. So a clinical practice guideline is basically, it's usually a series of statements or suggestions, guidelines, bullet points on how to carry out a particular clinical practice, whether it be, for example, hearing aid fitting and verification, validation, whether it be, you know, behavioral audiometry, abr, et cetera.

And so with these clinical practice guidelines, the key here is that there has to be a high level of evidence in the peer reviewed literature in order for it to make its way into that clinical practice guideline or that series of recommendations. Additionally, usually these clinical practice guidelines are sponsored, or in some ways at least organized by a professional or like a regulatory organization such as aaa, asha, FDA and other regulatory bodies as well. And those sponsoring or guiding organizations will typically set out what the guidelines are for determining the clinical practice guidelines. So with that, let's now contrast with clinical consensus. So first of all, we know that there is a lot of clinical expertise that many of us here today have, and we know some things that might not actually be necessarily in the peer reviewed literature yet, that is, and so that clinical expertise and that knowledge is still very valuable.

And so having a clinical consensus allows us to integrate some of that clinical expertise into our recommendations, not really making us to really just follow what's in the refereed literature. Secondly,

we have these opportunities to introduce these concepts and these clinical expertise recommendations to really help reduce clinician uncertainty. Because, because there is a disconnect between what's in the peer reviewed literature and what is happening in everyday clinical practice. We really need a little bit more guidance because we know that science is not fast, right? And in fact, if you look at across medical specialties, the research to practice gap, or the gap in time between when scientific discovery is made and when that Knowledge is applied in the clinical guidance or in the clinical practice is on average 17 years.

And that's just average. That's also assuming that it actually makes it to clinical practice, which is a whole nother part that we can't guarantee. So we really need to close that gap. And because again, because science takes time and the peer review process is lengthy, we have to utilize this extensive clinical knowledge that we have amongst all of our audiologists out there who have been working with these patients for decades. And finally, this will allow us to provide a little bit more recommendation and guidance to our clinical population, our clinicians who are out there and who might not all have, you know, 40 years of experience in working with cochlear implant patients.

It doesn't mean that they don't have all of the knowledge and the skills necessary to see their patients and ensure that their patients achieve their maximum potential. But they also are looking for guidance from professionals, from their peers as to what they could be doing now while they're waiting for that evidence to reach peer review.

Okay, so for some, let's, let's contrast some examples. So for example, a clinical practice guidelines such as that, that's listed below the Messersmith and colleagues from 2019, which was an exceptional clinical practice guideline. I want to make sure that it's not misinterpreted that I am criticizing this in any way because in fact, that group of really highly knowledgeable, very, you know, experienced professionals, they did their job, so they did what was required of them and what the task was placed of

them for this clinical practice guideline from the American Academy of Audiology. So, for example, in a clinical practice guideline, you might need to make some recommendations that are a little bit less definitive. For example, you may want to focus on auditory training, but the details may vary from patient to patient.

And providing, for example, some examples that they could use. So the patient might use speech tracking or they might be using some, you know, synthetic exercises or analytical exercises. They might do this in the clinic, they could do this at home or possibly in group settings. But you can see that all of this information is listed as a little less definitive because the evidence in the literature is not extensive in this area. However, that does not mean that auditory training is not beneficial.

We all know that our patients who engage in auditory training regularly tend to be our, you know, high performing patients. Now, of course, one might say, is this a chicken or egg? Right? Because of course, those who are super motivated and who are going to do everything, they might have done fine, even if they didn't do auditory training. But having said that, it's still, there's still some clinical evidence and guidance there that we have that's not necessarily in the literature.

So for example, a consensus statement when referenc auditory training might say, right, we recommend the use of home based auditory training in the cochlear implant ear alone for approximately 30 to 60 minutes a day. And of course, we might then further have some additional recommendations for say, our patients who have SSD or asymmetric hearing losses. They might need more of this auditory training, more in terms of dosage and more in terms of just beyond just home based auditory training. They might need, you know, guided training with a speech language pathologist. This all also might apply to those who are obtaining a second cochlear implant and might need to isolate that cochlear implant, you know, that new CI ear for home based auditory training on a relatively regular basis.

So that would be sort of the difference between these two. And it allows you to provide a little bit more of that clinical expertise and knowledge from really this wealth of information that the individuals can bring to it. And that is a little bit more flexible and open as compared to a clinical practice guideline where you really are limited to what's out there in the literature.

Which brings us to the clinical care consensus, why we're here today. So the clinical care consensus, it was achieved through use of a modified Delphi consensus. And so a modified Delphi is really just a modification of a technique that's been around for, gosh, I want to say, about maybe 60 or more years. It was initially developed as a way to bring in experts to synthesize the literature that already exists to then come up with guidance documents or guidance statements based on the literature, and then also to allow them to vote anonymously so that you're not swayed by, you know, public opinion or perhaps the loudest voice in the room. Now why Delphi?

That was designed to basically be sort of like the Oracle of Delphi, because that was seeking knowledge, all knowing sort of thing. So it's sort of a play on, you know, your Greek, your Greek mythology. But really the goal of this project was we really wanted to come up with these evidence based guidance statements, the clinical consensus statements that were specifically related to the clinical management of adult cochlear implant patients, specifically those who are utilizing nucleus cochlear implants. Because of course we know that each of those different systems might have slightly different sets of parameters and different workflow that we might use for them. And so this of course for today is going to be aimed and targeted towards our nucleus cochlear implant recipients.

All right, so the purpose of course is we want to ensure of course that our patients receive the utmost highest quality in patient care. But we want to also improve the clinical capacity that we have, the clinical efficiency, so that we can deliver this same quality care to more individuals in an efficient manner. We all know that the utilization of hearing technology is pretty abysmal. It's, you know, 20% on

average for adult hearing aids and we're anywhere from 2 to maybe 12% utilization for adult cochlear implants. If we're going to even make a dent in that, we have to think more efficiently.

We have to improve our clinical practices and our long term patient management for this population. And so how we were able to achieve that is we brought in these expert clinicians led by of course our friends in the industry and the industry leaders. And this is the goal of course is to bring all of this great collective knowledge together and then come up with this recommendations for protocols, care management as well as the use of cochlear tools and connected care. Because there's so many things that we can be utilizing in the overall patient care journey from even pre op through long term maintenance phase.

Okay, so our objectives, so when we brought this group of individuals together, which we're going to be giving some shout outs and not too long from here, our goal of course was we want to optimize outcomes, first and foremost, absolutely critical that we are engaging in evidence based care, without a doubt. Secondly, of course we need to standardize the programming timelines because we sort of have everything right. We have some clinics that are still more along the timeline that was late 1980s with maybe 9, 10 visits in the first year. And then we have those clinics that are, you know, three to four visits in that first year for adults and sort of everything in between. So how can we standardize things a little bit more so that when a patient is going to see a clinician for cochlear implant, it doesn't matter if they're going to see someone in New York or California or Texas.

We have sort of some degree of standardization of how we are recommending that timeline activation follow up as well as their long term care? Because we all know with social media they're all comparing notes, right? And so how many times, I can't count how many times that I've had someone where I've said, look, at this point we need neuroplasticity to take over and you have to take time and use these new mapping changes. But they'll say, well one of my friends on Facebook said that their audiologist

says it's completely fine to come in every week. And so it's sort of like that, you know, not that that we're going to follow that, but again that, that just leads to confusion amongst patients and we want to minimize some of that.

We also of course want to define what the evaluation schedule would look like because we know that not every single visit in the post operative phase is going to include evaluation. It might just be programming such as, for example, on the activation day. Additionally, what do we do with the other ear right there in. When we first started this journey, Terri, of course we, the second year wasn't even a consideration, right? It was sort of like let's get one of these and we're going to give him one good ear and to work with and let's go.

In fact, it really wasn't until about 2007 where bilateral cochlear implantation was really accepted as the standard of care for individuals who had bilateral severe to profound sensorineural hearing loss. Finally, also we want to outline best practices. What does best practice look not only for programming and evaluation but for counseling? What does it look like for general rehabilitative activities, auditory training, working with a speech language pathologist, the use of accessories as well as how do we manage maybe sound quality complaints and sound quality concerns from patients. We also of course within this entire journey we want to recommend effective use of the tools that cochlear has for us to use as clinicians.

And there are so many tools we even have today and I'm betting we're going to have even more and you know, 6 and 12 and 24 months from now. And finally the last goal of course was we want to ensure that the long term care strategy that we are applying to this patient population is going, going to ensure that they can have their very best maximum auditory potential for a lifetime. And so this was a big heavy lift, right? So these are a lot of major objectives that we had. And so once.

And of course the, the list could have been even longer. I remember at one point, you know, Weston saying, okay, we've got lists, we've got it, we want to do this, we have to manage it down to this list. And so it's good to bring, you know, the dreamers in and bring them back to reality because it's, it's very important, right? Because if we have this recommendation that is Extensive or too extensive, people won't be able to utilize it, at least not in an efficient manner.

Okay, so this was an expert driven consensus. And so we had the chairs of this consensus leadership were Terry and myself. We had a modified Delphi methodologist who Heather Strader, who had worked on the MSTB3 modified Delphi process. We had a consensus liaison, Weston, who kept us on track, really kept us, we were on task, which we really appreciate. We also had the observers who were, with their tremendous expertise, Barb Buck, Yeta Abrahams and Janine Deldot.

Now who were the experts? So we brought this group, this amazing group of people who collectively, I believe had like over 200 years of experience with cochlear implants. So we're talking a lot of experience here. We broke them in, down into different content expert groups. Now first I do want to point out that this group of experts that we brought together, we wanted to make sure that we had diversity in this, in this population.

We wanted diversity of the where they were in their career lifespan. So we have some individuals like, you know, Bill Shapiro, who's been working with cochlear implants since day one, maybe even prior to day one in the US and we brought in individuals who might have been doing this maybe the last five years or so, and everyone in between. And of course we have tremendous value and insight and different insight from different individuals along the career path and the career lifespan. We also had a diverse representation with respect to the clinical environment. So we had people from very large academic medical centers.

We had more, you know, the smaller non for profit clinics, the private practices as well as the Veterans Administration was represented as well. And of course we wanted to bring in individuals who worked primarily, of course, with the adult population, though many individuals who worked on this project did have experience working with individuals across the lifespan. So we had our five content areas that we ultimately were able to narrow down from our huge list that we started with. Those were programming and objective measures, which was led by doctors Jordan Holder and Allison Bieber. Next we had evaluation and validation of performance, led by Drs.

Meredith Holcomb and Mary Rose Goldstein. Contralateral ear considerations, Drs. Susan Rathgob and Bill Shapiro, patient management considerations, Drs. Kristen Lewis and Kerry Richter. And finally cochlear services and tools by doctors Molly Smeal and Becky Lewis, many of whom I think are, if they're not here today, they probably will be on a future recording.

So as I mentioned earlier, I'm going to what the Delphi consensus product looked like. But from this point I'm going to turn things over to my colleagues. Thanks Renee. That was great. So for this next phase of the webinar, I'm going to talk through what a modified Delphi consensus process is and why it's important.

Important. Renee nicely alluded to the fact that this is something that's been in practice for a really long time. In fact, it was developed by the Rand Corporation in the Cold War era and the purpose of it initially was to study the effect of technology on warfare. And the intent was really, as Rene said, to make sure that all of the voices, all of the experts who were brought together had an equal voice. And there wasn't any bandwagon effect or there was wasn't any issues with the strongest voice in the room really dominating.

And to support that, there are some key tenets of what a modified Delphi consensus process is. One of them is anonymity in voting. And so if I have an opinion that might be different from somebody else, I

can express my opinion in an anonymous fashion. I'll show you kind of how that played out in the consensus process here in just a second. But with that there's an opportunity to provide comments.

The comments were then fed right back into the group for a next round of review and iteration. And then the voting in particular had predetermined criteria. So that's another key element of it. It's not like we're taking a survey and drawing arbitrary lines afterwards. We're essentially pre registering our stats this way.

So, so to talk through what the process looked like here for the Cochlear Care consensus, we did this across six meetings. So there was quite robust discussion throughout this process. We started with literature reviews and draft protocols. So step one was, hey, for your respective area, if you're in, you know, programming and objective measures, do a literature review on kind of what the current state is for the literature and then from that put that into a framework that's clinically applicable. Right.

So taking that and putting it into like an activate, optimize, maintain framework so that way we can develop consensus statements that are, that have the ability to be plugged right into clinical practice. So that's what we did over the first two meetings. And then throughout the subsequent meetings the Likert statements were written and then they were voted upon. Again that was anonymous and pre, pre registered. Essentially there was an opportunity to comment again that was anonymous as well and then an opportunity to revise those Likert statements.

So here you can see an example of a Likert statement and just kind of what this looked like this is an actual SNP from the surveys that were sent out. We used a 9 point Likert scale where you could respond here and then add a comment as needed. I was the only person who was unblinded to this process since I facilitated this. So I scrubbed all the names and made sure any comments couldn't be interpreted or attributed to a certain individual. And then we reviewed them.

So let's give you an example of what this looks like. So some of these are just kind of tongue in cheek examples for Likert statements. And so this first one would be here, you know, vanilla ice cream is recommended in the summer. And so you can see there's the strongly disagree to strongly agree. So we used a 9 point Likert scale and then those that scored greater than 7 were considered to meet consensus.

Those that scored 6.5 to 7 were near consensus and then consensus was not met for those with scores less than 6.5. There is a process for managing outliers. We didn't have too many of those that impacted final scores in this application, but that was something that was considered if the score or if the vote, excuse me, was greater than two points away from the mean, that was considered an outlier and excluded from that final calculation of means. Okay, so here's one that would meet consensus. I think we'd all agree with this one.

So weekends should come with an optional 24 hour extension. And so that's our Likert statement. And so then we submitted this for then review. I'm seeing a laugh react there. We all agree with that one.

That's a clear pass. In fact it only got 7.1. I'd expect it to be a little bit higher than that. But okay, so what the scores are. So there's, let's see, 5, 6, 7, 8 votes here.

So we have 3 that voted 6, 2 that voted 7, 2 that voted 8 and then 1 that voted 9. So we have a mean score of 7.1. That is something that we consider to meet consensus. And there are zero outliers for consideration here. I think this is really important because, and this is something that we went through actually in our first meeting, like hey, this is what the scoring is going to look like.

So know this is how that's going to be interpreted. Right. So if, if there's a Likert statement that, you know, I really don't want to pass, I know that I need to give it, you know, a six or less. Right. So that is something that was very transparent from the beginning of that process.

Okay, so here's one that is near consensus. And so coffee is essential for making any Monday survivable. Something I personally agree with. But, hey, maybe there's not some coffee lovers out there. So, similar thing.

You can see one person scored 4, 5, 6, three people scored 7, and then three people scored 8. So we have a mean of 6.7. We calculated one outlier, and in this instance, that outlier would not be considered in the final score. However, there is a process for handling near consensus statements, and that is essentially, we lean on our fearless leader, Dr. Renee Gifford, to give us a steer on whether that's something that we would like to meet consensus or not meet consensus. And there was one example of that in our results, which I'll show you in a minute.

Okay. No consensus. Hey, this is, like, highly controversial, right? So pineapple belongs on pizza. Similar concept for scoring.

I don't want to belabor that point. You can see the mean being 4.75 with one outlier there. So something that doesn't meet consensus. Okay, so we did. We had six meetings, but we did two structured rounds of voting.

And so when we first collected Likert statements, there were 69 of them. And so then when we sent those out for voting, 64 of the 69 met consensus, three, excuse me, were near consensus, and then two did not meet consensus. So during our meetings, we actually went through, we reviewed all of the comments. And, you know, if I. If there was a consensus statement that actually, you know, met consensus, but we looked at the comments and said, hey, actually, this is a good point.

It could be improved upon if we made this further suggestion or delineation or what have you, that was something that was acceptable. So then those groups could go in and potentially revise those based on

those comments. And then so those were submitted to round two. The other thing that's, I think, important here to call out is that we did combine statements or recommend a combination of statements when they were very similar. Right?

We didn't want to, you know, have any unnecessary duplication in this to cloud what potentially we would be recommending. So we went through that structured process as well to say, hey, these two are similar. How do we want to combine these? And then we distilled those down to one. So then for the next round, we had 61 statements that were reviewed, 60 of those met consensus.

There was one that was near consensus, which we decided to exclude, that will ultimately be reported in the manuscript for you to view. We did distill these down again further to 56 final statements. Again, just edited down for clarity. Thank you to Renee Co. For providing a steer that way. And so this is really the process as to how we landed on these 56 final statements.

You can see multiple rounds of reviews. There was anonymous voting, anonymous commenting, and there was a lot of good structured discussion and deliberation about what was the best way to provide this recommendation. So. All right, with that, I'll kick that back over to Renee to talk through some of the key consensus statements. Thank you.

And Weston, can I add in too? Renee, that boy, look at all those statements. Right. I think just having so many is testimony to the complex care that our clinicians are providing. Like Renee alluded to, there were so many things that kept being added on.

It really shows the complexity. So we're hoping to decrease that complexity through the consensus. Such an excellent point, Terry. Thank you. And that also is a great segue because as Weston mentioned, there are 56 consensus statements, but we're not going to go through all 56 today.

So we're going to review a few of the really key statements. I also want to point out that at the last American Cochlear implant alliance in 2025, we met as a group and we ultimately prioritized the statement so that we could come up with like the key statements that we felt were most important that will most impact your, your clinical practice and. But you'll have access to all56 should you really be interested in the document that will be forthcoming. All right, so first we're going to kick it off with the programming and objective measures content. And this was with Jordan Holder and Alison Bieber.

And the very first one was upper stimulation levels should be guided by electrically evoked stapedial reflex measurement by the first follow up visit when possible, using a probe tone of 678 Hz measured in the contralateral ear. Of course, should they have a contralateral ear that's not implanted and that should be used as initial setup. And this was, this was actually quite based on the published evidence. So this was one of the ones that actually could have been a part of a clinical practice guideline document. And this was, if I remember correctly, this was sort of voted the, I think the top or in the top two or three.

Is that right, Wes? I'm seeing Weston nod his head. Yep. Excellent. So that tells you how important this group felt that this was absolutely critical to one's patient care.

The second one in this group that was part of the, you know, the key statements is that it's recommended that clinicians use the population mean mapping at activation. And so the population mean mapping has been shown to be truly effective and a great kind of uniform starting place for many of our patients. And so the goal here is that we're going to be increasing T and C levels simultaneously and globally to a level that the patient reports that is very loud. And then over the course of about a 15 minutes that we're, you know, conversing with the patient and family and, you know, kind of going over things if the patient is still saying it's too loud. And then we would again reduce the upper stimulation levels globally from there to get them to a place where they feel comfortable going home with that.

And so of course, I love that these two key statements, these go over what we know as far as upper stim levels as well as the current limiting for both the lower and the upper stimulation levels, because that part is really a lot of what we do, which is very, very critical.

All right, so some other key statements were that with reference to verification of the setting of lower stimulation levels, was that lower stimulation levels should be verified using ADIT detection thresholds, using frequency modulated warbled pure tones or fresh noise. Of course, we know from the literature this is another one where a clinical practice guideline would be very reasonable based on the peer reviewed literature, is that the optimal range for our cochlear implant aided thresholds is 2025 DB HL from 250Hz through 6000Hz. Now, we do know that if we have a patient that we bring in postoperatively, we, let's say we bring them to the booth first and we see that their ADA detection is in the range of 20 to 25 dB HL, that tells us it's very unlikely we're going to need to make any adjustments to T levels because of course, those lower stimulation levels are the primary driving force for our ADA detection. Not the sole force, but a primary driving force. And so that immediately, if we're seeing that they're right there in that zone, that takes one of those tasks off of our to do list for that particular patient appointment.

However, the patient, of course, we did add a little bit of a, you know, caveat. If the clinician considers adjusting lower stimulation levels outside this range that yielded this, you know, aided audiogram that they, you know, for example, if thresholds were poorer than 20dB 25dB HL or even better than 20dBHL, which is either one of those can be problematic that we might want to make those adjustments going forward, of course, Very important.

The next. Hey, Renee. Yeah, we back up one second. I have. There's a good question in the comments and just a comment that, hey, we're moving from 20 to 30 or from 20 to 30 to 20 to 25.

And I think this might call out the distinction of, of the consensus group saying the optimal range is 20 to 25, whereas, you know, you've probably heard Cochlear say 20 to 30. That's a little bit more encompassing of a broader range there. Right. Can you just speak to that? Yeah, it's a great point.

And so, yeah, the literature, depending on whether you're talking about a pediatric or adult population, on the peds population, those papers are really showing more. 20 to 25 tends to be the best for giving a child optimal access for, you know, development of auditory skills as well as listening and spoken language. Whereas on the adult side, the research has shown really more in the range of like, well, 20 to 30 is fine. And so that's where those recommendations had come from originally. But like you said, Weston, we were talking about really what's the optimal range.

And we know that the cochlear system is very capable of giving our patient aided detection in the range of 20 to 25 across the spectrum. And so that's why we were recommending that, that however, if I have a patient who I'm like 20s and 25 and I might see a 30 here, you know, like, let's say at one frequency, I'm not going to worry too much, particularly if they are an ex, you know, a long term patient. Things haven't changed too much and their performance is still, you know, where it should be, where, where they had been in previous appointments. So I think that allows the clinician a little bit of professional judgment as well. Thanks, Renee.

Yeah, thank you. That was a great question, Michael. Moving on to the next one, the evaluation and validation of performance. And our leading experts here were Meredith Holcomb and Mary Rose Goldstein. So one of the key statements here in this content area was that when we're assessing adult cochlear implant performance postoperatively that we recommend that we're following the Minimum Speech test battery version 3 or the MSTB3.

And so the MSTB3, I'm sure many of you, if not all of you here are familiar with that. It was revised a couple of years ago and there are a couple of papers that have been out since then. This is very

evidence based and it gives us really a nice way to guide our appointments as well as then providing that standardization across clinics as well that we were talking about as part of our motivation for doing this in the first place. Place. And I do also want to point out the MSTB3 that this recommendation was achieved by modified Delphi process.

So that was in one of the other consensus statements that came out that way as well. Another key statement in the evaluation and validation of performance is that we are recommending to our patient a minimum of 12 hours a day in device use. Now, of course, if you're familiar with the literature, some are saying, you know, 10 hours, some say 13. And realistically, it probably depends a lot on what the, how much time they're spending asleep, right? So like, you know, if you're someone who gets like six hours of sleep a night, you're going to be awake more often, probably want to wear your processor more often.

Whereas if you're someone who, for whatever reason, and I'm super jealous, if you're getting 11 hours of sleep a night, that is actually in the recommended range for adults, believe it or not, for the academy, American Academy of Sleep Medicine, then they're not going to be necessarily able to get to 12 hours a day, every single day, day. And that's okay. But coming with, you know, half of our 24 hour period, we should be recommending that our patients are wearing that processor. And that is a reasonable recommendation to make starting at activation because it starts them off on, you know, the very best foot possible.

Additionally. Oh, this is one of my favorite ones. I'm so glad we've got this one in here. Evaluation, validation, performance. It is not necessary to continue adjusting TNC levels once a map is optimized.

What does optimization look like? Well, remember from our programming, the very first content area measurement of esrts to help guide our, you know, our profile for the upper stim levels or SEA levels. And then finally, aided detection, right. Is going to tell us are our lower stimulation levels, are the T

levels, are they set appropriately? And the problem of course, is that sometimes when we bring people back at all of these subsequent appointments, if they've been optimized at one month and there aren't really any changes in performance other than possibly improving over time, the concern is that the patient has driven to the clinic, they've made the, you know, this the time to get there and you're both there.

So might, might we want to just kind of tweak things a little bit? Well, that can become problematic over time. Right. Because if you tweak things just, oh, a little bit here, raise things up by four to five clinical levels. Do that again in another six to 12 months.

Over the course of like 10 years, you can see someone really have. We could be deviating away from a path that could really be what represented that optimal programming for that particular patient. So this is a way for us to come up with, you know, this is the recommendations for optimization of the map. And then once the patient is stable, really, it's not going to be necessary to make adjustments unless those adjustments are warranted. And of course, we'll touch upon that a little bit more as we go.

Oh, next, moving into the next one. So this is contralateral ear considerations. And our leading clinicians here were Susan Rathgob and Bill Cross Shapiro. And so of course, considering the contralateral ear, recommending that we tell our patient when they meet criteria for the second ear. Right.

I mean, obviously we probably are doing that preoperatively no matter what, but certainly in the postoperative phase, if we have an individual whose contralateral ear is meeting the requirements or the candidacy for a cochlear implant, we want to recommend that ear for cochlear implantation and ensuring that we are managing that patient's ear. Right. Both ears, as best as we know. And so additionally, that might mean, okay, let's say we have someone who's bimodal and they might be, you know, borderline candidate for a second implant, but they're doing really well bimodally. It's really

important for us to, of course, manage that contralateral ear, looking at those unaided audiometric thresholds over time and then ensuring, of course, that the hearing aids are fitted appropriately as well.

And so all of that, of course, is going to be included in our postoperative management. But of course, paramount importance is making sure that our patients are aware when each of the individual ears happens to meet candidacy. I'm sure that many of you have been in this boat, but I've seen patients before where I've said, you know, at the pre op eval, look, both of your ears meet candidacy. I, you know, I understand you want to go with one first. Let's, you know, keep it hearing aid on one side, but maybe down the road we'll consider, you know, talking about that second ear.

And I, I guarantee you, I know that there have been a few patients that said, well, you didn't tell me that both ears met candidacy. I just thought that we were going to go with like the poorer ear. And we all know we, we told our patients. So again, it's important to bring all of that information up repeatedly over time because of course, that first eval appointment is, can be really overwhelming for our patients.

Renee, can I add in on that? What's interesting too is if we're reducing appointments, we have fewer opportunities to talk about a potential bilateral with our patient or to even talk about their other ears. So it's important to include that in those appointments that we do have for that patient to start thinking about it. So I agree, pre op is the great time, but then to remember to include it post op because we have fewer opportunities to do that. That's a great point.

Thank you so much for jumping in, Terri. That's great. The next key statement in the contralateral ear considerations was the use of a hearing aid in the contralateral ear. Of course we know that bimodal benefits are dramatic and significant, but of course ensuring that we are following that, you know, best practices for both ears and then determining the time between activation and bimodal stimulation. So some patients might say, well, you know, I think I want to spend some time with just the new CI and maybe I'll hold off on my hearing aid for at least a period of time each day.

If that's how the patient wants to proceed, great. Of course, I'm in the camp that I want people to hear the very best that they can the majority of the time that they are awake and, you know, and listening. But that doesn't mean that we don't have at least a period of time each day with, with just the CI alone. So that's going to be a discussion with you and your patient. But ultimately the key is that we really want to encourage consistent use of that hearing aid in the contralateral ear and ensuring that us as audiologists, if we are the one that's managing a single patient in the.

Every. Every ear that's attached to that patient. Right. So that's going to be the CI and the hearing aid ear that we need to make sure that we're applying those best practices to both sides. Slides.

Oh, next one. Patient management considerations. We had Kristen Lewis and Kerry Richter working with us on these two. And so this one, this is a bit of a long one, but very important. So basically by three months post op, we realized that patients for the most part are probably at the point where they have reached a clinically meaningful improvement in their speech understanding performance when comparing to where they were preoperatively.

Of course, then based on the literature out there, of course, this was based on both peer reviewed literature as well as clinician expert guidance Was that by about anywhere from three 12 months post op, we're going to expect to see monosyllabic word recognition scores on average in the range of 55 to 65%. Now, that is important to outline that range, right, because some people were going to be able to optimize immediately and they're going to be wearing their processor 12 hours a day or more, and their trajectory is going to be very steep. Whereas we might have someone else who, you know, we tried esrts, they couldn't tolerate it, or they might have had, you know, fluid that was, you know, contraindicated for that or for whatever reason, we weren't able to optimize them until a little bit further on in the process, we might expect them to reach their asymptote closer to six to 12 months. And the literature is kind of like in that range. But it's really important for us to kind of have a benchmark, a goal

of where we know, on average, the typical adult patient is in that range, typically about 56 to 65% percent.

Correct. That is, of course, we know that there are so many factors that can influence this. Right. And so underlying etiology to some extent does influence performance. So if we know if we have, like, for example, temporal bone fracture, that tends to be associated with poor outcomes, whereas individuals who have, you know, like a Meniere's disease tend to have relatively good outcomes, at least with respect to auditory outcomes.

Additionally, processor wear time is huge. It's absolutely a critical factor. And in fact, there is emerging evidence to suggest that it's not just a correlational nature, that actually if you could take an experienced user and if they can increase their wear time, they're going to see improvement in their performance and also, you know, participation in oral rehabilitation exercises or auditory training. So, of course, this is a really important guideline to provide for our clinicians, for everyone, for those who have, you know, less experience, as well as those who are fully experienced. Because sometimes when I see a patient and I think, well, this person's going to be at 100%, you know, three months out, but they're at 60%, that's okay because that's still in the average range.

And provided that we have reached optimization and that they're doing all of the things that have been recommended, that is, we're, we're benchmarking them to what we would expect. And, and that's a nice to have that range. Terry and Weston, do you have any additional input on that one?

I would say this one. There was great discussion around this as well, because we don't want to limit it to a certain number of appointments and miss out on important appointments coming back in. So it's important for us to track those patients, see how they're doing, and recommend outside our reduced protocol if they need to come back more often. But for most patients, we did feel, and the group felt, that reduced appointment schedule was appropriate, but keeping track of these patients so that we

don't miss opportunities to make them hear better. Absolutely.

Excellent. Thank you. That's a great point. And of course, if we're following the MSTB3 like we talked about in the previous key topic area, it's recommended that we DO assessment at three months. Right.

At three months, and then the next appointment would be 12. So it's just nice to have this recommendation for the range of performance we would expect, of course, knowing that there is a range. Finally, our last topic area was cochlear tools and services, and we had Molly Smeal and Rebecca Rebecci Lewis working with us on that. That and the key statement here in this topic area was administer remote check once the patient was reached their kind of expected performance milestones. So that would be roughly three months or later.

And that can be utilized as like a baseline to ensure if, or to know whether or not we need to be bringing them back more frequently or to know like, if a patient has concerns, for example. Well, no, your detection is still good. You know, the incision looks good, impedances are good. Your performance is still about the same as it was the last time. And so it gives patients, it gives a lot of information to both the patient and even more information, I would argue, to us as clinicians, I can't tell you how many urgent patient visits over the years could have been eliminated with the use of remote check.

I had patients who would drive, not kidding, when I was in Mayo Clinic, they would drive from northern Minnesota, Minnesota, down to southern Minnesota, and we would find out that they had just a, you know, a dirty microphone cover. So things like this, you know, the having these tools, this is it. This is absolutely critical. I am a huge proponent of remote check. It offers so much information.

And like I said, it also allows us to say, like, okay, this person has reached all of their benchmarks. They're on track, just like we would expect. They've been optimized. ESRTs aided detection in the 20 to 25 db HL range. We've assessed them.

They're, you know, CNC at a minimum, on average 56 to 65%. Do we really need to be bringing this individual back over and over again. We don't necessarily always know the answer to that, but remote Check is an excellent tool. If you're not already utilizing it, highly recommend the use of that tool.

And we are just a few minutes left and so I'm going to just summarize this and, and then perhaps, perhaps turn it over to Weston and Terry to weigh in and close us up. So if you're wondering, if you're feeling overwhelmed by this webinar, you're probably not alone. But I want to summarize some key takeaways. So first of all, we know this care consensus in these statements is going to provide us with evidence based guidance to allow us to provide our patients the very best optimized post operative care. And that's specifically for our adult patients, recipients of the nucleus cochlear implant system.

Secondly, of course this was developed through a systematic review, expert consensus. And so we know that all of these consensus statements that you're going to read through are grounded in clinical evidence, both in the literature as well as and or clinical evidence from this group of people who have 200 plus years of expertise.

This cochlear consensus guideline provides us with practical recommendations. We really can implement these relatively easy in our everyday clinical practice practice. It's just a few sort of key things that we could do. And finally, of course our goal is we want our patients to reach their maximum potential as quickly as they can, right? I mean that's the goal for everything.

And we know that we can get there as quickly as possible through the use of optimized programming approaches as well as evaluation and overall streamlined care. We know that this technology is absolutely, it's miraculous, right? It's, it's hearing restoration to individuals who otherwise wouldn't be able to have a effective communication. And so if we are going to chip away at the poor utilization of cochlear implantation in the adult population especially, we really have to streamline our practices. And

a great way to do that is through the use of evidence based guidance and clinical led expertise.

And with that I will turn it over to my expert colleagues. Thanks Renee. For next steps, I'd encourage you to examine your current care protocol. If you happen to have a written care protocol, maybe take it out and see how it compares to what's being recommended here. Or maybe just chat with a colleague and see how these care recommendations could be applied for your patients, ultimately helping them hear better, faster and then opening the door for more patients to access cochlear implant technology.

Number two, there is sign up for pro news@pronews.cochlear.com that is the channel that we've been using to communicate all things cochlear care consensus, so be sure to sign up for that. Number three is watch out for the publication on the cochlear care consensus that should be coming out in the coming months. Lastly, if you have questions, please reach out to your local cochlear representative and we'd be happy to discuss all these findings with you. Here are references and I'd like to thank you for joining today.