Empowered Patients, Efficient Practices: Candidacy and Evaluation

Presenters: Heather Strader, AuD, CCC-A, Molly Smeal, AuD, CCC-A, Kathleen Sheets, AuD, CCC-A

Hey, everyone. Good morning, good afternoon, good evening, whatever time zone you're in. Thank you so much for attending today's webinar. My name is Lori Hambrick. I am a principal education specialist on the global education and training team.

And again, thank you for joining today's webinar. This is part two of a five part series. The series is titled Empowered Patients Efficient Practices. During last week's session, I hope you were able to join us, but you would have heard us talk about continuous clinicsal improvement. Doctor Jacob Hunter, Doctor Renee Gifford, and Doctor Philip Chang addressed barriers to cochlear implantation and also offered ideas on ways to overcome some of those barriers.

Doctor Hunter spoke about outreach efforts and ways for you to get the right patients into your CI clinicss. And Doctor Gifford provided some ideas on how to model up, excuse me, how to modify the follow up schedule for CI recipients and to improve clinicsal efficiency. If you missed session one, you can access the recording in audiology online with the link that is in the resources section and that will be pushed out in the chat. And today we will be addressing the next step of the CI journey, the candidacy and evaluationuation process.

I'd like to review the goals and objectives for today's session. After this course, I expect you to be able to identify one change that you can make to improve your clinicsal efficiency, to explain the value of the MSTB three, and to identify two ways in which AB staff can provide support to your CI candidates.

At this point, I'd like to ask today's presenters to introduce themselves. Doctor Schrader, would you like to start? Sure. I'm Doctor Heather Schrader. I work as the executive director of the Institute for Cochlear Implant Training.

And then I'm also work clinicsally as a cochlear implant audiologist at Prisma Ent in Greenville, South Carolina. Doctor email? Hi, yes, thanks for having me. My name is Molly email and I am a clinicsal

audiologist and researcher at the Cleveland clinics in Cleveland, Ohio. And doctor sheet, hello, I'm Doctor Katie sheet.

I'm an audiologist with midwest ear, nose and throat specialists. We're a private ent clinics in the St. Paul Minneapolis metro area in Minnesota. Thank you all. Thank you for taking the time to be here with us today.

The minimum speech test battery, also known as the MSTB, was updated to the MSTB three at the beginning of this year. And before we go into information talking more about the MSTB three, I'd like to see how many of you are already using it. So you'll see that a poll just popped up on your screen, and the question is, are you currently using the MSTB three? You can select yes, no, or you plan to, but you haven't had a chance to implement it quite yet. So we'll give you just a few seconds to input your answers.

All right, let's see those responses. 50% of you said yes, 30% of you said no, and some of you are planning to, but haven't had a chance to implement it. So hopefully, for those of you who are, you'll learn some helpful information from our presenters today, and those of you who are not, maybe you'll learn something that will make you consider using it. And for those of you that plan to but haven't implemented it yet, hopefully you'll also learn some tricks that will help you. Doctor Schrader, I know you were involved in this MSTB three update.

Why was there a need for an updated version?

Well, thank you. Thanks for having me on and to talk about the MSTB three. It's taken up much of my professional life over the last few years, and so it's definitely a labor of love. I first of all want to point out that the MSTB test battery is designed for adults, but it can also be used with children. So we specifically suggest using it with school age children as you're able to.

We always know, all those pediatric audiologists out there know that we're always trying to get them to kind of that next harder test paradigm so that we can test them efficiently and effectively over time. So the MSTB is intended to be a streamlined recommendation, and it was determined through a modified Delphi process. So that's a fancy way of saying that we went through a lot of steps in order to kind of move through this process. A rigorous literature review, these content experts that you see on the screen in front of you all came together frequently to discuss and kind of go through this process. And if you've ever been in a room with a lot of really smart people that have some strong opinions, you could probably guess this was quite a lengthy process, but it was something that everybody there was really dedicated to because we saw the importance of it.

And so that brings me on to my answer to your question. Why did we need an updated test battery? And as many of you know, candidacy has expanded really dramatically over the last ten years. Pretty significantly. And the patients we're seeing have a lot more variety.

Specifically, if we think about our patients who utilize electroacoustic stimulation as well as those who have single sided deafness or asymmetric hearing loss. These patients, they're a lot more difficult to test in some regards. We've all been trying to figure out what is the best way to test them. Many clinicss at this point are really evaluationuating patients on a case by case basis and really providing cochlear implants off label with our best clinicsal judgment. I just want to take a quick side note to just point out that the FDA's role in this process is to ensure that there are safe and effective treatment options available.

But it's us as clinicsians in order to evaluationuate patients and to help make recommendations based upon their best opportunity for improvement. So, of note, the FDA states clearly on their website that physicians are to use legally available drugs, biologics and devices according to their best knowledge and judgment. So it's up to us as providers to set the stage for best practices and to help move forward

the FDA approval as well as insurance criteria over time.

The short and fast answer to this is why is there a new test battery? A lot has changed in candidacy. There's been quite a disconnect between clinicsians and insurers and FDA indications and clinicss at this point have been pretty inconsistent regarding the test measures they're using because we're all just trying to figure out the best ways to evaluationuate these patients. This has led to confusion amongst referral sources, which is a problem for access for cochlear implants patients and payers as well. We know greater consistency and test measures between clinicss is really important so that we can provide better referral sources and access to cochlear implants, but also so that we can improve our collection of data, so we can use data from multiple cochlear implants, cochlear implant sites in order to kind of figure out really what are the outcomes that we would expect.

Thank you for that information. So what would you say is unique about this version of the MSTB three? Well, that is, there are a couple really important factors that are different about the updated MSTB three. This is a protocol and I'm not going to be able to go through part of it because we only have just a few minutes today. However, I did want to point out just a couple of the main changes when we think about kind of the old MSTB versus this new recommendation.

First of all, this is meant to be streamlined, so we're supposed to, we're trying to spend less time testing and more time counseling our patients. And it does assume that we have an updated audiogram and verified hearing aids.

The protocol does start with a c and C score. So at the top of the screen, you can see that we start with a best aided individual ER C and C score in order to really determine candidacy. So CNC scores are how we are determining candidacy for cochlear implantation. And of course, we can't do this in and of itself. We also have to think about other factors, and you can see on the bottom of the screen that we've listed out those other factors that we all think about.

When we think about testing and counseling our patients, like their medical factors, cognition, patient motivation and expectations, these are all important things. But importantly, we want to base our candidacy on these CNC scores. And that is because CNC are much more stable over time. They're not as affected by top down processing and auditory memory and executive functioning as like the AZ bio sentences and noise tests. Evidence informs us that there are some really fairly reliable expected outcomes pre versus post op when we think about CNC scores.

Meanwhile, AZ Biosis scores vary quite a bit pre versus post op, so it's harder to use that as a basis for helping set patient expectations. I did want to point out this best aided definition. The MSTB three team has defined the best aided condition as testing using a hearing aid that has been optimized for hearing loss in the ear to be implanted. This movement towards optimizing each ear individually is important because of our candidacy of single sided deafness and asymmetrical hearing loss. So we really are changing our focus into optimizing each ear individually in order to have the best outcome instead of looking at both ears together.

The next step of this process is. So then the next step of this process is the AZ bio sentence score. So we're still testing AZ bio sentence scores. It's a really nice, real world kind of test paradigm, and it is also what many insurance or insurance companies are requesting for coverage. So the next step is really to determine if that patient qualifies for coverage.

And so for our single sided deafness and asymmetric folks, we might be able to just move on and test that ear to be implanted. For our more traditional folks, we might be testing each ear individually just so that we can better understand which ear we might want to implant or want to implant first.

AZ biosenses. We suggest starting testing at a plus ten signal to noise ratio, then moving on as appropriate. We might have to add more background noise. What we're really doing here is we are

documenting that this patient deteriorates when they're in a more difficult test scenario. And so we can use this information.

We're going to clearly document it for insurance companies, all of our test paradigms and all of our situations and what we're basing our candidacy on. So it's up to us to help tell the insurance company how we're basing our candidacy. We based it on these CNC scores, but we can also verify that they do meet their guidelines for AZ biosentences scores. So I know many of you are probably thinking, aren't we making them a candidate by increasing the background noise with these AZ biosentences? But the answer is no, because we've already determined their clinicsal candidacy based upon CNC scores in step one.

So really here what we're just documenting that they do deteriorate in background noise. The next kind of step to this process is an everyday listening condition. So this might be what you previously considered, that best stated condition. So we recommend a test with both ears together, optimized as well as possible. This might be bilateral hearing aids, it might be a unilateral hearing aid, occluded ears, or even some cross hearing aids.

But this is our nice pre versus post implant outcome, to look at both ears together.

I'm going to move back for one more moment, then we definitely recommend some patient reported outcome measures. The CICOL and SSQ are great ones. I'm going to talk a little bit about those and patient counseling towards the end before moving on to medical candidacy. I know that's so much information. This flow sheet is available on the ICIT website under the MSTB three suite.

But just to wrap it up and summarize it, this MSTB three represents an evolution of clinicsal care. So over time, we've seen this, we've seen changes in presentation level and kinds of sentences we use and how we test in quiet versus background. And now we're changing candidacy based on bilateral

sentence scores to focus on single word scores in the ear to be implanted. So those big changes are that change to best aided condition, which is focused on the ear to be implanted once again. And that really helps us to all have a place to refer to when we are trying to defend our candidacy decisions for our patients.

This is a published paper where a bunch of people come together and gain consensus on this definition of best aided. I think that's important for the field. The C and C score is the primary measure for determining candidacy. And so you're all probably thinking, what is the cutoff for this? And the answer is that the MSTB three team does not actually provide a cutoff.

So we think it's important for clinicss to kind of determine this internally and decide. We think it's important because clinicss have a different level of comfort in implanting more off label use. But also, we know that this is gonna change over time. So as we have more evidence to support the outcomes of patients with different levels of hearing, we're gonna change this. And we should take a look at the literature.

There's really great literature that supports a cutoff criteria of 40%, 50%, and 60%. And they're all on the website, too. So we point you towards them, and we want your team to come together and kind of decide on a place to start, but also be willing to continue to have this conversation over time. I just want to point out really quickly that there is also a post op protocol. This very nearly mirrors the pre op protocol.

So it's not surprising we're kind of looking at at results over time. And this is all available once again on the website. So you just mentioned that the post op protocol pretty much mirrors the pre op protocol. What about for second sides? Does your evaluationuation process differ for second side CI evaluations?

That's an excellent question, Lori. The MSTB three actually states that patients should be reevaluationuated for a second CI at follow up appointments. And it's really, once again, based on that CNC score. So if that patient scores lower than what your clinics candidacy score is for those CNCs, they should be considered a candidate for a second cochlear implant. We still recommend determining kind of that bimodal benefit and how much that hearing aid is contributing to the overall performance.

But we think it's an important conversation to start having with the patient as soon as their CNC scores get below that criteria. For some patients, they're going to get some pretty good bimodal benefit. And you might wait a little bit longer, but I just encourage you to continue to have this conversation at follow up appointments, continue to test kind of this best aided condition with the hearing aid c and C scores, so that you can continue to have that conversation with patients and decide when the best time is to move on to a second cochlear implant. Great. Thank you.

Now, for the percentage of people on the call who haven't incorporated the MSTB three into their clinicsal practice yet. Will you share how they can access it? Absolutely. So the ICIT website, which is cochlear implanttraining.com, houses the MSTB three suite. So you can log in, you can create an account for free, and you can log in and download all these materials.

You can see across the bottom of the screen. There's lots of materials available, including a really, really detailed manual. So a lot of these questions you might have about the MSTB three are probably talked about in the manual. So please download these materials and send any of your questions or concerns back so we can continue to follow up and make educational materials as appropriate. Great, thanks.

And how has incorporating the MSTB three into your clinicsal practice affected your clinicsal efficiency? That is a great question. So my team has been incorporating the MSTB three for really the past two years, as I've been part of this process, and so we've done a pretty good job incorporating it. Our clinics

does see patients for evaluationuation, usually two to four weeks out. We would love to be closer to two weeks to evaluationuation, but sometimes patients have to wait a little bit longer.

These appointments are 90 minutes in lengthen, and this assumes we have an updated audio audiogram for the patient. Sometimes we end up having to update their audio in this appointment as well, but no surprise. We start with the case history and try to understand the patient's hearing background. We verify hearing aids based upon their hearing loss, and we are most frequently fitting clinics learners just to streamline that process. Then we move right to CNC at each ear, and so we have a definitive answer of if they meet candidacy within the first 30 minutes that they're in our door.

So candidacy for our clinics is anybody who scores less than 50% at either ear would be considered a candidate in that year for a cochlear implant. I'm curious if doctor sheet or doctor email would want to share what their clinics has chosen for candidacy and why they chose that level. Sure, I can answer that one. So our clinics has chosen the 50% cutoff, and we made that decision based on the literature that's available about post operative expected performance with cochlear implants. Perfect.

Thanks. Thanks for that. And I think this is a conversation we just need to keep having between clinicss to better understand why we're choosing different cutoff criteria and kind of be willing to be flexible and change over time. I think it's really important that we know within the first 30 minutes that this patient is a candidate for a cochlear implant. It allows us to really shift our goals.

If this patient is not a candidate for a cochlear implant, we might shift to evaluationuating their personal hearing aids to see if we need to make recommendations about replacing or reprogramming those aids and really counseling about the future. Someday you might be a cochlear implant candidacy. And this is when we want you to come back for more testing. And we want them to be prepared for understanding that process at that time, if they are a candidate. We're going to move on to AZ bio sentences and that best dated condition and the everyday listening condition to make sure we can document insurance

coverage.

And then we're going to move on to the most important part, which is our patient counseling. This is all trying to stream down this testing so that we have more time to counsel our patients. This 30 minutes patient counseling is not device specific. We do in a separate appointment. So this is really trying to help them understand the process of a cochlear implant.

Expected outcomes, kind of factors that might limit their success with a cochlear implant. And just of note, there's a really interesting paper that has been, was published fairly recently by Shannon et al. She's from Muscle and in 2023. This paper shows that it's really important that patients have appropriate expectations of a cochlear implant. We all have patients in our clinics who score so well in the booth, and they do what we think is really great, but they complain.

They say they're not very happy with their cochlear implant. They don't like the sound quality. They're disappointed. This paper really points out the importance of, of pre op counseling and helping patients to establish realistic expectations in order to really help them to feel successful with their cochlear implant post op. Great.

Thank you again for all this great information. And before we leave the topic of the MSTB, three doctor email or doctor sheet, do either of you have anything to add about how using it has affected your clinicsal efficiency? I would just echo exactly what Doctor Schrader said. Our clinics has seen a reduction in the time of our evaluationuations. We used to have the 120 minutes time slot, and now we have done 90 minutes, which is great in a busy ent practice.

It allows us to see more patients in our day, and it's also easier to get those evaluations on our schedule. It's easier to find a 90 minutes block of time than it is 120 minutes. Great. Thank you. I'd like to pause for a question that came in during Heather's, during the information Heather was sharing.

So, Doctor Schrader, when you document that the patient meets clinicsal candidacy, do you also document whether they meet or exceed Medicare or FDA criteria or are you only documenting whether they meet the clinicsal criteria. So we do have a statement. We have both. So we have statements about clinicsal criteria, and then we also have a separate statement. And we very specifically define they meet Medicare criteria based on testing in the best stated condition, which is the left ear with plus ten signal to noise ratio, they scored less than 60%, which makes them a candidate for Medicare criteria.

We do try to very specifically state both that the clinicsal candidacy has been met and then also that insurance criteria has been met. Great. Thank you. All right, so during the webinar that we had last week, Doctor Hunter, Doctor Gifford, and Doctor Changdeh identified some reasons for low utilization of hearing devices globally. Doctor email, I wanted to ask you, what are your thoughts about underutilization and what is the cause for it?

Sure. Good question. I think this is a topic we could all spend a lot of time talking about. Is underutilization of devices really across the whole hearing healthcare continuum? I think there's estimates that suggest as few as two to 12% of patients who could benefit from a cochlear implant actually get one.

Unfortunately, on the hearing aid side, those numbers are also low. And a lot of hearing aid sales seem to be from repeat patients who are coming back to be fit with new technology. So I think across the whole continuum, we need to talk about this issue, especially because the prevaluationence of hearing loss is expected to rise from these numbers from the World Health Organization. And so in the CI space, we spend a lot of time talking about this. And I think sometimes our instinct can be to sort of externalize the issue of underutilization and say, well, maybe patients have fear about surgery or a lack of knowledge about surgery.

Maybe non implant providers are not up to date on candidacy criteria or not referring in soon enough. But I think we also need to kind of look internally at our practices as cochlear implant providers and see if we are creating any barriers to care for patients in the way that we are moving them through the process and evaluationuating them. I think some of the things we'll talk about, like wait times to get in or the number of times we bring patients back in the first year, may indeed be creating some of the barriers to cochlear implant care that we like to talk about. Thank you for that. And when you were at the University of Miami's hearing, the hearing implant program implemented some clinicsal efficiency changes in order to help the program continue to grow.

What are some of the challenges that were identified with the traditional model you were using and also some of the challenges you faced during the candidacy and evaluationuation processes. Sure. So I think I'll start with this figure. This is a nice figure from a paper by Ashley Nasseri and colleagues that really highlights all of the discrete steps patients have to go through to get from a point of hearing loss identification to cochlear implant and then the subsequent follow up. And this is a lot of steps.

And there are so many opportunities here for patients to fall through the cracks or get missed. And so as we were starting to think about our own program and some of the clinicsal efficiency changes we might be able to make, we decided to create sort of our own version of this type of process map to see where our patients may be falling through the cracks in our own cochlear implant practice. Here's an example of one of the process maps we had come up with that only looks at the time of patient referral into our implant program. Robert was one of our cochlear implant coordinators. This tracks from that initial referral only to the point of CI evaluationuation.

This is not even getting the patient an implant, getting them through surgery or post activation. This is only to get them an evaluationuation. And I really think this can kind of make anybody's head spin. If it's confusing for us to look at, it's likely even harder for a patient to navigate. And there are so many

opportunities for us to miss patients.

As we had identified some of these issues, we also wanted to take a look at our clinicsal FTE and see how are our audiologists in our program spending their time. I had started at University of Miami in 2019 with Doctor Meredith Holcomb, who's the director of the hearing implant program there. One of the things that she had done is collected some information from other implant centers throughout the United States who are doing a higher volume of cochlear implants per year. These are some different clinicss. You can see here how many implants those clinicss are completing per year, their clinicsal FTE for their CI programs, and how that breaks down into a ratio of number of cis per clinicsal FTE.

What you can see here is that when we compare ourselves to a program that's doing a similar number of surgeries per year, we have a lot higher clinicsal FTE for our CI program, which made us kind of wonder, how are our implant audiologists spending their time in clinics? And so we also took a look at the amount of time audiologists were spending with new patients. So patients coming in for a new cochlear implant evaluation versus those with existing cochlear implants. Who are maybe coming for an annual follow up. And what we saw is that we were only able to spend 10% of our time with new recipients.

So I think likely we're contributing to the underutilization to an extent because we just didn't have the capacity at the time to spend time with some of the new patients coming through the door. In order to better assess why that was, we took a look at our CI post activation series of appointments at the time. So this was from 2019. At the time, we were spending 90 minutes per visit, and we had what I think at the time was a relatively common post activation series with a two week and six month follow up appointment, which now they're starting to be a lot of talk at meetings about eliminating some of those visits in between which we'll talk about shortly. And when we looked at how we were spending time at each of these visits, we were actually breaking all of these time points into two separate visits.

So, for example, for a unilateral CI recipient, we were spending as many as 15 hours in that first year following up and doing programming and booth testing, and even more so for bilateral CI recipients, where we could be spending as many as 24 hours with each patient in that first year after their initial activation. Now, part of this was due to confusion about billing and if we were able to really provide all of these services in the same appointment slot. And so if you have any questions about billing and coding, that's actually going to be covered in the fifth webinar of this series, which will take place on October 1. So more to come on that. But this really highlighted for us some areas where we could improve the amount of time we were spending with patients.

And then I think this is sort of a big ticket item for all CI programs. We took a look at number of CI surgeries we were completing per year, and you can see over time, we had a steady trajectory of doing more cis per year, but that number was actually starting to decrease in the years prior to some of these clinicsal efficiency changes, which was a big sign that we probably needed to make some changes. And one other tool that we found really helpful in being able to make some of these changes is something called slicer dicer. If any of you are using epic in your practices, this is a program that's built into epic that can pull de identified data about your clinicsal practice, which was really nice to track trends and kind of see how your program is moving along. But what we saw when we did this is that we were actually completing fewer CI evaluationuations than were scheduled per year.

So this big bar of 483 patients were evaluationuations that were not completed for one reason or another, which told us maybe we're not really evaluationuating the right people or we're not explaining the process well enough for them to understand why they might be coming for that CI evaluationuation appointment. And so sort of the combination of some of these factors that I just talked about, like long wait times for appointments, we weren't really accepting. A ton of new CI evaluationuations, despite having a high fte of CI providers in our program and reduced surgical numbers overall, are sort of the issues that prompted us to make some of the clinicsal efficiency changes that I'll talk about next.

So what steps did you take to address these challenges that we see on the screen here? So, good question. So, sort of the way that we approached making some of these changes was with this mindset that we needed to clean up our own house before inviting guests in. And what I mean by that is, I think our instinct, CI programs oftentimes is that we either need to hire more providers to grow our program or that we need to step out into the community and try to identify where we can get external referrals from. But in looking at this, we saw there were a lot of areas within our own practice that we likely needed to change in order to improve the volume of CI recipients that we could reach and new CI evaluationuations that we could complete per year.

And so there's three kind of points that I'll highlight during the rest of this talk, which are that we use things like an improved internal triage and referral system, implementation of telehealth services, and a modified appointment schedule to help improve our clinicsal efficiency. One thing I would point out is that not all of these changes were intentional. I think that this talk will make it seem like we had a really clear structure for all of these changes we made. But to be honest, some of these changes were actually happy accidents that occurred from things like the Covid-19 pandemic and telehealth. So although these changes were all great, some of them were just things that we figured out through the process.

Kind of worked for our program. Again, thank you for this great information. I wanted to hop in a polling question before you move into talking a little bit more about the use of telehealth and how that impacted things at the University of Miami. So the poll has popped up. Are you currently offering telehealth services at your clinics?

Please select yes or no, and your answer will be submitted in just a moment. I'll see your responses.

All right, can we get the results? Let's see. Oh, so we have almost even mix. 57% of you say yes and 43% of you say no. So I'll hand it back over to you, Molly, to share a little bit about how you use

telehealth.

All right, so as you can see here, these are the two that we'll focus on a little bit more for the duration of the talk. And so just to kind of circle back on where we were when we started making some of these changes, the first thing that I want to re highlight is that process map that I showed at the beginning. That is really confusing to look at. And so to start making some of these changes, we went ahead and modified this process map to make things a lot more clear and a lot easier to follow for any member of our program. So this is sort of the step that patients would take to get through the process.

In our updated map, we would have hearing loss, diagnosis by ENT and audiology. And then we implemented a triage system through something called a pool. Again, this is a really nice resource in epic where you have a group of either providers, implant coordinators in the same triage system where all of the patients can be sentence triaged and then scheduled. And so myself and Doctor Holcomb would review all of the patients coming through the program and determine what kind of audiology appointment they should be scheduled for, regardless of if they were SSD bone conduction CI. They would then be referred on for the telehealth evaluationuation, which we'll talk about in a minute.

After they completed the telehealth, we would schedule the in person appointment depending on what their preference was from the telehealth evaluationuation. And then we would complete that in person evaluation and move them forward either with a surgery, if that's what they opted for, and were a candidate for, or some type of other device fitting. So, for the telehealth, what we were primarily using this for was pre CI evaluationuation or pre evaluationuation counseling so that we could provide patients the information they needed to make a decision about if they even wanted to be evaluationuated for a device and if that was really the right option for them. So a lot of the information we covered, which I'll show on the next slide, were things we would talk about in a CI evaluationuation anyways. Really, like I said before, this was prompted by the pandemic because we found we had a

really large backlog of patients who needed to be put through the CI process that we couldn't get through in a timely manner due to in person restrictions.

But what we found as we did this and sort of moved past the point of the COVID pandemic was that it was appropriate for patients of all ages. This allowed us to include pediatric patients and their parents, so there weren't restrictions on how many family members could join an appointment. And our oldest patient that I can remember doing this with was 94 years old. So it's really not restricted by the age of the patient. It allowed for the whole family to join in and engage and expanded our geographic region from kind of more tightly bound down here in the South Florida region to being able to reach any patient within the state, really, as long as they were within the state of Florida.

Everything we provided to the patient was in writing, and we were able to have captions come across the bottom live through PowerPoint. So there was a visual component for those with more significant hearing loss. And what we ended up finding that I'll talk about towards the end, is that it did increase the likelihood of patients being able to make a decision about if they wanted to pursue a CI evaluationuation, and then actually pursue a CI once we got through that evaluationuation point. So this is an example of the slide deck that we shared with patients. Another nice thing about this is that it really streamlined the delivery of counseling from our audiologist because everybody was using the same set of slides.

So we talked about, again, some of the basics, like what hearing loss is and how we hear with a normal ear how a cochlear implant works and what the different parts and pieces are, how we expect someone to perform with a cochlear implant. And this did allow us to provide a little bit of individualized counseling, but we would really then focus in on that after we had the aided testing component. And then we spent some time talking about manufacturers oral rehabilitation and expectations for wear time.

So after the telehealth, again, as a reminder, this is where we were with our kind of post operative follow up schedule. This was another change that we made, is that we took a look at our billing practices and took a look at how we were bringing patients back, and we were able to actually reduce this down to a lot fewer visits. This was a change that probably took a longer time to implement and took a lot of buy in from the team to reduce the number of appointments we were spending with patients in that first year. And actually, this seems counterintuitive, but we increased the duration of each visit to 120 minutes, but then reduced the number of visits we were spending within that first year. So whether patients had one or two cochlear implants, we condensed our appointments so that we were programming and testing all in the same visit, and we eliminated that two week and six month follow up time point.

And another thing that University of Miami has always been great about is the use of objective measures for programming. And so we found that implementing things like ESR by some, you know, by the one month, either if it's ad activation or at the one month, helped to streamline the programming process. So we weren't having to spend as much time programming recipients as maybe we used to. And another thing that AB is great about, in specific, is having some other resources that we can add in in between those time points, like the AB success team, where patients can meet with somebody from AB to go over their equipment, batteries, and some of the basics that maybe we don't need to be spending as much clinicsal time on. Thank you.

So, so far, you've shared with us some of the challenges you faced, some of the changes that you were looking at making, and so how did this impact the overall clinicsal efficiency? All right, this is probably my favorite part, is the outcomes, because this is the exciting part we all look forward to. So I'll start with the telehealth, because this really made a pretty significant difference in the practice, which is why we continued using this even beyond sort of that initial point of the pandemic. And we actually went back and looked at this retrospectively to see, did it make a difference in our practice. We had a study where

we looked at 582 patients between the years of 2015 and 22, so that we had a pretty even split between when we were doing telehealth and when we were not.

And we have the groups of those who did undergo a telehealth counseling and those who did not. And what we can see is that this did slightly shorten the time from the initial assessment and referral to surgery. Again, I think that these numbers are still much longer than we would like them to be, and it's still taking patients a significant amount of time to get through the entire process to surgery. But this at least showed us we're maybe heading in the right direction, and also pointed out that this is maybe something we need to work on a little bit more closely after we had fixed some of these initial clinicsal efficiency issues. The other nice thing about this is that it increased the likelihood of a patient making a decision to pursue a cochlear implant by the time that we reached the evaluationuation and surgery with the telehealth we had a much higher conversion rate from evaluationuation to surgery of 83%.

So 83% of the patients that ended up at the CI evaluationuation actually pursued a cochlear implant, whereas before we had implemented the telehealth, only 48% of those patients felt comfortable and confident in moving forward with the surgery. So I think allowing them to have the counseling in advance of the evaluationuation and make a decision about is this something that I really want to pursue? Helped us to improve that conversion rate and really better prepare them for what the evaluationuation appointment would entail and what the long term process of having a cochlear implant looks like.

Coming back to this slicer dicer little figure here, which I love, again, this is a reminder of the CI evaluationuations that we were completing per year in 2016 and 17. And when we bring this up to speed, by the time that we reach 2022, we were completing a lot fewer evaluationuations per year, which, again, might seem counterintuitive, but because we saw that increase in conversion rate, we know that we're now evaluationuating the right people and moving them through to surgery when it's

appropriate for them. And another positive change is that we had a lot smaller number for those not completed evaluationuations, meaning that patients were no showing at a lower rate and were actually choosing to come to that CI evaluationuation after it was scheduled.

So, again, as a result of changing some of our postoperative appointment structure and eliminating some of those visits, like the two week appointment, the six month appointment, and eliminating the number of times that we were asking patients to come back after that first twelve month mark, we were able to start spending more time with new CI users versus established. So over here, another great slicer dicer figure, this purple line is the number of appointments per year that we were spending with established CI users. And you can see that starting to slope off over time. And the blue line is the number of patients we were seeing per year for new patient evaluationuations, and that's starting to increase. So as we start closing that gap, that tells us we're now starting to make that switch between spending time with existing recipients and adding in more time with new CI evaluationuations.

And this figure, again, just kind of nicely highlights that we're starting to spend more like 25% of our time with new CI evaluationuations and getting more potential recipients through the door to hopefully help reduce that underutilization. And finally, again, the one that a lot of people care about is the CI surgical hit rate and how many surgeries we're doing per year. So the green line is the actual number of surgeries completed, and the blue line is the number of evaluationuations completed per year. Again, we're seeing this big gap between surgeries and evaluationuations in 2019, and that really started to close up over time as we move towards 2022. And we had just reached almost 200 surgeries in, I believe, 2023.

So we were really starting to increase our numbers at a much faster rate than we were previously. All right, so just to sort of summarize, again, I think using things like your electronic medical record system, whatever it may be, effectively, and having things like a triage system and telehealth can help increase

access and make your program more effective. Consider restructuring those follow up appointments and implementing some of the remote options that the manufacturers provide, like remote programming that's on the horizon and was actually here. Now, using some of these tools and then reducing that post op follow up series can really improve the amount of time you have available for your clinicsians to spend with new patients. And patients really appreciate these things.

I think we always get a little nervous that they'll feel like we're providing poor care or not seeing them as often. But if you just provide the expectation from the beginning that this is the amount of time we will spend, a lot of them are actually happy to come back fewer times, especially in that first year where follow up is more heavy. So with that, I wanted to ask doctor strait and doctor sheet a question. I think both of you are in kind of relatively young practices, and so I wanted to ask if any of these clinicsal efficiency approaches seem like things that would be useful in your practices. Absolutely.

I love this data. I think it's really important for us to look at this. We're not all from big, huge cochlear implant programs. My program is only about three years old. But I think that that makes your data even more important for us to evaluationuate.

So, excuse me, most of the time, we are spending our time evaluationuating new patients because we don't have a huge group of older patients that we're maintaining. However, I think it's important to set these things into place early and like you said, setting those expectations early and often for what follow up looks like, who's responsible for what kinds of things as we move through over time, and helping our patients to feel like they're supported, but they can also help take care of their own needs, I think is really important and something our clinics has spent a lot of time doing. That's great. All right. That is everything I have for my section.

I was just going to add, I think here in Minnesota, our anticipation of remote programming used in the winter is kind of exciting. Like, I think that we are new in the program, but that patients are excited when

they see that that's a potential option. And like you said, less visits that they're more excited about. It can be really intimidating if you hand them the list of expected visits, and it's several, when they see it's fewer, and that that remote programming might be an option that's exciting for them. When I think about our bad weather days, or if patients are feeling ill, or even those that don't want to drive in the dark, I think it's a really great opportunity for us to use.

Yeah, that's a great point. Thank you. I see a question that came through in the chat, and this one, I believe is for Molly. How are you scheduling enough admin time to have people to be able to cover the triage pool? That's a good question, and that's one that I don't probably have the best answer for.

Unfortunately, I didn't have extra admin time to do that, necessarily. So it was something that we just kind of did in the admin time that we have already available. But what we found is that over time, once we got the pool set up, once we had everybody effectively able to use something like that and had the buy in from the whole team, we were able to manage the referrals really quickly once we had a good process in place. So I think that initial ramp up period is the hardest. Good.

Thanks.

One of the things that I wanted to share is, like Molly said, AB has many resources to support you and your patients throughout their CI journey. Wherever you are in the world, if you're in the US, Brazil, the Netherlands, Israel, Australia, or anywhere in between, we are there to support your patients. Now, I do want to point out that some of the specific resources and team names may differ across different areas of the world, but wherever you are, there's one thing that doesn't change, and that is AB's commitment to supporting you as the hearing care professionals as well as candidates and ab recipients. So, doctor sheet, I wanted to ask you, how do your patients get connected with AB? Yeah.

So I would say the typical process is that during the evaluationuation, if they're deem to be a potential candidate, I start by giving them the candidate guidebook from advanced Bionics, as well as the contact information for our cochlear implant consumer specialists. I think the book does a fabulous job of educating people about hearing loss in general. How a CI works, as well as providing them contact information that they might want down the road for things like the insurance prior AutH team or customer service, or even getting them in touch with cochlear implant mentor. I think one of my favorite features is the little QR codes throughout. And I think it's so much information at that first meeting that they can really take that book home and dive deeper and really involve family members that maybe weren't in person for that evaluationuation.

And I also think it helps establish right away that advanced Bionics is a contact point and a resource for them, not just our clinics or their individual audiologist. Our particular guidebook actually have the contact information for our specialist in them, which is awesome. But if that's not available, I would really recommend putting the contact information for that support specialist in the patient's phone. Obviously, if they agree, and I encourage every patient, no matter how hesitant or how excited they are about the implant, to meet with them, because I just think that sets the patient up for confidence in the company, and it brings awareness to the fact that they have an entire team between us and our clinics, as well as advanced bionics. Thank you.

And I like how you mentioned that a couple of options already. You can simply tell the patient about the contact person in their region. You can add their information to the materials that they're receiving. You can put their contact person's name and number in there, in the candidate's phone. And then I also wanted to mention that in some cases, hearing care professionals will ask the recipient for permission, or the candidate for permission to share the candidates information with the consumer support staff.

And then that also helps reduce the amount of times that maybe a patient forget or starts making connections in other ways and doesn't start communicating with the manufacturer like AB from the beginning, and then set them up to have not only their clinics as their support team, but also advanced bionics as well. Absolutely.

So I have another question for you. Doctor sheet, CI candidates and their family members have many, many questions. How do Ab staff support you and your patients during the candidacy process? Yeah, I think having them involved from the start, I think one of the biggest things that we use them for is to help answer our patients and their families questions about the order forms. They really have the time to walk them through the many accessory options.

They explain the point system, and they really make sure that the patient is comfortable with what they're choosing and what they want to order. And I also think that helps at activation time. They're already familiar with what might be in that backpack because they went through it in detail and know what to expect of what they wanted to order the vast majority of time. I would say the patients that have had that meeting with the support staff were able to eliminate any appointments between our evaluationuation and the activation, which obviously is huge for our clinics time. And then in that interim period between device selection and activation, they really have the time to answer patients questions that may come up along the way of what to expect or what they need to do or prepare or download the app, things like that.

Great. Thank you. So you've mentioned a number of different ways in which the Ab staff can support the CI candidates. What would you say is the greatest benefit of having your patients engage with AB during that candidacy process? I think the greatest benefit is probably that it just creates that relationship from the very beginning with advanced bionics, and it helps them feel like they're part of a larger community.

I'd say it also sets them up to look for advanced bionics to help in the future with things like troubleshooting equipment or equipment issues, the battery replacements down the road, or other needs in the future. They feel much more comfortable going to them directly instead of coming to us first. Overall, I would say the support staff team just really takes a lot off of my plate and allows for instant patient confidence in not only just our clinics, but in the product that they're choosing as well with advanced bionics. Great. Thank you.

And before I wrap up with one final question for each of our presenters, and also based on time, I think we will be able to answer a question or two that has come in the chat. But I do want to have all of you on the call to think about what tasks you might like advanced bionic staff to take off your plate or what, and think about what ways you are comfortable leaning on your local AB team. And also think about who you'll reach out to for that support. If you'd like to discuss ideas that the regional team members that you already know can definitely chat with you and help identify ways in which they can provide support. But if you're unsure of who your regional contact is, please email education and trainingvancebionics.com, which we'll also put in the chat.

And that way, if you don't already know who to contact, we'll work with you to get you in touch with your regional team.

All right, so here's the question I'd like to ask each of you, and then we'll address maybe one or two attendee questions. So will each of you share one action that clinicss can take to be more efficient and better serve their patients? So doctor strait, will you start? Well, I can tell you about something that our clinics has done has been really effective for us. We started a little over a year ago instituting a group device counsel appointment.

We saw we were spending a lot of time with our patients selecting devices, and it was time, some of a large chunk was not even billable. And then even just doing it one on one with every patient takes a lot

of time out of our, our clinics schedules. So we have once a month we have a group device counsel appointment and we invite about a half a dozen patients to come in. These are adult focused. We have had a couple older kids that have participated in the group at device council as well, but mostly adults.

So we invite them each to bring one person with them. And so we usually have about a dozen people in the room, about half a dozen patients and a half a dozen people with them. And we, one of our audiologists can then spend a half hour, or, excuse me, an hour going through the main similarities and differences in the devices that are out there in the manufacturers. And then we can also connect them directly with their manufacturer support staff. So at the end of that appointment, once that patient has selected which device they would like, we will take those next steps and make sure they're connected directly with a support person from that manufacturer company.

It has saved us so many clinicsal hours. Instead of spending 60 to 90 minutes with each patient, we're spending that 60 to 90 minutes with a half a dozen patients and just being able to use that extra clinics time with other patients who need to be seen. Great. What about you doctor sheets? I think just to reiterate what I said earlier, utilize that support staff to take those non billable items off of you.

Have them go through order form options, discussing accessories. They can set up advanced bionic success appointments for after activation. So if the patient is already set up with that, they can talk about accessories, setting up Bluetooth, and really involving family members along with the patient as well. I love that you mentioned setting up Bluetooth. As we've done trainings across the country and across the world, I've had numerous audiologists mentioned that they feel like they're suddenly the Apple genius bar.

But there's no reason for you all to have to be the Apple genius bar. Let Ab help you with that. And Doctor Sunil, do you have anything to add to. Sure. I think I would say before you and your clinics jump into making changes in clinicsal efficiency, really try to take some of these steps to better understand

what the problem is and what the cause of the problem might be.

I think we always want to jump to the most obvious solution, which sometimes are things like hire more people or, you know, that's probably the big one. But I think if you can do something like a root cause analysis or look into more formal approaches to continuous improvement in clinicsal efficiency, that can save you time in the long run if you're making changes, that might not actually be the solution to your problem. Thank you. You all have really great and very applicable answers to that question, so thank you. I do have a question from a learner that I'd like to ask, but before I ask it, I want to go ahead and pull up this survey that we can leave up here while we're answering this question.

So I would like to ask all of you on today's call to please either use the QR code on the screen or the email address you see or the link that we will send out in the chat so that you can answer a short survey. There are only two required questions, so it should not take you even a full minute to answer it. And we really appreciate your feedback. So the question that I would like to address is one about meeting with the CI surgeon. Are patients meeting with the CI surgeon immediately after the CI evaluationuation, and where is that visit in the process?

And I believe that would be directed to you, Molly, because of all the details that you showed about your process. But anyone's welcome to chime in, too, after Molly has a chance to answer. Sure. So when I was at University of Miami, they would actually meet with the surgeon first, and they would place the referral for the CI evaluationuation. They would be obtaining things like imaging or vestibular testing as we went through that process of the telehealth and the evaluationuation.

And then the next time they saw the surgeon would be for a preoperative visit, and that would be just to get their medical clearance and make sure everything, you know, vaccination wise was ready for the surgery. So it would happen sometime right before their surgery was scheduled.

Ours takes place a different day after the evaluationuation. Then we help them set up that appointment with the surgeon.

And ours often, not always, takes place, actually the same days, just following our cochlear implant evaluationuation. So when possible, which isn't always possible, but we like to be able to do the CI evaluationuation and then send them right over to that surgeon that same day, because we know everything's really fresh in their mind, and it's a really good opportunity for them to be ready to kind of make a decision and make some progress. Thank you each for answering that question. It's very interesting to see some of the things that you've mentioned throughout today's webinar that you do essentially the same and some of the things that differ. We are at the top of the hour, actually a little 1 minute past, but I do want to take a moment to mention that we have another webinar next Thursday, September 19.

The next topic will focus on the next step in the CI surgery and activation, and we'll have guest presenters Doctor Michael Harris, Doctor Scott Brown, and Doctor Christina Brimell. So in this webinar series so far, we've discussed how to get the right patients into your clinics and how to prove the clinicsal efficiency during the candidacy and evaluationuation process. Next week, we'll move to the next stage in the process, which is surgery and activation, and we'll share the registration link in the chat for you. And one other learning opportunity that I want to make sure I mention is that if you are interested in learning more about clinicsal cochlear implants, including the opportunity to learn more about clinicsal efficiencies, check out the Institute for cochlear implant training, which many of you have probably heard of referred to ICIT. And in this webinar we spoke about it as well.

And you can visit their website to learn more about the courses that they offer. And we'll put the link for that in the chat as well. So thank you to all of you who took time out of your busy clinics schedules to join today. And a special thank you to Doctor email, doctor sheet, and Doctor Schrader strait. Sorry,

Doctor Schrader, thank you so much for taking the time to prepare this excellent information and to share it with all of us.

Have a great day, everybody.