Components of Adult Auditory Rehabilitation Assessment and Treatment

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Presenter: Christin Ray, PhD, CCC-SLP; Erin Stefancin, MA, CCC-SLP; Kara Vasil, AuD, CCC-A

- [Jerry] My name is Jerry Cirino, I'm with Advanced Bionics. I am the Regional Manager and I live in the suburb of Cleveland, Ohio. Thank you all so much for joining us. This is the advanced Bionics in Ohio State University Cochlear Implant team. Our third webinar in a series called "Interprofessional Auditory Rehabilitation: Meeting the Needs of Adults with Cochlear Implants." If you happen to miss the first two, you can catch those online at AudiologyOnline and register and watch webinars one and two. Just the...excuse me, before we get started, just some housekeeping. If you do have some technical issues here is a number, if you wanna jot it down or a website that you can go to really quickly, if there are any issues that you have, hopefully you don't. Just a disclaimer that any of the opinions of non-AB employees are their own and those of their own company. And of course, as was mentioned, this webinar is being recorded for you. So the chat section on the far left is, as was mentioned, is a way you can put in your questions. So please feel free to do that. We will be monitoring them and then ideally bringing up the questions for the presenters at the very end. So don't worry we will get to ya. So I'd like to welcome Dr. Kara Vasil Erin Stefancin Taylor and Dr. Christin Ray, who will be discussing Components of Adult Aural Rehabilitation, Assessments and Treatment. This webinar is the third in a four part learning series brought to you by Advanced Bionics and the Ohio State University team. Very quickly, Kara Vasil is a Research and Clinical Audiologists at the Ohio State University Wexner Medical Center. She completed her undergraduate degree in Speech and Hearing Science from the Ohio State University in 2012 and her Doctoral Degree in Audiology from the Northeast Ohio Audiology Consortium in 2016. Her clinical and research interests include cochlear implant, evaluation, programming and adult aural rehab. Erin Stefancin Taylor is currently a Speech Language Pathologist at Nationwide Children's Hospital and the Ohio State University working with pediatric and adult CI patient populations. Erin received her undergraduate and graduate degrees from the Ohio State University Rehabilitation and Auditory-Verbal Therapy. And last but of course not least is Christin

Ray, is an Assistant Professor and Speech Language Pathologists in the department of Otolaryngology-Head and Neck Surgery at the Ohio State University. She earned her Master's and PhD degrees in Speech and Hearing Science from the Ohio State University and she currently engages in Clinical Practice and Research with a particular interest in optimizing outcomes of adults with cochlear implants.

- All right, thank you for the introduction Jerry and thank you all for joining us today. Like he said, this is the third webinar in our series, titled "Components of Adult Aural Rehabilitation: Assessment and Treatment." You can access our previous two webinars; "the need for AR and its models and feasibility." And they're both available and in recorded format on AudiologyOnline and speechpathology.com, So we hope that you'll tune in. In today's presentation, we'll discuss some of our main outcomes of interest when providing clinical care to adults with CI, some of the particular tools we use in our assessment, how we use these assessments to help design a comprehensive treatment plan, and of course the evidence and the theories that drive our AR treatment. So during this presentation we hope that attendees will be able to identify some key outcomes to collect that may be outside of our usual battery to design a treatment plan. Describe some way to targeting both top down and bottom up skills in auditory training and discuss how to effectively scaffold learning during AR. So it's time for some audience participation, just like our previous two webinars. We know that AR happens in some form for all of our CI patients but really varies greatly and how we define outcomes can be just as variable. So please type in the chat box how you define success for your patients, is it their device satisfaction, Quality of Life, particular outcome measure, questionnaire on speech recognition, testing alone. And let's see if anyone has any input on that. So now that this graphic on the next page here has been shown in our previous couple of webinars, and we keep coming back to it for good reason. Thanks for the responses so far. I see speech recognition, testing, patient satisfaction, and generally how well they feel they can hear and those are great responses. This graphic was presented in our previous webinars, like I said, and we

presented it at a luncheon where we hosted our past CI research participants. And we asked how they define success with their CI. This was all pre-COVID and these are all the responses that we got. So they texted their responses, the larger words are the most common answers. So if we're defining successes, either communication skills with family and our patients are defining success, as you see here, their environment, being able to communicate, talk on the phone, talk to their grandchildren, feel accepted, how are we measuring that exactly and how do we provide treatment planning that focuses more than just on the percent correct on words and sentence recognition? And that's really what we're constantly working on and what we plan to share with you today. So let's look at some of our clinical outcomes of interest. As an audiologist this is a big one for me. So despite what the patient reported issues are, do they meet candidacy requirements for CI in the sound booth? So we're looking mainly at those unaided audiometric thresholds then a severe to profound range in both ears, looking at their performance on sentence recognition materials like AzBio sentences or HINT. Many of us also test speech recognition in noise in multitalker babble either to make someone a candidate, if they don't meet candidacy requirements in quiet, or just to have a better idea of how noise is affecting their listening environment. And that's a really good pre and post measure as well. But after the patient gets the implant, we're looking at aided thresholds in the sound booth to be sure that their range of audibility through the CIA is good and also sentence and word recognition with or without noise. Again, we can compare this to their pre-op performance and hopefully see a significant improvement there. But a lot of us who they're working with CI we see patients who either thresholds and sentence recognition performance are objectively really great yet they're unhappy with their device and vice versa. Many of us have seen someone who performs poorly in the booth and they're really happy with their performance and their progress outside of the sound booth and in their everyday life. So we really know that there's more to just success than the scores alone. In the last webinar we talked a little bit about the ICF framework and about function, activity and participation. So you'll see biomedical model on the left hand side and the biopsychosocial model on the right

hand side. The biomedical model here, it's really focused on function. So the chief complaint of hearing loss while the biopsychosocial model steps back and looks at the overall communication impairment. Of course we're still treating the function, but we need to also look at how the activity and the participation in daily life are being affected. If we can assess how this is occurring in conjunction with some other cognitive communication skills. So we know that demographic factors like age, duration of deafness can affect our outcomes. And certainly ideological factors can as well, their unaided and aided performance. But we know that these two factors alone account for a smaller chunk of the variability among CI outcome than you might think. So what else is contributing? From some of our assessments, which Erin will go into in a bit more detail further along in the presentation, we can see a range of deficits in older adults. Of course speech recognition is there listed at the top, but also all of these other factors like psychosocial function, motivation, device knowledge, self-efficacy, quality of life. We know that older adults in general, may show decreased communication confidence, especially in a complex listening environment, like where there's background noise or multiple talkers or a reverberant room. So based on the deficits that we're seeing, we can look at assessing all of these constructs that we've listed and more within both audiological assessment and SLP assessment per CI candidate or even an experienced CI user. For all adults there are considerations for neurocognitive abilities that are impacted negatively by aging listed in the left column like processing speed, attention, working in explicit memory, verbal fluency, and some executive function and visuospatial construction, and you'll see some studies cited here that have shown this. These constructs are expected to be impacted by aging, but there are also some in the right hand column that we expect to remain intact throughout the aging process. So some of these that are more resilient to aging includes simple auditory attention, implicit memory, visuospatial abilities, overall language and vocabulary skills and executive function of understanding general topics and the similarities between them. And there may be an effective hearing loss that is further degrading these abilities. So considering the deficits that we see relating to

hearing loss, neurocognitive changes and including deficits and things like communication, confidence, quality of life, self efficacy, these are really important to consider as a whole when regarding how they'll impact the person's ability to understand speech and participate in their regular communication environment, especially when they're listening with a degraded signal. And that can be with hearing aids when they are a CI candidate or with a CI and we know that there's some degree of degradation there as well. So with all of these considerations, it's really important to consider the degree of impairment that a person is presenting with, that can help determine perceptual training components as well as dosage or the intensity and the frequency of the training. So these are really outside of the usual audiological battery that I'm used to when seeing patients. So this chart here on the next slide helps to kind of lay it all out for us. So we can break our assessment measures down into four categories here in the four columns. So non-auditory cognitive linguistic measures, and patient reported measures. And these are mainly gathered from questionnaires and device and technology related skills. And lastly, some auditory measures. So as an audiologist, my focus has really been on that fourth and final column, but by including an SLP in our process, we can get a better look at widening that scope of it and seeing a fuller picture of how our patients are doing both pre and post-operatively and where we're starting from. And I say pre-operatively because these assessments take place before CI. So we're starting the process and all of these discussions before they're ever implanted. This really ingrains in the patient that this CI journey is not limited to the ears, that we do care about other factors that are contributing and wants to target them so that we can develop an effective treatment plan from the start. So that also helps I think with establishing expectations from the start, understanding that there will be some work to be done and some progress to be made, and then other factors that are contributing. So this is really what our timeline looks like here. So pre-operatively at their first visit, they're seeing the audiologist for their formal CI evaluation and the surgeon for their medical exam including imaging as needed. Then we're scheduling the patient to come in for a second visit. This is where we do the device selection with

the audiologist and where they also see the SLP to do that pre-op evaluation? And after the patient is activated, of course they have their regular appointment towards CI programming or mapping and testing and we try to coordinate our SLP appointments with that same timeline, as you can see. So they're kind of following them over time, monitoring progress, looking at not only audiology testing, like the speech recognition in the sound booth, but also the testing and the perceptual training that they're doing with the patient. And this is sort of logistical but I think worth mentioning, we really do try and coordinate these appointments so that they are on the same day, in the same area, especially for our patients who are driving a long distance to see us. So we can also start AR with a more experienced CI user, even if we didn't begin with them pre-operatively and they're just struggling in a particular area or who was never really assessed on these terms; good performers, poor performers, we think could all benefit from a more comprehensive view of their communication skills. So next I will hand it over to Erin Stefancin Taylor, she's a great SLP on our team and she'll talk a little bit more about the specific tool used in evaluating and treating

- We are going to be looking at the clinical assessment tool that can be utilized as a part of this comprehensive communication assessment that Kara was just saying. So we're gonna just ask a pretty simple question and Kara had posed this previously. We know what outcomes that we want and which is something that you looked at with that graphic that she had displayed. So now what are we gonna do? Next we're gonna be looking at the how, how we can assess from those specific outcomes. And also we're gonna be looking at what tools are available for both formal assessments and patient reported outcome measures. So for our comprehensive communication assessment for CI users, we will look at the theoretical framework of a functional outcome assessment, which uses a variety of standardized outcome assessment, questionnaires and tools, all of which are key components to evidence based practice. So using all of these tools can enhance clinical practice by identifying body function and structure limitation, formulating evaluation, diagnosis, and prognosis of a patient,

forming a plan of care that's sustained in evaluating the progress of the patient as well as validating the benefits of treatment, improving communication between all parties involved, as well as improving documentation of care. So we can take this framework to approach a comprehensive communication assessment for AR. The ICF framework with Kara previously discussed in our webinar and also was reviewed in webinar number two, it looks at the impact of a health condition on multiple facets of a person's life. So this table shown here, it breaks down the ICF categories of body function on the left and body structure, as well as activity and participation on the right. In addition, it has specific activities within each category so sound discrimination, cognitive function. And then it also has what professional could be responsible for administering that. So as an example, we could look at the activity of listening under the ICF category of activity and participation within the ICF framework. And it lists some potential assessments that can be administered by an audiologist, for example, AzBio and HINT sentence lists, as well as specific measures that could be administered by an SLP or audiologist, including listening comprehension measures such as the Harvard 12 Sentences or patient reported measures such as the Cochlear Implant Quality Of Life profile, the CIQOL, and the Listening Self Efficacy Questionnaire, the LSEQ. These are assessments that we're gonna go into a little bit further. So this table can be used to look at examples of measures that an AR provider could access for their own clinical assessment protocol. This resource will be included in the AR toolkit that our team will be diving into a little bit further in our next webinar, which will be taking place on Wednesday, September 23rd. So next I will be discussing some of those specific formal assessments and patient reported measures that the AR clinic at Ohio State uses in our evaluation, as well as some of the reasoning behind those measures that we had selected. So as stated previously, we're gonna dive a little deeper into some of these tools that we use within our comprehensive communication assessments. We're gonna be starting with looking at cognitive linguistic measures. So this table has a quick breakdown of the name of the measure, time to administer, tasks assessed, how they can be accessed. So whether they're free or purchased as well as consideration

for an audibility component. So it's noted that the majority of these assessments do have an audibility component so they're administered by having a patient listen to instruction, but we will go into further detail regarding potential alternative formats for those measures, and how we can address the consideration for audibility before assessing a patient that has hearing loss. So this specific measures if you can know, the test of word reading efficiency, the second edition, which assesses lexical and phonological access and fluency. So this is one of the assessments looked at in a table that has a no for audibility as it's a visual measure does not rely on audibility to complete. Additionally, this has been shown to relate to CI outcome. So it's important to note that there are some measures that already exist that don't require modification or require that consideration that you have to reinvent the wheel for some of these. So we're gonna go into specifics on the ones in considerations that we'll have for the first three listed in the table. So I pose another question to you, how do you know if you're assessing audibility or cognitive-linguistic skills? So how do you part out cognition versus audibility? It's important to look and consider different portions of an assessment that are audibility focused, and then finding ways to provide visuals essentially using a PowerPoint or written words to supplement aural instruction. So this way we can look at cognition without concern through audibility effects. In the coming slides we're gonna be looking at modifications for specific screeners and formal assessments that already exist. So the Montreal Cognitive Assessment or MoCA is a cognitive screener that takes about 10 minutes to administer for ages 55 to 85 and it's available in about 46 languages and dialects. The HI-MoCA is an alternative format of this cognitive screener in which the repeating sentences and recall tasks, which are circled here, are administered without verbal instructions, but visually using a PowerPoint. And doing this visual format it removes the confounding effect of audibility. So the utilization of cognitive screeners has been discussed frequently both in the literature and clinical forum, but it's important to note that this tool is a screening tool to determine if further assessment is needed, it's not used to diagnose. Additionally, it's not extremely clear how to best use it with the population of people

with hearing loss, but it does give some preliminary information on a patient's cognitive function. And it also could be used in consideration for whether or not to include neuropsych on their team. So the California Verbal Learning Test or CVLT-II is a measure that analyzes the organizational strategy and studies repetition and learning effects for verbal learning and memory. This assessment takes approximately 60 minutes to administer, and the CVLT is a sensitive measure of cognition, and it has been related to speech recognition. Heydabrand et al utilized the CVLT and found that the measure of verbal learning was able to predict 42% of variants in improvements spoken word recognition. So the validity and feasibility of the CVLT-II was established by Pisoni et al in 2018, the visual version of the CVLT. This computer controlled visual version eliminates any audibility effects that may be present when the stimuli is presented with spoken language. Additionally, measures of the CVLT, including the list learning task, can reveal how a patient can learn over time with this ability pre-op explaining variants, post-op, speech recognition So the tasks that are assessed can uncover a patient's ability to adapt to a new signal, as well as their general learning abilities. The Repeatable Battery for the Assessment of Neuropsychological, the updated version, is available in over 20 languages for ages 12 to 89, and they take approximately 30 minutes to administer. It's also important to note that this assessment does have that list learning task that I described previously from the CVLT. the RBANS-H is a visual version of this assessment in which a PowerPoint presentation is utilized with the assessment and aural instructions are supported with written explanations. Some of the sub tests on the RBANS-H that use the visual instruction include the list learning task where a repeated list of words is presented and the patient is asked to repeat them back, story memory, where a story is presented multiple times and the patient is asked to repeat back as much of the story as they can remember. Digit span where the patient has presented a list of digits of increasing length, and then asked to repeat them back and list recognition where a patient is asked if they remember is a specific word on the original list of words in a yes or no format after a set amount of time has passed. So we will now be looking at the

teaching reported measures that can be utilized within a comprehensive communication assessment. This table has a breakdown of the targeted skills and tasks, it is assessing and including Quality of Life, Device, Skills & Management, Communication Ability, Self-Efficacy, and Social Participation. It also has list the name of the measure, a description of it, where it can be accessed in consideration for an audibility component. It is noted that for all of these patient reported measures, audibility does not need to be considered as it is completed on paper by the patient independently. So we will go into further detail regarding some of these measures on the table. Also it is important to note that these are just some of the measures that our clinic uses and the theoretical framework for each of these will be discussed. This does not necessarily mean that all of these assessments should and need to be included within a comprehensive communication assessment. We just present our measures and reasoning for each of them as an example of the thought process of our team, to allow you to ask yourself similar questions in the development of an AR protocol. So the Cochlear Implant Quality of Life profile questionnaire is a patient recorded outcome measure that uses a 5-point Likert scale with higher scores indicating greater Quality of Life in the domains of, and it has the domain tools on the right hand side. Communication which is receptive and expressive communication ability in different situations. Emotional, the impact of hearing ability on emotional wellbeing, entertainment, which is enjoyment and clarity of things like TV, radio and music. Environmental, including the ability to distinguish and localize environmental sound. Listening effort, the degree of effort and resulting T associated with listening . And social, the ability to interact in groups and to attend and enjoy social function, which may include their social fear of a patient. The patient reported measure is free to request using the link that's listed at the bottom of this slide. The CIQOL can measure progress of a patient pre and post CI as well support outcomes of AR as a whole. So kind of supporting what we're doing. Additionally, McRackan 2019 noted, absent to low correlation of the CIQOL outcomes and speech recognition, he noted that this support that people listening functionally in their life incorporate higher level constructs

than speech recognition tasks, meaning identify all by themselves. So this tool used in conjunction with speech recognition can provide a broader picture of a patient's current functioning level. The CIQOL global is a brief version of this questionnaire. So questions are seen listed on the right side. The short screener has the potential to be used as a screener for AR. With the CIQOL global score, the average of a CI user is 36. So a total of less than or equal to 36 could be considered a low average based on the scores of experienced CI users. Our clinic uses this global version for a quick screener and has the wording listed in this red square that describes the score less than 36. We could consider AR as a potential option for patients to improve speech understanding and communication with their hearing technology. So the Cochlear Implant Management Skills, the CIMS, is a self administered measure that assesses CI device skills and management. Some benefits of the CIMS is that it allows the reevaluation of skills at regular intervals without taking up a significant portion of clinical time. So it can be filled out before a patient enters the room, and that would save time by targeting maybe only the specific skills that the patient is showing areas of need. For example, if the patient completed as prior to an appointment and listed that they were competent in all areas of the CI skills and management with the exception of how to change their program, that specific skill could be targeted with device instruction. This can also be used as a checklist for training to ensure that each of the skills has been covered and reviewed. The Personal Assessment of Communication Abilities, the PACA measure, self perceived communication abilities in real world situations interactions. This tool is free to access online, using a link listed on the slide. Some AR tools such as the COSI pictured in the bottom right hand corner can be more open ended in nature so maybe asking overall goals, which can make it difficult for clients to articulate what their own goals are without having guidance from their clinician. The pathway is more focused in nature. So we can teach concepts that are easier to understand, and it's comprehensive and looking at ability in a variety of situation. Although it's a personal assessment, so it allows clients to take control and ownership of different situations where they feel they need more support in. From taking ownership this measure can

lead to a discussion in goal setting based on the areas where the client finds they have the most difficulty, as well as being able to order situations in order of importance, in the areas where they would like to see the most improvement. And in the table we can use as a patient, maybe recording very much difficulty in listening in restaurants and in conversations in groups. But they need prioritize conversation in group as they don't spend a lot of time in restaurants and they spend more time with their children and grandchildren. With the goal selected that can be using the PACA, it's often be used in conjunction with the COSI to look at improvement in each of these specific areas. Additionally, it can be completed by a patient and significant other separately to look at whether or not their scores are similar or if they report different perception. For example, a patient may report slight difficulty watching TV, but their spouse may indicate very much difficulty. With this discrepancy it confer to conversation revealing maybe that the TV is turned up to it's louder setting and the patient is able to understand it but it's too loud and frustrating for their significant other. The PROMIS Social Isolation Questionnaire measures social connectedness and participation. Social connectedness informs how people experience listening in their everyday situation. When we look at a patient's connectedness, we look at their social world and where they feel they belong. A focus group in Hughes et al in 2018 revealed that participants with severe to profound sensory neural hearing loss presented with increased social isolation and overall decreased participation in life. When talking about AR with patients, goal setting and realistic outcomes, it's important to consider social isolation effects. Participants in the study reported that both social isolation and high listening effort negatively impacted their overall wellbeing as well as Quality of Life. The assessment of social isolation as a part of AR with kind of working on focusing on limiting social isolation and increasing participation in a patient's life, merits opportunities for more listening friendly encounters. For example, for a patient that is more isolated and maybe lives in an assisted living facility, we could use this as a discussion point for how they can increase their opportunities for listening. Like going to social events within the facility, or setting up weekly calls with their family.

Additionally, this knowledge can inform more realistic goal setting. For example, when we send a patient home and we are working on some auditory training tasks, it's important to have knowledge of their social group, and maybe how often they're in contact with others. As that can inform, if we choose stimuli that are presenting with live weight, maybe using a grandchild or a spouse or using computer based activities, that they have less family and friends, interacting with family and friends on a daily basis, such as AB sound success as an auditory training program for them. We know that older adults with hearing loss have difficulty in understanding conversation in daily situations, which we can measure through PACA. Self efficacy is another concept that we can look at in addition to communication ability to further support our patients. Self-efficacy is different than self-esteem or self-confidence. It describes actions that need to be planned to execute a specific behavior. So higher self-efficacy for behavior means that more effort is given to achieve that behavior. Numerous studies looking at domain specific self-efficacy, playing a role in the management of chronic health conditions demonstrated that rehab approaches that incorporate self-efficacy have been found to produce better outcomes for learning new skills. Additionally in Jennings in 2005, it evaluated a group AR program that was working on improving communication strategy. Results demonstrated that self-efficacy for situational management improved and higher levels of self-advocacy were also related to reports of daily use. The general self-efficacy scale, which is on the left, looks at overall self efficacy with questions such as I can always manage to solve difficult problems if I try hard enough and I'm confident that I could deal efficiently with unexpected events. General self-efficacy gives us an idea of a patient's likeliness to advocate for themselves and to advocate for ideal listening situations. So Listening Self-Efficacy Questionnaire, the LSEQ on the right, measures an individual's confidence in a variety of listening situations. So for quiet listening and maybe looking at listening in one on one in quiet such as I can understand one on one conversations in quiet or directed listening, it would be looking at focusing on listening to one speech sound source, a question like I can understand the TV. And then complex listening is listening in

situations with challenges such as noise or distance. The question could be, I can understand one on one conversation when a person's speaking from another part of the house. So overall it's important to note that for a patient centered, comprehensive communication assessment, we need to consider both how we define success and the outcome measures that we use. Regardless of what cognitive linguistic assessment or patient reported measures your clinic uses, the main goal is to match how we define success with the CI and the outcomes we use. We should care the most about where those two concepts overlap in our practice best meet our patients' needs. Next we'll be exploring how we can take information from the measures mentioned previously to support our clinical decision making and patient centered treatment planning. So this resource listed here provides a blank template for guiding you through a comprehensive communication assessment for AR. This PDF will be included in the AR toolkit that our team will go into further detail during our final webinar on Wednesday, September 23rd, We will briefly review this template, looking at two specific skills and how they can be assessed and how they can guide treatment planning. So for our example, we're gonna be looking at listening comprehension listed on the left hand side and communication ability listed on the right hand side. For test material, we could utilize the Harvard 12 Sentences for listening comprehension and the PACA and the CIQOL to look at communication ability. If a patient presented with low score in each of these areas, this can inform what auditory training tasks we target as well as how we target them. For example, if a patient presents with core listening, comprehension and notes quite a lot of difficulty in listening in restaurants on the PACA, we could potentially target a goal such as patient will answer questions with 80% accuracy in the AV condition without background noise. on the Harvard 12 Sentences in the AV condition, we could look and see that our patients was about 50% accuracy when there was background noise. That's showing us that there's still learning to be had in this area. Well restaurants do contain a lot of background noise and while the patient's goal is eventually to work on listening and noise, we may start with our quiet condition based off of their baseline performance, which is why our goal

was in AV conditioning quiet. Additionally, we can consider whether or not this patient may benefit from top down training, looking at the big picture, like attending to a contextual cue when listening to speech in noise or bottom of training focusing on training specifically analyzing the acoustic parts of speech. Like distinguishing phonemes at different places for voicing in the auditory-only condition within a listening practice. These are also considerations that we could make. A Patient-Centered Approach is utilized in goal setting to encourage patients to take ownership of their progress in their training. We looked at the PACA with previously discussed in regards to encouraging patients to be strong participants in their rehab plan. We can continue to foster this ownership through promoting self management for our patients. This can be done through increasing patient knowledge, accountability for following treatment recommendation and overall social support. More topics for promoting self-management can be found on the right hand side of the slide. The example of this concept includes ensuring that a patient feels comfortable and independent-intact prior to assigning them for home programming. We have patients demonstrate independence with completing a task such as navigating programs with their CI before sending them with homework that may included changing programs. Overall our goal is to encourage self-management for our patients. We use the time in our clinic to update and modify goals as well as to ensure that a patient feels comfortable with task before we send them home. We may also modify our home programming based off of their performance in the clinic. For example we need add in written instructions for a patient that is practicing using their mini mic to supplement their home programming. So what players are involved in active goal setting for our patients. Goal setting includes the patient as the main stakeholder, but we also meet a new family and friends and other professionals within the multidisciplinary CIT, including the SLP, audiologist and surgeon in goal setting. Some questions that we may ask in creating a goal could include; where does the patient wanna communicate? Maybe with the whole family around a table or one on one with their spouse. Who do they wanna communicate with? Are they most concerned about familiar voices, feeling members and friends or

unfamiliar? Potentially a surgeon or ENT that they may not see very often. How are they reporting to communicate with other clinicians? Also how much time are they spending in speech and how much time are they spending practicing listening to others, essentially their communication environment? It's important to talk about where patients wanna communicate and what in condition to drive our treatment focus and to appropriately select auditory training materials that fit our patients' needs. We will return to our previous example with a patient presenting with deficit and listening comprehension and communication ability. So in goal setting and treatment planning, would we be specifically targeting how to listen to paragraphs and answer related questions? Not completely, we are however, providing support and training for listening in complex environments, for example with noise, and using functional activities that are relevant to our patient's life. That may be playing "I spy" with their grandkids in noise, or having a spouse read off clues for a crossword puzzle to a patient. Our last thing that we will be looking at is the evidence in theory that drive our AR treatment practice. So the Zone of Proximal Development is defined as the distance between the actual developmental level, which is determine by independent problem solving and the level of potential development for a patient. A clinician can provide support that can be adjusted or faded, to maintain learning within that Zone of Proximal Development. The use of scaffolding in conjunction with the Zone of Proximal Development allows for learning to occur. Teaching a skill using this concept focuses on increasing motivation and improving performance, with less of a focus on weaknesses. Therefore, this learning framework can lead to achievement in a skill that is beyond what the learner is capable of independently. It's important to find this sweet spot of learning in AR treatment. We want our patients to learn a new skill and we know from research and learning that there is this sweet spot of performance, that's not too easy, where a patient may have already mastered a skill and not too hard where learning may not be occurring because it's too difficult. We would estimate this to be approximately 60 to 80% accuracy for our patients. Additionally, knowing a patient's baseline skill level, using their performance on a comprehensive communication

assessment is beneficial in supporting a patient in their learning because we want to know where they are starting from and can use support to get them to where they want to go. The fundamental components of scaffolding include; establishing shared goals, understanding current levels or the baseline of skills, providing tailored assistance through scaffolding, maintaining pursuit of the goal, controlling for frustration and assisting in generalization of a skill. These fundamental components are found within the skillset of an SLP and can be used in AR treatment. The way we move a patient toward the targeted goal is through tailoring support through the Zone of Proximal Development, moving them all the way to the generalization of a skill. We're gonna use our previous example again, with the goal of listening and auditory-only condition with background noise. This wouldn't mean that we maybe start our training at that exact point. We might establish this goal, understand a patient's baseline level, which may require an Auditory Visual condition potentially in quiet, based off of their current performance level. But we would eventually move towards that goal, towards generalization. We may start out with Auditory Visual condition and quiet, we might add noise, we might take away the visual, but we would start to move them towards, through this Zone of Proximal Development, and move them towards generalization of the scale, eventually leading to that goal of auditory-only condition in background noise. A comprehensive communication assessment provides a rationale for how we choose to scaffold task, to be more difficult or less difficult. That definitely provides information on where someone's skills are like we stated before, their baseline. And from there we can shift support using the Zone of Proximal Development by making things harder, for example, when a patient improves in skill. Now let's talk more specifically regarding how those supports can be added or stated to make a task more or less difficult. We will be looking at that in a framework of style, content, talker and signal. To make style more difficult we can increase the rate of conversation. To make it less difficult we could slow down a speaker's rates. This could also be something that we discuss with the patient and work on them, requesting people to slow down their rates when family members are talking with them, if they're having difficulty

understanding. To make content more difficult, it could be novel conversation like a topic that they're unfamiliar with, or a book that they haven't read previously. And we can make it less difficult by disclosing the topic ahead of time, music theme, maybe vocabulary they're familiar with. For example, a patient who might be really into cars that could be some of the vocabulary that we're using in our training task. To make talker more difficult we could use someone with a less familiar accent. So in AB sound success, it has a variety of speakers. We can go through and find which speaker the patient perceives to have the least amount of familiarity with. So for example, maybe they're not really familiar with the New York accent that maybe have a faster rates. On the other end, the less difficult, we could preview into the speaker with maybe a more familiar accent. So the patient might be from the Midwest, that's where they have the most familiarity, and we could pick a speaker who's from the Midwest, maybe with a slower rate on sound accent. To make the signal more difficult, we could add in speech babble as background noise, which is a way that you can alter auditory training tasks on sound success. Additionally, to make it less difficult, we could make a noise that isn't in the background for background noise, maybe traffic noise could be used. So it was previously discussed rehab approaches that incorporate self-efficacy and safety compliance, pretty better outcome for our patients. This suggested listen hear come from "Hearing Care for Adults 2009," by Robert Sweetow. Compliance recommendations include providing clear and understandable information, simplifying instruction, using appointment reminders, determining attitudes and experiences and how that can affect a patient now in the current moment. Additionally, considerations such as doing the first session face to face with a patient. Overall, the goal for patient compliance is increased science and lead patients towards generalization of their skills requiring less support for their training from us. It's important to have check ins to alter their treatment plan, to update goals. But overall, we want our patients to be able to use their learning and support that we have given them to generalize them to their everyday listening environment. So now what do we do with all this information? We can take the theoretical basis of the biopsychosocial model of care and learning theory,

outcomes of interest in looking at what you consider makes the patient successful to CI, the best available research evidence to support these outcome, resources of clinical assessment tool such as formal assessments and patient reported, outcome measures, clinical expertise, including previous experience with patients and patient centered practice, including the consideration of a client's characteristics like age, gender, motivation, values and preferences. If you take all of this in selecting what is determined to be appropriate assessment materials for our patients, creating patient centered goals and informing AR treatments, the guiding towards clinical decision making for adult aural rehabilitation. These next two slides are our references. So thank you very much for joining our talk. Before taking any questions we wanted to invite you to continue this journey of exploring interprofessional AR with our next webinars series, which is taking place as I previously stated on Wednesday, September 23rd, where we will be discussing outcomes for adult AR, reviewing case studies and introducing our AR toolkit that was previously referenced in this webinar. So we really appreciate you coming to our talk and we would be happy to answer any questions that you have.

- [Jerry] So I don't see any questions in the Q&A unless others are if anyone has any question that they want to ask now, please do or type in the Q&A to read those and get some answers. Okay, I'm not seeing anything is anyone else who's a hosting... okay, here's a question, sorry, I'll read it. SLP billing question, you did two evals in less than six months. Do you bill these as communication eval and then use AR code per second one?

- Christin might be able to answer that a little bit better. She's got the billing knowledge.

- [Christin] Yeah, so we actually bill the Cog-Communication eval both times and we haven't had trouble with that. We just have to have an order basically for both of those, which in our system just kind of gets generated automatically once a patient, the CI

candidate, kind of all of their appointments and orders from the AR taken care for for us so we're lucky in that. But we haven't had any trouble billing and getting reimbursed for the Cog-Communication eval for both of those. Johnny says, do we use the MoCA most often the communication evaluation? We actually don't use the MoCA routinely, the communication evaluation, we use that RBANS-H. However, we will pull that out. One if time is an issue during that particular session and that's just kind of like a random thing that might happen it's not really part of the protocol, but the MoCA might give us a broad overview more quickly than RBANS during an assessment. If we spent a whole lot of time on counseling or talking about their goals then we're just not gonna get through the whole RBANS We might give the MoCA briefly and then that might guide the further need to continue on or have another assessment, a schedule. But it's a tool that we can use.

- [Jerry] I'm sorry, so there's a few more questions that should take us to the end. One question is have you used the SLP assessments through tele practice?

- So in our clinic we are still doing our first upgrading in person. We have trials in the assessment using telehealth, so the RBANS-H. I had emails, copies of the patient reported measures ahead of time to the patient, which proved to be very beneficial and needed to send me a picture back. But yes we have gone through our protocol using telehealth previously with having set everything to RBANS-H to have that PowerPoint and aural instructions supplemented. It's beneficial in making sure the signal is not great, like using their computer's audio, we always have the instructions visually as well. So we have trialed it but we aren't using it regularly.

- [Jerry] And another question, how long do you typically plan for each evaluation?

- Sorry, which question is it?

- [Jerry] It says how long do you typically plan for these evaluations?

- Each evaluation we have about two hours with the time blocked out with understanding that sometimes that takes more or less time, but within our schedule, I would say it typically takes an hour to two hours to complete.

- [Jerry] Okay, I think last question. What kind of terminology do you use in assessment statements to justify therapy if cognitive communication is grossly for

- [Christin] So yeah, one of the billing codes that we can use for everybody is symbolic dysfunctions. This is actually a code, an ICD code that we can use. And it's the one that Asher recommends that we use that's basically a symbolic dysfunction cover, I believe that's what it is. Now I also typically will bill a cognitive communication impairment. So if there are domain general cognition's on the RBANS-H let's say we find that there's a deficit on one of those sub tests and delayed memory and immediate memory in language, whatever it might be, that's easy. So this is a good question. We can use that cognitive communication code as long as we're justifying that they have a communication impairment. Usually we pick that up on listening comprehension. So I just make it a point to document, that they're unable to answer questions given in the auditory-only formats. So yes, it's probably their audibility that's driving that, but it's still affecting their ability to do that task.

- [Jerry] Okay, thank you and I lied there is one more question. And the question is what recommendations do you have for audiology teams that don't have a connection to their SLP teams to start an AR program?

- I think some of our measures especially that patient report aid tool can be really beneficial, like time saver aspect. So I have mentioned it with the CIMS being able to give it to a patient before they walk into your room and be able to see if there are any

deficits, essentially looking at things like the PACA looking at those different communication abilities in different environments or working self-efficacy questionnaire. Maybe starting there with something that you could get a patient ahead of time and look at quickly when they're in front of you. I know that billing is a big barrier and not being able to be to bill for time maybe spent on a patient completing that with you but I think that would be a really good place to start for some of those. Like we're supplementing, like we're stating in addition to a formal audiology investment for PCI.

- [Jerry] Okay Erin how would you--

- [Christin] Then the other thing is--

- [Jerry] relationship maybe?

- Christin were you saying something?

- [Christin] I think I cut Jerry off, I'm sorry. I was just gonna say that, it depends on the setting that you're in. So if you're an audiologist and you're in ENT setting, one thing to think about is, do you have SLPs in the clinic? Probably, did they do anything related to hearing loss? Probably not, however, there are probably adult focused SLPs if this is an otolaryngology clinic, that's not specific to children's hospital and maybe they do voice and swallowing. That's what I did before I fell into this. So just letting them know like, this is an area where you could expand your practice. You could expand your caseload and getting the department on board too. And even starting with the CI Surgeon. I know Aaron Moberly has spoken before about the importance of getting surgeons on board with this and getting their support and the departmental support for an SLP to be either adding this to their case load or finding an SLP who can do this. And the same thing in the community, if there are SLPs in the community and private practice,

they may now even be aware that this is something that they could provide. And yes they're gonna need some more education, they're gonna need to learn about cochlear implants about hearing loss with their general skillset. You know what Aaron talked about with scaffolding and the Zone of Proximal Development and kind of these core fundamental SLP skills. All SLPs have those so reaching out and finding SLPs in the community or even within your department or in a VA, that's another area where I know there are some VA Audiologists who are interested and are trying to get the existing SLPs onboard and excited about adding the patient population.

- [Jerry] Great, fantastic, well I'd like to thank Kara, Erin and Christin so much for being on this was very good and very informative. And for all the participants for taking the time out of your day to be here, if you have any questions, feel free to email, if any further questions, email the presenters, they have their emails on this last slide here for you all to see and also remember to visit AudiologyOnline, to register for the next report and final webinar in this series that will be happening on September 23rd. So thank you all very much. We appreciate it and have a wonderful day.