Custom Hearing Products: Crafting a Personalized Hearing Solution

Presenter: Michele Hurley, AuD, FAAA

Foreign.

And welcome to Crafting a Personalized Hearing Solution. I am your host for today's session, Dr. Michelle Hurley, senior Education and Training Audiologist with Starkey, and I'm really pleased to have the opportunity to meet with you today about a topic that I've always been very passionate about. But before we get started, let's talk about a couple of housekeeping notes.

If you do have any questions throughout the course of the session, you'll use the Q and A area. Simply type in your question and hit send and I will provide an answer to those at the end of today's session. If you're looking for the handout for our session today, you'll find a PDF handout for this presentation in your pending courses on Audiology Online or by clicking on the link in the chat within this classroom itself. If you are looking to earn a continuing education credit for today's session that is available with a paid Audiology Online unlimited CEU Access membership, after the completion of the course, you'll go to your pending courses and you'll be able to access that multiple choice exam through Audiology Online pending courses and you'll have seven days to complete that course. If you need any technical assistance throughout today's session, you can call audiology online at 753 21.

You may wish to jot that number down as we won't see that again throughout the session. You can also send an email to customer experienceontinued.com or simply use the Q and A window here in the room itself.

These are the risks and benefits associated with Audiology Online courses and you will have the ability to be able to review this at your leisure through the handout if you prefer.

We have three learning outcomes for our session today. At the end of this session my expectation would be that you'd be able to identify proper protocols to safely make quality impressions, to be able to identify ancillary custom products to offer patients, and identify the advances in custom hearing aid

technology.

Let's go ahead and get started now. I think the reality of today's world is that as hearing professionals we know that patients have a choice. Obviously that more traditional path has been to seek professional expertise for fitting of hearing instruments. But we know that with over the counter and direct to consumer that there is another pathway for individuals to seek better hearing. And I think we as the industry recognize that that medical model that has been the more traditional one is going to deliver the experience for that patient because the professional expertise of that hearing professional, you know, we know that hearing Aid consumers are, you know, wanting to understand what the best path is for them.

But, you know, when we think about, you know, the options that they have to examine, you know, how do they know which product to try? How do they know the best pathway for them to choose for themselves? So we're really going to take a look at some of these options and really where, you know, that professionally trained, you know, hearing expert is going to be the best solution for that patient. Especially when we think about where custom products fall into that sort of, you know, space.

So when we look at the options that are available in today's world, and we know that there are, you know, over the ear as well as custom products that are available, you know, obviously from the hearing professional, and there are over the count or over the ear and, you know, custom looking instruments that are available in that, you know, over the counter space as well. So if we just take a look at some examples of that, you know, how's a consumer who has a less trained eye than us going to be able to identify, you know, what is going to be, you know, something that would be fit by professional versus something they could walk into the pharmacy or order online? Well, if we take a look at these devices, we can see, you know, that category that, you know, from a RIP perspective looks very similar to what we have to offer from a professional perspective, you know, fit with an earbud. So, you know, a lot of

similarity there, even though there's a dramatic difference certainly in, you know, the, the tools that we would use to be able to fit this successfully for that individual and the custom devices, you know, while looking very custom, you know, adjacent, you know, are truly not custom. But I think they look close enough that that certainly could be a, you know, difference maker for somebody who is uneducated about the right service delivery model to best suit their needs.

One thing I think we really need to keep in mind is, you know, the key difference in that experience is the professional themselves and the key role that you're going to play in ensuring that your patient has that best hearing experience over the course of time. And Carol Rogan of the Hearing Instrument association shared the results from a focus group that market track 10 actually, you know, did that gave us that capability to see that you yourself, the hearing professional, is the most important piece of that, that ability to achieve hearing aid delight. Obviously there's a lot of things that play a role in that, but first and foremost it's you, the professional. You know, obviously that patient is looking for a strong recommendation from, you they're looking for that ability for you to counsel and educate them about, you know, the benefit of the technology and how to use it successfully, to be able verify that it's performing successfully. All of those are things that are not available when we place an order online or over the counter.

So I think it's really incumbent for us to remember that we are that most important piece for that individual's success and delight with their hearing instruments. When we think about technology and how dramatically it's changed. In 1913, the world was introduced to the first sort of commercially manufactured hearing aid device. And as we continue through, up until about the, you know, the 70s, all of those devices were over the ear. But in the very early 80s, a true revolution occurred when Starkey fit President Ronald Reagan with an ITC or in the canal device, and that was the first commercially available custom hearing aid.

And those took off like a rocket. And that became the pathway of which better hearing was delivered most frequently for quite a number of years now. In the 2000s, the RIC product was developed, and, you know, since then, it has become the dominant style of hearing aid fitting worldwide. And that's, you know, not surprising because it is very easy to fit something we can, you know, fit very quickly because we can go get a product off of the shelf, program it for our hearing individual, and fit them in the same day, which, of course, is not possible with a custom product that is truly custom.

But I think we need to keep in mind that, you know, there are a lot of desire for custom products when we think about hearing aids. And if that's not something we're presenting to our patients as an option when appropriate, of course, we are really missing that opportunity to deliver something that is desired and meaningful for them. And there was a study done by Susan Witchard that looked at, you know, the percentage of individuals who want custom products but yet are really not being exposed to those. And it's about 80% that would like to have that custom technology. But yet we see, you know, custom is a really small percentage of products, products that are fit worldwide, roughly about 10 to 20%.

And so, you know, I think that, you know, very often that's us as the hearing professional, guiding them towards those over the ear products that are a big reason why we see those percentages.

You know, why do people want custom? Well, you know, I think if we look at our digital era, obviously we get things, you know, very, very quickly, but sometimes that's not necessarily the most desirable option for that patient. The expectation for product personalization really Quite high in many areas of, you know, consumerism. A 2019 survey from the Redpoint Global and Harris poll actually found that consumers expect personalization as a standard of service. And you know, when we see that, you know, that trend, we can see that there's a lot of avenues to even personalize products that are, you know, pretty often, you know, off the shelf.

Like, you know, sneakers for example. And having that capability to personalize those is something that many, many, you know, organizations, manufacturers of these types of products have looked to include because of that desire for personalization. So Nike gives you that capability to be able to design your own shoes. In fact, at Starkey, we have our own Starkey custom designed Nike sneakers that, you know, everybody's always really excited to, to see. So, you know, it is meaningful.

It is something that is important, I think for many individuals. You know, when we think about, you know, where we are today, you know, why should we think about custom products for our patients? You know, obviously that interest for a personalization would be a key reason. But there are other areas that are clear differentiators of why custom hearing aid technology may really benefit the patient more so than something over the ear. So it might not just be a cosmetic interest, but also an acoustic benefit.

One of the really important differentiations is in acoustics and delivering that amplification for our patients. And you know, we see that the trend of course, has been towards those standard or over the ear products, but that doesn't deliver the same type of, you know, acoustic resonance that our ear canal and the pinna combined can do. So when we, you know, take that out of the equation, essentially by hanging that hearing aid on that pinna itself, we're losing that benefit of that ear canal resonance and pinna effect, you know, extensively. What we see happen, you know, if we're not incorporating that natural concha and that ear canal anatomy is that, you know, we're, you know, seeing a, an insertion loss and you know, not really being able to take advantage of that natural sound transmission, the ability to localize that our penna offers us and also the spatialization of speech and sound that allows us really to, you know, localize and recognize where sounds are coming from. And that's part of that whole natur natural experience.

Who doesn't love a good head related transfer function? You know, they provide some very important data for us. And we can see in this example how sound is being filtered and absorbed by the outer ear when we have that, you know, the custom versus the over the ear products. So if we look at the natural resonance that we took a look at just a moment ago. And we take that from the unaided ear to some custom devices, starting with an invisible in the canal or iic.

We can see that that follows that natural ear canal resonance quite closely, the cic, you know, following that same trend, the itc. But then, you know, as we get out a little bit further, we start to lose a little bit of that benefit of that concha in particular. And so the ITC has, you know, that same sort of patterning, but a little bit less of that natural resonance. And we see that it's really, you know, a, you know, bad memory when we look at that bte, which would be very similar, of course, to Rick in terms of that response because product is over the ear. So we're losing that pinna effect and that natural resonance that comes with, you know, using that concha and pinna to their best effect.

So this is where, you know, a custom device, and particularly one that is on the smaller side, as we can see, is going to allow us to be able to tap into those resonances most effectively and give those patients that natural sound quality in preserving those benefits of our natural ear function. Now, I know very often when we think about custom technologies, we have concerns about a inclusion and the impact that that has when we place something, you know, especially in that ear canal. And, you know, that's something that can be managed acoustically when we think about programming and also can be managed from the physical fit of the device. But I would say in today's digital world, with the advances in technology, that's allowed us really to move away from that being a, you know, significant concern with custom products as it was a number of years ago. So that's something that we really don't hear nearly as much because of the advance technology itself, allowing us to be able to consider customs as a more viable option for a wider range of hearing losses.

Now, when we're fitting RIC products, typically, you know, the, the easiest path of least resistance is to use a instant fit type of ear tip, an earbud of, you know, whatever that may be referred to as. And depending on the manufacturer, they look, you know, quite a bit different. But, you know, obviously a lot of similarities in terms of I can just that very quickly and easily on that product and fit that instantly. Do these instant tips really fit most? Well, I think that, you know, it's, you know, important to keep in mind.

Obviously they're comfortable in most cases, but they're also very likely underfitting those Very important low frequency and mid frequency sounds that are so critical to not only speech understanding, but also that natural experience and a safe experience as we navigate the world. You know, because they tend to be much, much more open even if they are occluded. They don't tend to have that seal that we have with something that was custom designed. So, you know, we're going to be losing some of that information. You know, we also need to keep in mind from that open, you know, pathway that they have that we're allowing more of that environmental noise to come in and be, you know, perceived by that hearing aid wear.

And so, you know, that sort of natural occlusion we get by having more, you know, surface area with something that is customized is going to be a big difference maker when we think about the environment and the sounds that may be competing with what our patient wants to hear.

So when we think about custom technology, there's a lot of benefit from that. You know, obviously when we think about a secure fitting, a more, you know, secure coupling in that ear space is going to be available with that custom product that's truly molded for their ear and has more, you know, of a body to that design than a instant tip would have. It also allows us to ensure that microphone positioning is going to take advantage of that natural pinna and that ear canal resonance more effectively. And, you know, it's really the only personalized solution that is available, you know, that, you know, is only possible through a hearing care professional. So this is a great way for us to be able to, of course,

deliver the best sound and fitting experience for our patients and do something that they can't obtain over the counter or online.

So how can we craft a personal hearing experience for our patient? Well, that includes not only hearing aids, but also custom products that are designed for other avenues that are unrelated to delivering just better hearing. So we'll touch on those as well. But it all really starts with a good ear impression. That's going to be the foundation of everything that we think of with custom products.

It really has become a bit of a lost art. And that's because of our, you know, desire to fit Ricks so frequently many of those skills of taking impressions on a regular basis have been sort of lost. So that's something that, you know, you may need to brush up on, just as I would if I was, you know, needing to fit patients on a regular basis, because it's not something I do on the daily either. So, you know, what we're going to do now is talk about some of the tips, kind of some of the things to really be thinking about, not only in terms of the materials that you need, but also how, how you position yourself to deliver the best product for that patient. And we always have to keep in mind that an ear really dictates what we can build.

So, you know, that is going to play a role in what we can recommend for our patient from a custom perspective, because, again, each ear is different. So when we think about impressions, I think it's important that a practice has a protocol for that process. And that way anybody that is working within that environment can have consistent behavior across individuals. And I think that really, of course, sets a very professional tone in an office as well. And it, you know, is including a number of things.

How we take a good history related to the possibility of custom technologies, how we have the appropriate materials at place, how we educate our patients about what the process is going to be like, because that's very important. What we do in terms of examining the ear, the process of taking the impressions themselves and what we do after the fact, all of that matters. And these are all things that,

you know, are really essential to deliver the best possible impressions and fittings for your patients. Why is that history important? You know, that's really kind of the first step of getting to know your patient when they're new to you.

And taking a good patient history is really essential. But there's key parts of that that may really relate to the ability to take a good impression or not. We obviously want to know about their needs and their lifestyle, but their medical history can be very, very important. Are they somebody that's dealing with, you know, diabetes, or are they immun compromised? That may be important when we think about, you know, the potential risk of taking an impression with that individual.

Are they on some sort of blood thinning medication? That can be a huge risk. Because if we nick an ear, which, you know, can happen, that could have a much more catastrophic, you know, impact on somebody that is on blood thinners and may be more likely to bleed more profusely. Have they had any sort of surgery on their ears? Have they had tubes?

You know, sometimes if we do an otoscopic examination, it will be quite evident, but that isn't always the case. So certainly a good question to be asking them. Obviously, we need to be looking to see if there's anything active in terms of an infection that would prohibit us from taking an impression, because that's part of our, you know, FDA regulations, you know, they have any, you know, sort of Malformations that may impact the ability to take an impression or take one as deeply as maybe we desire or they desire for the product that we're looking, looking for in their case. Also really important if they've worn amplification before to understand what they have worn, especially if it's been custom. You know, if they have products, I would certainly ask them to bring those to the, you know, evaluation so you can really see what's going on.

And if it's a custom product, some things to be on the lookout for would be, you know, was there any buildup on that device? Sometimes we can see that, you know, very noticeably, especially if it was

done, you know, in office versus by the manufacturer. That may indicate that the product, you know, had some fit issues and would be something that we need to be, you know, looking out for as we are taking an impression and deciding on the appropriate product for that individual. What size of venting did they have? You know, thinking about occlusion, we want to try and replicate that as possible if that was something that was successful for them.

And, you know, that may, you know, be different depending on the products that we're looking at. And again, programming can make a big difference there as well. Well, you know, when we think about, you know, modifications, do we see that, you know, there was a lot of grinding that was done on that device, you know, stepping event back, those types of things, all of those can be good indicators of, you know, concern that we need to factor into our decision making. Another one, you know, not necessarily related to fit, although it can be because of the space needed, is the size of the battery that they were familiar with. Very often we want to replicate that because that's what they're used to.

But, you know, obviously there are times when dexterity and cognitive concerns may lead us to something different for their safety and better handling.

We think about the supplies that we need. There's a French cooking term that I always really liked, mise en place. And it means that everything's in its place. And I think it's important when we are setting up our protocol, we make sure we know the items that we are going to need for taking successful impressions and have those at the ready so that we're not having to run off to another room while we are in the middle of taking an impression to get something that you need. And here's a list of supplies that are really important when we think about taking impressions, I think it's very valuable to have disinfecting wipes convenient and the appropriate ODA blocks.

And we'll talk a little bit about the difference between cotton and foam, but cotton really is the preferred odor block. And we'll discuss kind of the reasons why for that in just a few moments. It's really good to

have a very well illuminated ear canal. And so a bright, a narrow ear light can be very helpful to allow you to navigate the, you know, the narrowest of canals. And you want it to be really, really bright so that you get the best visual.

You want to have a quality otoscope, whether that is a handheld or video otoscope, because that's going to be, you know, obviously the most important piece of this in terms of making sure that it is safe to take an impression. Depending on the material that you're using, you might have a syringe or a gun or, you know, may use materials that, you know, you want to have both hand. So those are going to be those keys in delivering that impression material to the ear, the material itself. And we'll talk about some details on materials in just a moment. And you want to have your boxes ready as well, so that you'll be able to, after you examine those impressions, place those in the box to ship to the manufacturer.

When we think about material, silicone really is the material of choice in today's world. And it delivers the most accurate representation of the earth ear. You know, powder and liquid used to be an option back in the day. And while it was quite comfortable to work with because it was very soft and pliable, it didn't provide as good a detail of the ear. And then it also was not very durable when we think about the process of shipping.

And that's where silicone is so much better. You know, if you were in a warmer climate, you know, the powder and liquid material would very likely reach the manufacturer looking just like a puddle of whatever color of material it was does. And, you know, so that was not going to be very, you know, good for that patient because it usually would require bringing them back for a new impression. So this is where silicone has really been the leader in this. In industry, there's a couple of terms to be familiar with and that play a key role in your decision making about materials.

And one of those is viscosity. And this is, you know, related to the, you know, the material itself, a lower viscosity, so lower number is going to have a softer consistency, flows a little bit more freely through

that ear canal. And so it's really ideal for a lot of applications, especially deeper canal impressions, because we're getting down into an area where we want that material to flow and not be uncomfortable. We can find that viscosity with the lower being very effective for a wide range of hearing losses, especially those that are less severe. The higher viscosity means that it's going to be more firm as it flows, so it's got a little bit more kind of resistance to it.

And sometimes that can be advisable when we are making impressions for somebody with a more severe hearing loss, where we really want to make sure that we're filling that area in almost, you know, kind of taking it to its limits, because sometimes it'll kind of, you know, you know, stretch is probably too strong a word, but kind of expand that ear space a little bit, and that ensures we get that snug fit that will allow us to be feedback free with those custom products. So a lower viscosity, softer. A higher viscosity has more firmness hardness to it. The other term is shore value. And this is where we're looking at the aftercare hardness of this material.

So with a lower number, it's going to be kind of a more soft kind of, you know, finish to it once it is a complete impression. You know, these materials, if they're a softer material, usually they're going to be distributed via a gun as opposed to a syringe because they are softer and flow more free freely. A higher shore value is going to be a more firm finished impression. So it's going to feel a little bit more kind of solid if you were to kind of tap on it. You know, why is it important to be aware of the type of material and the viscosity and the shore value of that?

Well, this image is a really good cautionary tale of that. So what do you see when you look at this image, which was a, you know, attempt at a deep canal impression taken on an audio student. So, of course we see blow by. So there's material that is bypassed that block and is on the, you know, the interior side of that. But what else do you see?

If you look at this, you'll see that that ear canal narrowed before it widened out and so had a little bit of that wine glass kind of effect. And so, you know, what happened was, you know, obviously there was blow by, probably was quite uncomfortable when this happened. And then when they tried to remove the impression and it was impossible to get that wider area back through that little narrower isthmus, and that became, you know, something that was, you know, impossible to do in clinic. And that individual that we see here is on return from the emergency room. And whoever took that impression out did a fantastic job because it's intact.

But, you know, it required an emergency room visit to get that impression out. So, you know, why was this a concern? Well, that softer material flowed more freely into that, you know, wider space that occurred and, you know, that allowed not only that blow by, but that, you know, ability to have that wider area that then could not come back comfortably through that isthmus. So, you know, what would have been a better solution in this case would, of course, been to recognize when inserting that otoblock that all of a sudden it really gave way and kind of fell in to a wide open space and backing that up, you know, because we, number one, should have probably seen this behavior on otoscopic examination, and then we should feel it when we are putting that otobloc. And that may have a, you know, impact on the style of device that our patient can actually use successfully.

So, you know, very important to be aware of that and recognize that maybe with this type of ear, we think about that block placement very critically. We consider, you know, maybe using a more, you know, firm type of material so it doesn't have that flow where it can easily, you know, potentially get past a gap in that otoblock placement. So a couple of things really to be thinking about, you know, a low viscosity material material was used in this instance, and that was, you know, part of why it got past that block so easily. So student wasn't hurt. You know, all was well, neither was the impression.

But I think it's a great example of, you know, three elements really. The otoscopic examination, the. The. The feel as we put that block in, and the type of material that we want to consider for, you know, our practices to make sure that we are delivering best practices for our patients. One critical aspect as well is that syringe placement.

Unfortunately, we see this, you know, not, you know, not uncommon where that material didn't reach that block. And that's because that syringe wasn't getting deep enough to allow that material to get there. And it probably didn't stay in place long enough in the ear canal. And we'll see a good example of that here in just a little bit. So you want to make sure that you leave that tip in place until the material starts to come back around that tip.

Then you start to slowly really back that tip out and fill in the rest of that ear impression. You know, we want to make sure that, you know, that Tip stays embedded in the material until the impression is complete. And that will, you know, ensure that we have better contact with that ODA block and that we don't have gaps in that impression as we, you know, we're maybe having some movement issues as we were making that impression. So, you know, here's a really good example of making sure that that syringe is going to allow that mater to meet that ODA block. We want to make sure it's guided around those turns in that ear and doing that of course, comfortably, because that's sensitive real estate when we think about that ear.

But you can see in this example the difference in, you know, the type of product that we would be able to build because we missed getting that material to that block. So hence we have a much shorter canal and that, you know, may impact the build of that product and might not be as successful fitting for that investment individual, you know, also thinking about, you know, sound quality and where that receiver is going to be facing, you know, can be a part of that decision as well. So the goal, getting around that all important second bin, unless we have the, you know, caveats that we saw in that impression just a

moment ago with that blow by and that wine glass type of shape.

So I think, you know, this quote from Aristotle really is great. We are what we repeatedly do do. Excellence then isn't an act, it's a habit. And I think that really pertains to taking good impressions. Again, this is something, you know, you're probably not going to nail it on the first time or the 10th time.

It's going to take a while to practice and get good at that. And that's what our patients deserve. So there's really five key points when we think about shooting successful impressions. We want to ensure that we're using the right size of otoblock, you know, because again, material can get by eye, you know, and that could be very uncomfortable for our patients. Otoblock placement, very clean, very keen.

We look at that, you know, in that example with the syringes and making sure that placement is not only where we want to be from a safety perspective, but also, you know, that it's encompassing all of that ear canal space so that material can't get by either that syringe tip and angle that we just discussed, waiting to take, you know, time to allow that material to set up up appropriately. And you know, as we were taking that impression to make sure that that syringe tip remained in that impression the entire time as we sort of backed out While we were injecting, you always want to break the seal. And we'll see a great example of that here in a video in just a moment because that releases a lot of that pressure that occurs by us completely occluding that ear with that impression. One really important area that I see very often when I'm in offices is that individuals will not set their, you know, space that they use to take impressions where it's going to be very physically comfortable for the person sitting for the impression or especially for the person taking the impression. So this is a great example of what not to do and really thinking very, you know, critically about the space in which you're going to be shooting.

You need easy access to materials, and you need it to be comfortable for you. You got to take care of review. And obviously this is not going to be very uncomfortable if you do this a couple times a day at the very least. And, you know, it also is less safe for both individuals involved. So you want to make

sure that everything, you know, is set up so that you've got your mise en place with your materials.

They're easy to access and a, you know, stance that's going to be comfortable for both patient and professional. Here's some great examples of, you know, how we might make that consideration a little bit different depending on the types of tools that we're using. Very often, you know, we want to be seated if we are trying to look directly in that ear with a handheld otoscope or an otolite. So being seated at ear level is a really great way to make sure that we're not going to, you know, have any sort of risk of harming that individual. It's also more comfortable for us if you're using a video otoscope.

Very likely you would be standing so that you can see that screen a little bit more easily and, you know, possibly be able to handle that device more effectively. Video otoscopes are a great option and available in a wide range of sort of price points and. And choices. They do really give us that best, you know, viewpoint, I think, you know, of the ear and the canal. Now I'm going to play a video for you that takes you through the entire process of taking an impression.

And what we're going to see is our expert at Starkey center for Excellence, R.A. woodworth, talk us through the process that he uses. And he takes thousands of impressions, you know, every year. So he is a true expert in this area. Hey, Josh, how are you? Good.

Good to see you. So What I'm going to do is, first thing I'm going to do is I'm going to take a look in your ears and make sure there's no wax or any blockage before I shoot the impression. Okay, so let's take a look in here real quick.

It looks pretty good.

Okay, so I got an idea what size your ear is. So I'm going to use this cotton.

I'm going to flatten it out, make sure I get the right circumference. It's important to flatten this because I want it to be comfortable and get the nice depth that I need to get a nice long impression.

Put the cotton in. I use my crow at. So I think when you start using a video otoscope, I think you should practice bringing the triggers forward and hold the camera at the bottom. The reason why I'm saying that is because I always go from the top. So if you know where you're going in, you have a better shot at what you're doing.

So always, you know, learn how to hold the camera and then position it on the bottom. And then I go from the top, top, and that's the key. Going from the top gives me an idea where I'm at. If you don't go from the top, you get confused. So I think it's important to hold that came at the bottom and keep the.

The corette on the cotton. And I like to go around the circumference because you want a good seal.

And if you notice, I twist, and when I twist, I don't have to move the whole corette. I can just twist and it goes where I want it to go. What's tricky sometimes is when you have a really curved ear, you have to pay attention to the curves because you don't want to hit the ear canal. So I got a position where I want it. And if you notice when, when you go in deeper, it gets tighter.

And that what that does is it gives you a good seal so you won't get a blow by. And this is a good spot. So here's the first bend. Here's the second bend. So I'm past the second bend and actually very close to the eardrum.

We're actually on the eardrum.

So I'm going to shoot the impression now. I'm going to brace the head and stick the tip in. And it's important to stick the tip past the aperture. And when you shoot it, let it flow out naturally. And then go

up here down into the concha bowl, up into the Helix.

And sometimes I like to go up and tongue the fossil and come back down and stay in the center.

Then we'll wait about five to eight minutes to remove it. It's important how you remove this because, as you know, when you shoot an ear impression, you create a vacuum. And when you take out the impression, it's so important to pull on the ear to break the seal. And then I'll show you the technique that I use to remove it. Yeah, so.

So I'm going to check. The good way to check is with your fingernail, make sure there's no indention so it's nice and hard so it's ready to be pulled out again. I wait five to eight minutes. So the key with this is when you shoot an ear impression before you remove it, you should always pull the ear back like this and down, make sure. And sometimes you can tell them to open, close their mouth and it helps break the seal as well.

So I always do this with all my patients when I remove the earth because we know that it creates a vacuum. Then what I do is I pull from the top and I twist it towards the nose. Nice and slow. Okay, Nice and slow. And then I grab the string and I pull it gently.

There it is. This is how you want it done. You got a good length. There's no voids. I got everything.

I want to build any model of hearing aid. And then I like to take a look in here again, make sure there's. There's no leftover material or so forth. It looks great.

Everything looks good.

I think that video is a great example of a process that, you know, really, you know, does deliver best practices in terms of all of those steps. And I love Ray's examples of, you know, how he moves that curette head and allows the, you know, the circumference of that block to be inserted equally, but without having to take it out and, you know, inject it back into the ear. So, you know, really great example there to follow from a master. One thing that we really saw, you know, during the height of the pandemic, when individuals were wearing face masks frequently, is that, you know, very often, you know, an ear that, you know, is more movable would have this sort of distortion that would occur with those, you know, ear loops over that. And that had a direct impact on the quality of the impressions.

And so what we saw was some, you know, improperly shaped concha bowls and helix, especially with these softer ears. And, you know, of course, we never know. You know, a patient may need to Be wearing a mask because of, you know, their health conditions and environment that you work in may require masks. So just be aware of this. If you see this type of example, when that mask is.

Is on, if you want that individual to continue to wear the MAS during the impression, ask them to hold that up by their hand, you know, over their nose and mouth during the course of that impression being, you know, made and set up. So there's some workarounds that you may need to incorporate. If face mask, you know, is giving you this type of, you know, shift in that ear, it's very important to, you know, try and allow that to be as natural as possible. Right. We talked about, you know, that sort of, you know, checklist of what we're looking for.

We want to make sure that as long as it's appropriate that that impress is past the second bend that we've got, you know, everything captured that ear canal to its fullest, you know, representation, the helix, that concha bowl. If you see any sort of gaps or voids, you know, these are things that I would make notes about on the, you know, order form because it allows us as the manufacturer to know that that's something that, you know, is natural, not something that we should fill in, which might impact the

quality of the fitting. When we take a look at, you know, an impression here that we received and scanned, we can see that there's some definite, you know, issues there. I think, you know, it's very likely that the hand was kind of shaking as that material was being injected into the ear. That's why we've got those kind of wrinkles, if you will.

It kind of kept, you know, moving. We can see, obviously, that is a very incomplete, you know, ear canal as well. And so there's a lot of, you know, critical areas that are, you know, not complete. When we look at this, this impression, obviously there's voids. There's, you know, another example here of a canal that, you know, while a little bit longer, is still missing some great information.

Doesn't look like the material reached that odo block when the injection was actually happening. And, of course, we can see that we've got, you know, areas that there's some. Some gaps again, and that happens to be, you know, close to that aperture, which would be very key when we think about good retention, attention of a device.

We also need to be cognizant of the texture of an ear. And it's important to note that especially when we see something that is softer and, you know, more malleable because it'll allow us to detail the impression better depending on the type of product that is being built, whether that is an ear mold or a hearing instrument, that may play a key role in the success and the comfort of that fitting. So important to note that texture because we can see, you know, that that can have some. Some potential for discomfort if that's not evaluated as part of the build. One of the things I think it's important for us to keep in mind is that this is one of the most invasive practices that we as hearing professionals do.

And so we need to make sure that we are utilizing a safe technique that, you know, is important. We think about, again, positioning of ourselves and our patient, our materials, and minimizing those risks. And another key part of that, obviously, is details that we learned with that history, such as, you know, on blood thinners, you know, diabetes, those types of surgical interventions that may have happened in

that space. You always want to have a plan in case something were to happen so that you're prepared to avoid doing any sort of harm with your patients. Of course, one of the most exciting developments, you know, when we think about, you know, minimizing this risk and building hearing aids consistently, is ear scanning.

You know, there are a number of scanning products on the market, so this is something that, you know, there's a lot of excitement about, but there's also a lot of cost involved in obtaining that equipment. And it's also important to keep in mind that even if we are, you know, doing ear scanning, it requires practice, and it requires ensuring that you have a full scan. We have had to call and ask for a new scan, just as we've had to call and ask for a new impression because of there being critical areas that were incomplete when we received that scan. So these are things that, you know, even though it is less risk for the patient, certainly for the professional as well, you know, it does require expertise and skill and practice.

Now, how can we get the best out of our custom products? We know that everything really matters because all of those elements and details can play a key role in what we can and can't build as a custom product, whether that's an air mold or hearing aid. So, you know, again, thinking about, you know, all those important areas of the anatomy, are they represented? When you take that impression out and examine it, don't just toss it in the box and. And, you know, throw it in the FedEx or UPS bag and hope for the best.

You want to look at that critically and make sure that what is needed to Build any type of product is represented. We talked about ODA blocks, and they can play a really key role in what we can build. Foam is an option, but it is an option that takes up more physical space in ear canal. So, you know, we're going to need to get that a little bit deeper to get the best length out of that impression. Foam is a little bit more abrasive than cotton, and so is not usually as comfortable as we're getting down to those

deep portions of the ear.

And it can have a real key role on that spacing that we could gain by using cotton, allowing us to be able to flatten that out and have, you know, less, you know, space physically kind of taken up by the block itself itself. So you can see in these examples, using a foam block, we lost a lot of critical information about that ear canal length. With cotton, we would be able to insert that a little bit more deeply and gain just that much more information and probably do it more comfortably as well.

So when we think about the impressions that we receive, poor impressions can lead to poor results. And I think it's very interesting to think of what we were asked to build in the case of the impressions that you see here that are less, less than ideal. The first one was a request for full shells, and obviously you can see that there's a lot of gaps and certainly key areas in that concha and helix are, you know, very underfilled. And so the likelihood of building a comfortable and successful product is certainly minimized. The second one was a request for a custom cased mold.

And again, you know, we're missing information in that concha and that aperture area that would be really critical for building a good custom case mold for it. Right. Direct product. And finally, these impressions were actually for CICs, and there's really not much canal there to build much of any device, much less a CIC that is completely in the canal. So in looking at these, you know, obviously we can see some, you know, poor impressions that would lead to poor results.

But the good news is, at least at Starkey, that 75% of the impressions that we receive are considered to be top shelf and would allow us to build a custom product that would be comfortable and successful for that hearing aid wear. So I think the good news is we see a rather high percentage of that that allows us to, you know, build a product that, you know, we would be proud of and your patient will be comfortable wearing.

So when we think about, you know, the, you know, impressions, you know, we're thinking about the Product that we're going to build, does it give us the detail that we need to have as the manufacturer to build that product, in this case a cic. And so we can see, you know, if it is a good impression. It allows us not only to recess that device more and build it, it's really designed to be built, but, you know, it also will give us better, you know, direction, if you will, about the direction of that, that, that sound port, that receiver, so that we make sure that the patient is getting the amplification that they need and without the potential for feedback.

The length of a canal is really, really important. You know, it gives us so much detail about, again, where that receiver needs to go and obviously some good, good retention information as well. So if we look at this example and looking at that, you know, from that side view on the left, you know, that canal takes a really extreme turn. If we didn't have that to see, we would, you know, probably be, you know, taking a guess about how to position that receiver. And that guess might not be successful for that individual.

So, you know, also might not be very comfortable for that patient to insert. If we went all the way around that almost 90°, you know, canal, canal turn there.

When you're asking for something, you know, special like a canal lock or conchal lock, we need to have obviously the information to be able to build that. And so that impression should reflect those particular, you know, elements so that we have what we need to not only build the product but also that additional element like a lock. So, you know, thinking about, you know, making sure that we've got that content concha area. If we don't have that, we're not going to be able to build a canal lock or a concha lock. And so we can see some examples of where we had less information than was really appropriate to be able to, you know, apply the appropriate lock.

That might have been essential with some challenging ears to make sure that device stays in place comfortably and delivers sound to the best possibility. So, you know, we've talked about this area a couple of times, but I think it always bears repeating. Examining that impression critically, ensuring that you've got the appropriate length of canal for the device, preferably around that second bin, unless that is, you know, a concern to shoot that for the patient. Thinking about that concha area is everything represented there for whatever purpose we need with that impression. And that helix information Ray even talked about going up into the triangular fossa never hurts to have more information.

You know, we would never call you back and Say, you know, we have too much information. It's usually that lack of information that requires that call, requires that patient to have to come back for secondary impression. And no patient likes to do that. And, you know, important point there. If you feel, as you examine that impression that it doesn't reflect, you know, your best results, you know, make sure that you take a secondary impression or impressions while that patient is there.

I never met a patient that wasn't willing to sit for another set of impressions to ensure that I was going to be able to deliver the best product for them. And, you know, even the best professional has to take another set of impressions at times just to ensure that you are doing what is best for your patient. So never worry about doing that. It's a lot better to do it while your patient's sitting there rather than having to come back.

When we think about that canal and that length and, you know, meeting that otoblock with that material, that's, of course, really important from the manufacturing perspective to know how to position that recommendation receiver. So make sure that you get that full detail to us and ensure that that material has reached that block when it was being injected so that we have as much of that detail to examine. You know, our hope is that, you know, every hearing professional, you know, taking impressions for custom products is, you know, focused on delivering, you know, the best possible, most complete

representation of that ear. And in doing so, you're allowing that manufacturer to be able to build the best possible possible product for your patient. And I started my career on the manufacturing side in customer service, and I always hated making that call for another impression.

And I can't tell you how many times I heard, oh, just do the best you can. You all do a great job. That's really not doing the best job for your patient if you're asking the manufacturer to try and guess. So, you know, definitely make sure you give us everything that represents your patient's ear the best for the best results. When we think about the different types of custom hearing instruments, you know, obviously they're going to take up different spaces, so we need to make sure the impression represents those devices.

An IIC obviously goes deeply in that canal. The ideal is for that face plate to be at that second bend and the tip of the device very close to the eardrum. And so, of course, that's very sensitive space. We need that to be comfortable, and we need to make sure that we're getting the best impression. This is the category of instruments that I know we remake the most.

So when we Think about, you know, using this digital technologies that we have in today's world to not only scan those impressions to build the shells, but also to view how components are going to go in comfortably. It's really amazing to think about rather than it all being done by hand and you know, then having to try and, you know, figure out that placement of those components all done, you know, kind of digitally in today's world, which is really, really exciting, we think about iics. Once you get down to that second bin, the device really, you know, is, is angled completely the opposite of what it would be if it were a CIC and built out further. So sometimes it can be almost difficult to tell which is left and right because of that positioning. It's almost the, the opposite because of the depth of that canal.

So certainly something to be aware of. So we can see if we're looking at a comparison of IIC here. We do get asked to build, you know, some that are out a little bit further. We get impressions where

sometimes that's what we have to do. And so as I mentioned, at the typical iic, the optimal iic, the faceplate would be at the second bin.

But we can see that if we place that face plate at the first bend or even out closer to the aperture, that's something that could resemble an IIC and is something that would we do get asked to do or again need to do because of the impressions that we have to work with. Of course, one of the biggest advancements in technology has been, you know, that digital capability. Not only of course in scanning, but also in being able to deliver, you know, wireless technologies. And when we're doing that in a small space, that can be somewhat difficult to be able to do, especially when we have to also factor in for the power of the device. In this case, this is a CIC that is wireless, that uses a 312 battery.

So we can again have a little bit of a larger size of battery plus, you know, wireless components like an antenna that need to be factored in and space all needs to be aligned for to deliver a comfortable fit and make sure that the patient is going to have, you know, a feedback free experience as well. So again, that scanning allows us really to be able to position and experiment how we want to input those, those components to deliver the best product for that patient. I think one of the biggest advancements and you know, from, you know, our perspective happened at the height of the pandemic was custom rechargeables. Being able to get that lithium ion component Inside a custom device as well as an antenna was a really huge achievement. And here we can kind of see that sort of, you know, split out.

The lithium ion component is that sort of gray area down closest to the shelf of the device. But we also have to have space for those components, those contacts to be able to charge the device and a wireless antenna. And so when we think about customer chargeables, you know, that's been a huge innovation, but it also has some challenges in terms of building that because we need to find room for all of those components that include that lithium ion power source. So the Tragus and Anatragus can be really important areas. When that area is really narrow, that means that we're likely going to have to

build up an out to be able to accommodate all of the things that are part of that product.

So that's an area that's really critical to be examining when you're looking at those impressions. If we were to see a really narrow and like we see there on the right, that would be, you know, certainly in a device that we're going to have to build out and up to be able to accommodate. And if we look at it just from that sort of front on view, looks great, looks like we got plenty of room to work with. And you know, we're going to have to look at that a little bit differently because of that narrowness of that tragle area, the concha bowl, incredibly important because again, we've got to find space for those components. And so if that area is underfilled or anatomically, it is not, you know, a very, you know, deep concha that can impact, you know, that build.

We have to go out again. And sometimes that can be something that a custom, a patient may reject with that custom product. So really take a critical look at that concha bowl when we're thinking about customer charge devices. Also we're thinking about, you know, a custom mold for our RIC products. Again, that's a great way to differentiate from that over the counter or online product.

And it also is going to deliver better sound quality. So if we look at a custom cased mold versus, you know, a, you know, custom but, you know, not encased mold versus an earbud, we can see we have so much more detail, we have so much more control of where that sound is going to go. But that custom cased mold where that receiver is embedded, you know, as a result of having that impression, makes a huge difference in terms of delivering the best experience for that patient. Sometimes when you have surgical Ears, it can be really difficult to look at that, you know, wide open ear canal and tell where that sound really needs to go. So that's where we're leaning on you, the professional who took that look in that ear to be able to help guide us on where we want that sound to go.

So details and the notes is very, very critical of these so that we do a best job in terms of where that receiver information is going. So it's really important to, to document that with, you know, anybody that's

had any sort of surgical intervention and has a more unique ear canal. And speaking of unique, I think it's really interesting to take a look at an individual from a left and right perspective that, you know, there was a vast difference between those two ears. And you know, we take a look at some other unique ears that, you know, may have occurred because of malformations, whether that was congenital or not. You know, when we think about these and you know, whether a custom product suits them, sometimes that is the best option for a patient, especially if we don't have a place to hang an over the ear product.

So, you know, know that, you know, I know from the Starkey perspective, we're always game to try something that is way out, way of the, the ordinary for an individual. So in thinking of some of those impressions that we've received from, you know, ears, such as what we just saw, you can see that there's a lot of, you know, differentiation between these and a lot of information that we really need to know and understand about that individual to build the best product from those. Also an area that's really important is that temporomandibular joint. We can see that the movement of that can vary even from one ear to the next, much less from one individual to the next. And that's really important to view that with that individual as you are, you know, preparing to select a product, take impressions because that may have a factor in the build of that product.

You know, speaking from our perspective, we're always going to do the best possible with some of the more, you know, unique requests that we get with building a product. And that's something that we relish as a company, you know, but you know, when we think about an ear that we, we see here looks like a really lovely ear, built a nice customer chargeable product for this individual, you know, so everything looks sort of, you know, hunky dory there. That's actually an artificial ear and artificial, you know, pena. And so, you know, we had that to be able to build A custom device for. And so just, you know, an example of a really unique situation.

That custom was a great solution for that individual, but it required obviously some special, special expertise and kind of, you know, wrapping up with custom products. Not only are custom hearing aids, I think a really valuable, you know, addition to a practice, but also specialty products for other types of ear applications that can be customized, is a huge differentiator in your marketplace to be the ear expert and obviously grow revenue as well. So there's a wide range of custom specialists, specialty products, whether it's for a swim plug, a sound plug, sleep plug so that you can sleep soundly, you know, next to somebody that's snoring. All kinds of professional molds, whether that's for car racing pilots, broadcasters that we see on the news or music monitors as well. And hearing protection.

And a custom solution is going to obviously be much more protective for that individual. And we even have great options, such as a custom rechargeable hearing protection with bluetooth capability. Capability. And that is a really great avenue in terms of being that ear expert, building that revenue, because there are so many applications for that. Law enforcement, dentists and hygienists, hunters.

So, you know, all of these are great avenues to deliver custom solutions for your patients that go beyond hearing aids. So, you know, I mentioned being an ear expert. This is a great way to grow your practice. And an individual who maybe doesn't have a hearing loss that can benefit from one of these types of custom solutions. Specialty products may have a relative that has a hearing loss, or they may have one later on themselves.

So this is a great way to really grow that business and become more recognized in your community as that ear expert. So as we summarize this custom process, whether we are taking impressions to build custom hearing aids or custom specialty products, it's really valuable to know as much as you can about your patient, patient's history, to have a great understanding upon that otoscopic examination, that examination of that impression, what that ear shape is like, whether that texture is firm or loose. All those details that of course we know matter in terms of the audiogram and those extra points such as

mcls and ucls. So final step, when you're taking your impressions, make sure that you examine those before you send those off to, to that manufacturer, making sure you know that you delivered your best possible result. You want to partner with your manufacturer, obviously you can see there can be a lot of back and forth, and we want to make sure that we're getting the best information whether that's the impression information or details from you so that we can deliver that best results.

Making sure that you note anything that may be out of the ordinary so we're aware of that. You know, making sure that your patient understands understands sometimes that you know it's not possible to deliver what they want because of their own ear anatomy or maybe their concerns about vanity. So those may be hard conversations but important ones to have with your patients and making sure that you understand the history of your patient because again that can provide so much value as you're moving forward with a decision of what's the best product for them. As we wrap up, I've got a list of references for information that we was presented during the course of this session. I will see if there's any questions but if not, I want to thank you for taking the time to join me today to learn more about custom products and the best practices for taking successful impressions.