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Patient Safety in Hearing Healthcare: Preventing Errors and Building Trust

Presenter: Natalie Hein, AuD

Hello everyone and welcome. I'm so glad you're joining me today for the Patient safety in Hearing health care, Preventing Errors and Building Trust. As audiologists and hearing care professionals, we know that patient safety isn't just a healthcare requirement. It's the foundation of every positive outcome, every successful fitting and every long term relationship we build in our clinics. Today we're going to take a closer look at how small decisions, consistent habits and intentional communication can dramatically reduce errors and elevate the standard of care that we deliver.

My name is Dr. Natalie Heinrich. I'm a member of the education and training team at Starkey and my goal for this session is to equip you with practical, real world strategies you can bring back to your clinics and tools that help you protect patients, strengthen your processes and reinforce the trust our patients place in us every day. And now to start, let's review some housekeeping.

First, how to ask a question? You can click on the Q and A, type in your question and hit send. I will be reviewing those questions at the end of the presentation. Where do you get the handout? A PDF handout for this presentation can be accessed through your pending courses on Audiology Online or by clicking in the chat within the classroom.

You do get to earn CEUs for today as long as you have that paid Audiology Online, unlimited CEU Access membership and after completing the course, you will go to your pending courses on Audiology Online and pass the multiple choice exam. If you need any assistance or tech support, Please call the 800 number. Email customer service at Audiology Online or use the Q and A window and the content that we cover today may vary in usefulness depending on your clinical setting, location and cultural context. Healthcare evolves quickly, so always reference the most current research and professional guidelines. Not all intervention or tools discussed will generalize to every patient or population and this course does not cover every possible risk factor or treatment option.

Use your clinical judgment, consider cultural and ethical factors and be mindful of limitations to diagnostic and screening tools. As always, it is up to each provider to critically evaluate evidence from multiple sources to guide best practice.

And we do have some learner outcomes from today's class. My goal is to 1 have you guys have the ability to define the four components of a soap Note 2 be able to identify primary red flags requiring medical referrals and 3 identify tinnitus symptoms requiring emergency medical referrals.

As this training provides an overview of strategies to help prevent medical errors in your office, it is designed with the assumption that that you are already familiar with the ear anatomy and common disorders. So a lot of topics and slides here will be review most likely for many of you. And if you would like more in depth training on any of the topics we cover today, please reach out to your practice manager for additional resources or as always, check out what is offered on Audiology online. There is a huge library available to you and Our Agenda Patients put a lot of trust in us as they're hearing healthcare professionals and we owe it to them to be competent not only in evaluating their hearing and potentially fitting hearing aids, but with the varied medical conditions we encounter daily that are related to their hearing health. Today's course will review root causes of medical errors, the most common errors in audiology practices, and steps to minimize adverse outcomes as a result.

We will review clinical documentation, types of hearing loss, the importance of otoscopy, necessary medical referrals, those red flags, tinnitus, ear mold, impression safety, tympanometry, and the importance of follow up.

Now I know that writing notes is is no one's favorite part of work. Honestly, I had to spend many late evenings catching up on my notes, but it is an essential part of what we do daily. So I want to review SOAP notes today as they are effective form of clinical documentation. The SOAP Notes system provides you with clear framework to structure all of your clinical notes. And please, please, please,

please don't forget to sign and date those notes.

This is an essential part of the process as well. Like one of my favorite mentors always would say, if it isn't in the note, it didn't happen. And the SOAP note structure is pretty simple. It's right in the name. It's easy to remember.

You just have to remember what each letter that acronym stands for. So we've got S for subjective. This is the first, which is the description of the problem as related to you by your patient or really the reason that they're coming in today. O for Objective these are going to be your observations that you can make related to the problem or the reason for the visit, like stating which testing you completed or your observations about the hearing aids that your patients may or may not have brought in. Then we have A for assessment.

Assessment is consists of the analysis or interpretation of your results. This could refer to testing or any steps you took to solve a problem with the patient's hearing aids, for example. And then finally we have P. So this is our plan. You can think of the plan as the follow up care, how you're going to provide ongoing care if needed, or for example schedule a test in a year from now.

So let's go over an example of a completed soap note, starting with S. Subjective. Mr. Jones reports that his hearing aids are not working. So Mr. Jones came into the office today because his hearing aids are not working. Oh, oh. Objective or your observation?

Example. The receivers were plugged with wax. Our arch nemesis, that wax hearing aids are functioning the way they should. Cytoscopy indicates occluded wax. So there's our problem there.

So then that brings us to analysis or my interpretation? Our interpretation which is that the cerumen in his ear canal resulted in hearing aid malfunction.

And then our plan, establishing a plan of care for the patient. Have them be seen for serum management, recouncil on wax filters and changing those, and reinstruct those patients on possibly having scheduled ongoing appointments, whether it is for cleaning the hearing aids or clearing out their ear canals.

And then that brings us to as hearing healthcare professionals, we also interact with many other healthcare professionals, including primary care, ear, nose and throat, physical therapy, insurance, just to name a few. So it is important for us to communicate in a professional manner and that we do this efficiently. Writing reports, it should be clear to the point, without any jargon. And back in the day it had to be eligible. Right now with digital options for notes, that is less of an issue.

But nonetheless we still remember those days and we need to make sure that we are respecting patients confidentiality, which includes being compliant for HIPAA when you are based in the US now to switch gears a bit, we're going to review the different types of hearing loss, those that are conductive, sensorineural, mixed, central and functional. In hearing loss, the first we're going to hit is conductive hearing loss. It's a result of abnormalities of the external and or middle ear, meaning that the passage or conduction of sound through the outer and or middle ear is somehow impeded. Because conductive hearing loss is the result of abnormal structure, it can potentially be treated by a medical professional.

And this audiogram is a classic example of conductive hearing loss as evidenced by the increased air conduction thresholds. In the presence of bone conduction thresholds in the normal hearing ear, there are many pathologies that can result in and conductive hearing loss, including ear infection with fluid in that middle ear, ossicular discontinuity, otosclerosis, atresia, and those are just to name a few. In other words, when air bone gaps are present and bone conduction thresholds are normal, the loss is conductive in nature.

And then we have of course sensorineural hearing Loss, you can see it as snhl, short term. It is characterized by irregularities in the inner ear, cochlea and perhaps the auditory nerve. In this type of hearing loss there are no concerns with the outer or middle ear and the loss is isolated to the sensory inner nerve structure of the auditory.

So as you see here in this example of the audiogram, the air bone thresholds are in good agreement, so no significant air bone gaps. And all thresholds are outside the range of normal hearing. The most common way we describe this that I would hear patients come in and saying is I can hear people talking but I just can't understand them. And this tends to be a particular problem. It especially in background noise.

It's often difficult to pinpoint the cause of sensorineural hearing loss, but there certainly can be hereditary components. Presbycusis and of course noise induced hearing loss are many common causes. In other words, when air and bone thresholds are approximately symmetric and some of or all of these thresholds are outside the normal range, hearing loss is sensorineural in nature.

Our next on that list is mixed hearing loss. And it is really just that, a combination of conductive and sensorineural hearing loss in the same ear.

So in this audiogram we can see that there are air bone gaps present in the right ear. And while there are some normal bone conduction thresholds, some of the bone thresholds are outside that normal range. In other words, when air bone gaps are present and the bone conduction thresholds are outside the normal range, the loss can be seen as mixed central hearing loss. Now that is characterized by difficulties hearing or understanding auditory input in the presence of normal hearing. Very simply put, diagnosis of central hearing loss is best made by demonstrating inconsistencies between pure tone recognition and speech testing.

A good starting place for this could be completing an audiogram and speech and noise testing such as the Quicksyn. Really that is an oversimplification and there are much more in depth testing protocols for this. So what are some examples of central hearing loss that includes auditory verbal agnosia, that is pure word deafness. It is the inability to comprehend speech. So individuals with this disorder lose the ability to understand language, repeat words and write from dictation.

Cortical deafness is an auditory disorder where the patient is unable to hear sounds but has no apparent damage to the anatomy of the ear, which can be thought of as a combination of auditory verbal agnosia and auditory agnosia. Auditory hallucinations are false perceptions of sound. They have been described as the experience of internal words or noises that have no real origin in the outside world and are not perceived to be separate from the person's mental processes.

And then functional hearing loss is a decrease in hearing that is unexplained by anatomic or physiologic abnormalities or both. Also called pseudohypacusis is a condition in which hearing loss is exhibited in the absence of organic diseases. So in these cases, there is nothing physically wrong with the person's peripheral or central auditory nervous system.

And this brings us to otoscopy. I cannot overstate the importance of a thorough otoscopy, and this is going to set the stage for the rest of your interaction with your patient. We are not just looking for lions and tigers in the patient's ears, but truly foreign objects. The shape of the ear canal and of course, that cone of light.

I always love talking to my pediatric patients, figuring out what animals they want to see in their ears or want really me to see in the ears. And lions and tigers were a big one. One of my favorite patients, she would always ask if I could find any flamingos in her ears. As you can imagine, she was a big lover of the color pink and flamingos were her top stuff, her favorite animal to carry around with her. And as we go through the case history with our patients, many of us really begin to put together the pieces of that

puzzle, if you will.

When someone says they can hear but not understand, I'm already thinking that they likely have good low frequency hearing with a loss in the high frequencies. When they say they hate earbuds because they never stay in their ears, I expect to see very small ear canals or canals with those sharp bends in them, or in fact, both. The cone of light is the landmark for normal eardrum, and this is the result of the reflection of light from the otoscope on a healthy tympanic membrane in the inferior quadrant. In the image you guys see on the slide, which is pictured, the right or left eardrum. If you said right, you are correct.

So that is that right ear.

And there are numbers of conditions you might discover during case history, otoscopy and audiometric evaluation that would require medical referral. I'm going to call these your red flags because these issues are outside our scope of practice as hearing aid dispensers as well as audiologist. I like to. We'll have either a waving red flag, red flag. Sadly, I don't have any green flags for you today.

If you guys follow those TikTok trends, just red flags. And we're going to focus in on eight primary red flags. So we're going to look at each one of these more in depth, including visible or congenital traumatic deformity of the ear, active drainage from the ear in the past 90 days, we have a sudden hearing loss within the past 90 days. Report of acute or chronic dizziness. Unilateral hearing loss of sudden or recent onset.

Again, within that 90 days, we have an air bone gap greater than 15 dB. Reported pain or discomfort, excessive cerumen or foreign body in the ear. I only got to catch a few foreign bodies in the ear before heading to the manufacturer side. My scariest for me was a patient that told me his hearing aids were no longer working and he didn't have hearing aids. So I quickly looked in his ear and he had just been

putting.

He bought some hearing aid batteries from CVS and thought that was it. So he had been putting batteries in his ears for months and there were a bunch of batteries in there that was a quick red flag, a waving red flag as they were corroding and a walk over to the ear, nose and throat.

So, number one, visible congenital or traumatic injuries for the ear. Anytime we see a deformity of the ear, we need to identify what we are seeing, ask the patient clarifying questions, and refer to a physician if we have any concerns. So those medical referrals should be made. If this condition exists and is unknown to the patient, has not had recent medical attention of a physician, or if you feel uncomfortable or hesitant moving forward.

So here are some examples of a congenital deformities atresia. So this one is an absence or complete closure of the ear ear canal or absence of the external auditory meatus and microtia. These are abnormally small ears. So this may be accompanied by underdeveloped, undeveloped middle ear ossicles.

And then we have acquired, so exotosis. This is going to be that bony growth arising from the surface of the bone within the bony portion of the ear canal. This, as you guys are probably familiar, is a result from prolonged exposure to cold water. And it can result in narrowing or closure of the ear canal and near the tympanic membrane. This past summer, I was in New York visiting my aunt and she had just, you know, that family audiologist stopped by and so she was very excited to tell me this past summer she had her hearing tested.

And you'll say, she said, you'll never guess what they saw in my ear canal. Now, this aunt of mine, she loves to swim in the ocean. She grew up in California, up in Northern California, where she would surf. And so right away I said, I know what it is. And she was very surprised I figured it out.

But luckily this was one of the main markers. I saw quite a bit working out at the San Francisco va. Many of my surfer veterans had that. Now, the image you see here is osteoma. This is a single benign tumor resembling cortical bone occurring at the tympanostoid structure line that tends to have really a narrow base.

And again, this can result in narrowing or closure of the canal near that tympanic membrane.

And the next set of acquired deformities include traumatic as well as cauliflower. Now, with traumatic, we are apt to see more of this, especially for veterans that I used to work with in offices that have been exposed to violent explosions. So I saw a good amount of this. And then we also have cauliflower ear. This is also known as wrestler's ear.

It's a deformity of the ear caused by trauma. So cauliflower ear occurs when the blood pools in the pinna after it's been hit or struck. And the pinna again, of course, is on your outer ear. This pulling of the blood is known as a hematoma. It needs to be treated right away.

So medical referral should be made if these conditions exist and is unknown to the patient, or if they have not had any recent medical attention of a physician, or again, if you have any hesitations to move forward. This is a cause for medical referral with my red flag waving.

And you'll hear me mention that statement quite a bit when you should go for that medical referral. So our next one here, we've made it to the melanoma. So this is external or middle ear cholesteatoma. And I have lived in many areas where we get a whole lot of sun. So I have saw a patient who had a dry, almost crusty spot on her tragus, which really she hadn't paid much attention to.

And I recommended that she follow up with her primary care physician. Didn't see her for a few months, and when she came back in, she thanked me for letting her know. As it turned out, that spot was melanoma. So she had surgery to remove it and reconstructive plastic surgery. So she's doing just fine.

And it is a helpful reminder that if you do see something, say something. And you can see an example of this on the image here on the right, Number two on our red flag list, active draining from the ear in the last 90 days and that one's a pretty obvious one. You don't even have to get really otoscopy going. You can see that one from just having a conversation with the paintage patient. And drainage of any kind should be referred out unless patient has been seen by a doctor and the drainage has been addressed and a plan of action treatment is underway.

And I know, I'm sure you guys have experienced this as well, but I would have patients that had chronic drainage. So we were always coming up with new plans of actions dealing with the drainage and how their hearing aids would function or not be functioning because of it. So this is something we see pretty heavily.

We've made it to number three. So number three on our red flag list is a sudden loss within the past 90 days. This one's really a waving flag. And causes can include infection, disease, acoustic neuroma, ototoxicity, and of course, allergies. In some cases, with that prompt medical attention, the loss may be lessened or reversed.

So please refer that patient out immediately.

Another example here you can see in clinic for a trauma to the ear. So those traumas can include a temporal bone fracture, concussion, direct energy injuries to the middle ear, or inner barotrauma. So that's that air pressure change. And that you'll see is very common with scuba diving and skiing. And a fun note on this slide, when I was having the design team work on this with me, I was reviewing the

slide with one of our designers, and he said, so this summer I went skiing and all of a sudden I had fell down pretty hard on the water and I had blood coming out of my ear.

Would that been a trauma? Yes, that exactly is it. So hopefully he doesn't mind that I shared his example. Another cause for sudden loss within the last 90 days for a patient is damage to structures in the cochlea as a result of medications. And that is called ototoxicity.

Aminoglycosides are causes. They're a class of antibiotics used to treat infections caused by negative aerobic bacteria. All of these images you can see here are ototoxic, and to some degree, they're also vestibulo toxic. So basically how I try to remember it is any of the myosin family drugs that my C I N can be ototoxic.

Next in our third section of our red flag, the glomus tumor. So this is a rare, benign soft tissue neoplasm. It's presented in the second to fourth decade of life for patients, and it really originates from the glomus body and accounts for about 1 to 5% of all soft tissue tumors of the upper extremities. And this glomus body is a component of the dermis layer of the skin. So it's really involved in that thermo regulation.

And then we have an osteoma, which is a bony, benign growth, the squamous cell carcinoma of the middle ear. So you might see IT abbreviated to SCCME. This accounts for about 1 1/2 of malignant tumors in the ear. And because of the low incidence and infrequent reports of the squamous cell carcinoma in the middle ear, the extent of concordances between the CT and MRI results, surgical findings and pathology reports are really not well characterized. And then the last bullet here, acoustic neuroma, also called a vestibular schwannoma, is a benign, slow growing tumor that can affect both hearing and balance pathways.

It can also place pressure on nearby structures that do include that facial nerve, causing some facial numbness. In clinic, you might see asymmetric hearing loss, poor word rec scores, unilateral tinnitus. These are all red flags that this could be a possible issue and prompt referral.

And we made it to four on the list. So number four on our red flag list is acute or chronic dizziness. And dizziness is really a general term that refers to an inability to maintain normal balance. It can also be accompanied by or described as well as with nausea, fainting, lightheadedness, and then hyperventilation as well.

Now, vertigo, a quick vertigo refresher. This is the feeling of spinning or the room spinning. Many things can cause vertigo, including an inner ear dysfunction. We've got brainstem dysfunction, sudden change in blood pressure, or a sinus infection. Physiotherapy can help if the cause of the inner ear dysfunction.

However, it is vitally important that they do seek medical help immediately. If you have any other symptoms that could pertain to your brain or heart. So example, numbness, weakness, especially down that side of your body. Facial drooping, a racing heart rate, photosensitivity or pain down your arm.

And what does vertigo feel like? Vertigo symptoms caused by the inner ear can come on suddenly without warning. A small head movement can bring those feelings on, such as dizziness, nausea, vomiting, fainting, instability, spinning. Your patient might find it difficult to turn their head, especially sudden turns when they're traveling in vehicles. If they sit up from lying down, for example, that morning when you first get up, your patient might also find closing their eyes to be a bit more comfortable.

Definitely lying down or sitting Very still with their head supported. And many things can cause vertigo once again, including inner ear dysfunction, brainstem dysfunction, sudden change in blood pressure or a sinus infection. Physiotherapists or physical therapists work with patients to help them manage that pain, balance, mobility and motor function. Most people at some point in their lifetime will work with a

physiotherapist and physical therapist. In fact, you might have been referred to one, for example, after a car accident, after surgery or the big one.

Especially for me, addressing low back pain had a few C sections and that is definitely a reason that I have gone in.

And a few more examples here of possible causes of that. Acute and chronic dizziness also include medication. One patients can be taking medications that the side effects include dizziness. You hear that on the commercials or all the time. Those commercials don't go away.

A serious otopathological illness, vestibular dysfunction, acoustic neuroma and Meniere's disease.

And throughout my time in clinic, as you are familiar as well, you did see a handful of patients with Meniere's disease. And the pathology affects the inner ear and results in sensorial hearing loss, tinnitus, vertigo and really a sensation of oral fullness. And these symptoms may appear separately and or simultaneously. The hearing loss can fluctuate, usually affecting the lower frequencies at first and then spreading to the higher frequencies as time elapses. For that component, I have enjoyed for at least Starkey the previously the remote control, how it could be ear specific when making adjustments as well as now in many of the different manufacturers apps, but specifically in the My Starkey app, you have that flexibility whether you're streaming or utilizing just the mic controls to make adjustments independently.

All right, number five, Number five on our list is that unilateral hearing loss. This means that the hearing is normal in one ear, but there is hearing loss in the other ear. The hearing loss can range from mild to very severe and it can occur in both adults and children. And the trauma or disease are generally unilateral in nature, so it should be referred to a physician prior to proceeding with any auditory rehabilitation. Now, what are some of the causes for unilateral hearing loss that can include Meniere's

disease?

Just one. We just discussed an acoustic neuroma, which we also have discussed already in this presentation trauma. Are you guys getting the theme there? We've also discussed that one, autoimmune diseases, perforation of the tm, that tympanic membrane, a cholesteatoma or that dreaded otitis media. I was that kid that got many, many ear infections.

And so I did put my tubes, I had tubes, I put them under my pillow for the ear fairy. So somehow my mom went along with that one, if you guys ever want to try that one out. The ear fairy came to my house and took my tubes, which is disgusting that she let me put that under my pillow. And then we've made it to number six on our list of red flags to refer outbore. And number six on the list is that air bone gap.

And the air bone gap is going to be greater than 15 dB. And of course that will be tested at 500, 1000 and 2000 Hertz. And this does indicate a significant medically treatable condition. So it is important to refer for medical evaluation if there is this condition is being assessed and diagnosed for the first time. Now, if the patient has a known mixed or conductive hearing loss, a repeated medical evaluation is not necessary unless they feel the need or a change has occurred.

Now, some possible causes of an air bone gap in the outer and outer ear and canal can include, include closure of that tragus, collapsed canals, atresia of the external ear, obstruction in that external auditory canal, lots of cerumen or other debris. So in my example, the patient that came in with a lot of batteries in his ears, that foreign object, external otitis, fungus and pre and cancerous growths.

Now, you can also have some causes for an air bone gap at the tympanic membrane that could be a preparation, a perforation, sorry about that. Post infection or surgical scar tissue, thickening of the tympanic membrane, extreme flaccidness, fluid, a cholesteatoma or a glomus tumor.

Now, other causes for that air bone gap greater than 15dB. This can be within the middle ear. That can include otosclerosis, dysarticulation, otitis media, mastoiditis or cholesteatoma.

Now, number seven on our list of our red flags. Now, number seven is that reported pain or discomfort. So the patient may report having pain in or around the ear and it can be related to the ear or it could be the result of, for example, tmj, orthodontic abnormalities, a dental oversensitivity, and of course, sinus problems, especially in that area. So these should be reported unless they're under current care of a physician or dentist already. So you're going to put out that medical referral unless they're already under that current care of a physician or dentist.

And this is really where a visual assessment comes into play because as a clinician, when you, before you even do otoscopy, you're going to check out the area around the ear, you're going to check out that anatomical component. You're going to look for possible skin cancer. You're going to look around that ear, you're going to check out how nice their holiday earrings are. That's always my favorite to take a peek at. Very cute earrings.

My patients had the best earrings. So we're going to look for swelling. We're going to look for, if we're already doing otoscopy, the absence of the cone of light redness. Again, that drainage. We're going to be watching for drainage.

And simply put, does the ear and its surrounding area look angry? So serious ear diseases or trauma can be the cause of this, all of which should raise the red flag and be referred to for immediate medical treatment.

All right, we have made it to number eight, the dreaded cerumen. And this can be a result. This results in obstruction of the ear canal and tympanic membrane. It causes the inability to perform impedance

testing, including those reflexes, our acoustic reflexes, inaccurate audiometric test results, inability to of course perform those probe mic measurements, inability to take accurate ear mold impressions. And the use of a hearing aid may cause excessive feedback if it has that wall of cerumen and reduce gain.

They say it doesn't sound loud enough. Of course, cerumen is always trying to get into the hearing aids as well, so those wax filters could get clogged up. Patients that I saw regularly for hearing cleanings had different recommendations for them. My swimmers, if they were good about their exercise, swimming in the morning, this was always an issue. I luckily was able to clean to the best of my ability to and remove the cerumen before having to send out to ENT or their primary care physician for that cleaning.

But I do want to note that all four quadrants of the tympanic membrane should be visible before doing any testing or making ear mold impressions, because those, if it's not, it can affect those results as well as that art of making that impression. Depression.

So, next up, tinnitus, Tinnitus, tinnitus. I'm going to go with tinnitus for this presentation. And tinnitus is a constant or intermittent sound that is experienced in the ear and or the head and is described in a number of ways. Common descriptions include ringing, buzzing, humming and chirping.

And oftentimes, patients do not come into your office stating that they are experiencing tinnitus. Instead, it's likely that they will state they are experiencing a ringing, chirping, humming, sizzling for, for example, most likely, ringing is the most common. And if they watch a lot of infomercials, they'll come in saying, I have tinnitus. I have seen it on tv, I have tinnitus. So those are some of the things that we hear about tinnitus when they come in.

And in most cases, the description of the sound is not extremely important, nor does it typically provide a great deal of diagnostic information to us as the professionals. But the importance lies in the fact the

patient finds it important enough to tell us, the professional about it.

Because tinnitus, it's not imagined, nor is it a disease, but rather a symptom of underlying health conditions. And in most cases, it's associated with damage to the ear in the auditory system. So I saw tinnitus heavily while I was in the government sector. It is usually in the top three disabilities related to our veterans service hearing loss, also being up there at the top of that list.

Now, here is an example of a tinnitus health history questionnaire where the patient can provide details of their tinnitus experience. It does ask questions like, how long have you had the tinnitus? What does it sound like? Is there a particular time of day when it's most bothersome? This gives you a clear understanding of what the individual is experiencing.

I want you to remember that no two tinnitus patients have the same experience. And honestly, what I have also found is it can change. So some windows, the tinnitus can be worse and it sounds a little bit different. And of course, there's lots of information that you all know about tinnitus that can affect the tinnitus, whether they're stressed, the salt in their diet, those types of things. So again, no two patients have the same experience.

And at times it can be different for the patient.

And due to that subjective nature of tinnitus, there is no reliable and purely objective measures for measuring it. However, numerous questionnaires or inventories have been designed specifically to evaluate the patient with tinnitus. These tools provide a means of evaluating the impact tinnitus has on patients, because that's the big part, right? A tinnitus questionnaire can, one, identify problems or specific areas of a patient's life that are affected by tinnitus. Two, it can quantify the magnitude of the tinnitus and that impact.

Three, it does serve as a helpful counseling tool. Four, it monitors the patient's progress with a particular treatment. This last Application is limited and that these questionnaires are not designed or validated to measure the effectiveness of tinnitus interventions. But administering a questionnaire like this one, pre and post treatment, can demonstrate patient benefits. So this example shown is the Tinnitus Handicap Inventory.

It asks questions like if there is tinnitus, makes them feel upset, out of control, frustrated. Their score indicates the magnitude of tinnitus of their life, ranging from slight to catastrophic.

All right, so tinnitus referrals. Patients who present with physical trauma, facial palsy, sudden hearing loss, warrant immediate emergency referrals for medical care before any discussion of tinnitus treatment occurs. Emergency referral is warranted for patients who demonstrate suicidal ideation or say or do anything that causes concern for their well being. It is not within the scope of practice for hearing health care providers to treat mental health issues. Now, an urgent referral for tinnitus can include pulsatile tinnitus, unilateral tinnitus, ear pain and or drainage symptoms related to head or neck movement and vestibular symptoms.

So dizziness or vertigo. A lot of those urgent referrals coincide with many of the topics that we discussed prior in this presentation.

Tinnitus treatment options hot commodity, right? This is the big talking point. And currently when we talk about this with our patients and for us to know, there are no FDA approved medical methods for the treatment of tinnitus and there really are no medications that have been shown to reliably reduce tinnitus perception. In some cases, tinnitus caused by a treatable medical condition such as TMJ may be drastically reduced by addressing that underlying condition. Those research efforts are ongoing worldwide, especially by the pharmaceutical companies, in hopes of finding some medical treatment that will cure tinnitus or at least provide relief for the majority of tinnitus sufferers.

And I always, for me when I am in clinic, by providing a patient with hearing aids that is a major player in helping reduce the symptoms of tinnitus for them, you have other options. Taking it a step further, with many manufacturers, including Starkey having a tinnitus memory and program and Starkey are available from the IIC all the way up to those standard products. And then of course, apps, apps are heavily utilized. It can be played through the sound speaker or streamed through hearing aids. For Starkey, that is the Relax app.

We have had the Relax app for over a decade at this point and it has a lot of different options, educational as well for the patient.

All right, now we have made it to ear mold impressions and safety techniques. So this is Truly an art, right? It is an art to make an impression. It is an art to make a custom product. And Starkey, that is our bread and butter.

We see a lot of impressions and now scans that come through. We do need to follow a few steps to make it safe and as comfortable as possible. I do find over communication to be helpful, especially for that nervous patient. So you're going to talk the patient through every step of the way. Tell them how different things are going to feel.

Tell them if it's going to be cold, if it's going to be soft, if it's going to be itchy, if it's going to make them possibly cough. Keep them informed over communicate whether that's during otoscopy and what adjustments you may or may have to make for surgically modified ears. And a bridge and bracing techniques that you will be utilizing. You'll feel my hand here on your ear. I'll be pulling back those types of things again over communicate.

So during otoscopy you're going to be bracing. This provides control and prevents potential trauma if the patient moves unexpectedly.

I love watching the medical shows and no one is bracing during otoscopy. It drives me nutty. And a thorough otoscopy is critical, especially if the patient has a surgical ear. So note on this image how the fingers of the instrument hand brace against the cheek while the fingers on the non instrument hand both brace against the head. And also pull back that pinna up for better viewing.

And of course you're going to be pulling back and down for that pediatric patient. And then the bridge and brace technique. Again, both hand and instrument act together. We are working in unison. One hand is that bridge and then the other hand holds the instrument braces against the head or bridge hand.

This is important and it prevents accidental injury or damage to the ear. So from the recommendation, I do want to just quote the recommendation by the International Hearing Society and they state both hands and the instrument act as a unit and at least one hand must be in contact with the patient's client's head. One hand serves as a bridge and is placed on the side of patient's client's head in proximity to the ear. One hand holds the instrument steady and is placed either firm contact with the patient's head or securely in contact with the non instrument hand. So this technique ensures that hands, head and instrument act as a single unit to prevent again that accidental damage or injury to the ear.

Now you can see here the impression gun. The size really does prevent using the instrument hand for bracing. So the tip is firmly in contact with the thumb of the non instrument hand and it serves as a bridge while the fingers bracing the head above that pinna.

And we've made it to tympanometry. Now this as you guys know is a diagnostic procedure to examine the functionality of the eardrum or tympanic membrane. Tympanometry is an admittance testing is a powerful tool. This is often quick, easy to perform. It does give us objective information regarding the integrity and movement of the TM again tympanic membrane.

And it allows us really to understand the health of that middle ear and monitor that health of the middle ear. So how is it performed? Lots of communication with the patient. Again as you can tell, I like to communicate over communicate whether it's with a four year old at home or in clinic and tell them it might feel a little uncomfortable. You may hear loud tones as the device begins to take measurements.

So let's go over these six steps here. You see of course one, we're going to do otoscopy, we're going to check for that earwax or foreign objects obstructing the ear canal. We're going to place that probe type device in the ear canal. And the test does change the air pressure and causes the tympanic membrane to move back and forth. And the measurement of the TM movements are then recorded.

Moving, speaking, swallowing during that test will result most likely in incorrect measurements. Luckily it does not take too long to do so you can quickly run it again because it does take about two minutes or less and people of all ages can have this testing done. It can be more difficult for children that are younger to cooperate. A very helpful tool is any light up toys. Light up toys that moved.

Any of those guys that changed colors were my best friend when doing otoscopy or anything really with kids and pediatrics in clinic. And the question I would get asked by my patients, are there any risks associated with tympanometry this test and there are no risks related to completing this testing. It is designed again to measure how the ear responds to varied air pressure in the middle ear. And again of course before we're doing the test, the patient ear is going to be examined to make sure that there is no obstructions. And as you can see on the image on the slide, a few of the different results you can get with your patient.

Normal TMP results include and indicate really there is no fluid in that middle ear. The membrane is moving normally. There is normal pressure in that middle ear. Space, there's normal movement of the ossicles and that membrane, the tm, and then there will be normal pressure that indicates inside that ear, middle ear space. And you can see on the slide what that result is for both adults and children.

But what about abnormal? Abnormal results may also be a reason for medical referral. So one of our red flags, particularly if you have identified a new condition such as a perforated tm, fluid in that middle ear space. So fluid in the middle ear space, perforation, scarring, it could be the result of frequent ear infection. So you could see scarring on that tm, middle ear, pressure beyond the normal range, growths in that middle ear earwax, blocking the tm, that earwax, it gets us every time.

And a lack of mobility or other problems with the ossicles in that middle ear space.

Now as we finish up here, I do want to circle back to the importance of documentation. So we always want to follow up with the patients. Whether or not you make that referral, ensure that an effective follow up plan is in place and always document appropriately. So again, if it's not in the note, it didn't happen. And make sure you date and sign that note because patient safety does come first.

One little tidbit that I want to throw at you guys when it comes to documentation here is if you have not heard in the Profit software, there's a new feature that was released called Session Notes. This is a huge time saver and I would have loved to have had it in clinic. But in this section in Profit software, in the Starkey software, it's called Session Notes. It tracks any adjustments that you're making in the software for you, whether it's in the right ear, the left ear, whether it's in Sound Manager, whether it's, whether it's changing targets, any of those adjustments you make for that patient in that visit is tracked under Session Notes. And what's really cool is that you can export it to medical records or you can also just copy it and paste it to a clipboard and do with it as you need.

So really helpful when you are writing those notes, those SOAP notes to utilize this feature. It is a brand new feature called Session Notes in Profit. So I wanted to give you guys that golden nugget to take away as well. And I want to say thank you, thank you for your time, thank you for joining me. I'm sure it was many of you enjoying your lunch while listening to me and hopefully you found a few little bits to take away to clinic.

With you. I'm going to go ahead and I thought I saw a few notes come through.

All right.

So we have recommendations other than changing tips for ear canals that will not stop seal for leakage.

All right that came around 1253 so we were probably talking about temps.

I am sure that we have a few different ideas of course changing the size right. Getting sure of that size, sadly trimming ear hair if needed. I did not love having to do that but I did trim a lot of ear hair to help with that seal and sometimes there was different individuals that I know that would use a just a different solvent to put around there to help with that tip. So I'm hoping that was related to the question. I based it off the time.

If not I will stay on and answer any questions any other additional ones. But again thank you for your time and I hope everyone has an awesome day. Enjoy it.