Advanced Ear Examination for Clinical Decision-Making

Presenter: Jay Jindal, AuD

Welcome to today's course, Advanced Ear Examination for Clinical Decision making, presented by Dr. Jindal.

Before I turn this over to our presenter, I do want to point out that these are the risks benefits associated with this class. This slide is in your handout if you would like to look at it at a later time. And these are the learner outcomes that you should be learning by the end of this class. Again, this is also in your handout and if you want to read through the learner outcomes, please do so at a later time.

And at this time, I'm going to turn the presentation over to our presenter.

Okay, I think that we can start. So welcome everyone and thank you so much for joining us today. It's a pleasure to welcome you all to the first Inventis Academia International webinar of this 2025. And I'd like to take a moment to express my gratitude for your continued participation. Your enthusiasm and engagement make this educational journey truly valuable.

Thank you so much. Well, we are kicking off the year with a session led by a renowned professional whom I deeply respect not only for his expertise, but also for the invaluable feedback he has provided on inventing instruments and software over the years. I'm thrilled to introduce today's speaker, Dr. Jay Jindal. Thank you so much Dr.

Jindal, for being being with us today. Thank you. Dr. Jindal is an highly esteemed audiologist with nearly two decades of experience. He is the founder and CEO of Audiology Planet, a leading UK based audiology organization offering a comprehensive range of services for patients of all ages.

Today's session, titled Advanced Ear Examination for Clinical Decision Making, will provide essential strategies and tools to enhance diagnostic accuracy and improve patient safety, making it an invaluable resource for your clinical practice. As always, I strongly encourage you to ask your questions at the end

of the webinar and please, please remember to fill out the survey we will send afterward. Your feedback is essential in helping us continue to provide high quality educational content. Dr. Jindal, the stage is yours.

Enjoy the webinar. Thank you Anna, you're always so kind with your words. And thank you to you and Inventus for inviting me for this webinar. I love talking about this stuff. Hello everyone, my name is Jay Jindal and I'm an audiologist in Kent, in Ukraine.

And without further ado, let's start Advanced Ear Examination.

Okay, so most of the images that I've used, they have copyrights, either mine or third party. These are some of the sources that I've used for the images. So Please try to refrain from reusing them. They're strictly for educational purposes of this webinar. And you can read this in full in the recording if you need to.

Okay, let's start. So we are going to talk about the eclecticism in otoscopy. So what should be the scope and range of ear examination? Can we look just beyond the ear or do we have to be confined with the ears? I'm going to talk about why you should look at the front and the back of the earth when you do otoscopy.

I'm going to talk about importance of using all your different senses when you use otoscopy, except touch, taste, of course, because I don't want you to be going around to lick people's ears. But you use the smell and touch in a certain way along with your vision and your hearing in order to do a good holistic ear examination. We're going to talk about how with the ear examination you could make some safeguarding decisions for children, vulnerable adults. Now, everything that you do clinically, no matter what it is, even if you pick up a pen in front of a patient, there has to be an outcome oriented approach. So you make a clinical intervention and you have an outcome in mind.

This is how you run a clinic scientifically. Now, in terms of the ear examination, we're going to figure out from ear examination whether somebody requires a medical referral, whether they require a safeguarding referral, whether your ear shape, size and conditions will affect impression taking, and whether the normal acoustics of the year will be very different from an average year requiring you to make some adjustments, some thought process adjustments or physical acoustical adjustments in terms of the hearing device fitting. Okay? So I recommend that you always think about an outcome for every single intervention that you make in the clinic. Some of the procedural consideration which I don't need to explain to qualified audiologists is that you take history and informed consent before you undertake any procedure, take care of infection control, use your manufacturer's guidance, whether you have use and throw things, whether you can disinfect them and then use them, etc.

Etc. Record keeping is really, really important. I do some of the work with medical legal cases and imagine that all the work that's done in the medical legal arena is based on paper and records. So if somebody sues you. I often say to my friend that my goal in life is not to get sued in my clinic, right?

Because I've seen, I've been working for about 20 years now and I've seen very good, clever, ethical Clinicians getting sued for trivial things. Now when that happens, the solicitors, experts the solicitors hire, they will get all the record about that patient from you. And that record will govern how well you've done with that patient. So no matter what you do in the clinic, if it's not written, it never happened. So do make sure that you have good record keeping and perhaps use some video assisted tools to do ear examination and therefore you have a complete record and you can close all the loopholes.

One of the first things that I learned about the examination is that unless you have the biggest size and shape of the speculum and really good instrument for lighting and looking in the ear, it doesn't work right. So make sure that you can get the best of the equipment and you do it in the best way possible to get great outcomes from your examination. I use this is Inventus harmonica. I have it here. So I use that

quite frequently in my clinic as a video otoscope.

I do have rechargeable, high quality otoscope which I use in my clinic again, which gives me really good pictures, really good view of the ear canal. There are lots of cheap otoscopes that you can find in the market, but I often find that I miss something or other if I try to use a cheaper one. Now, I quite like the intuitiveness of the Inventus software as it allows me to put the pictures on a report like this. This is my eardrum in the left ear and the right ear with my audiogram and tympanogram. And imagine if you're doing an ENT clinical, sending a report to ENT and put all these things there, then you've done half of their job as well as yours.

So videotroscopy really works. Okay, let's do the examination. This is taken from the British Society of Audiologists in uk and BSA recommends that you hold the speculum like a pen, the otoscope like a pen when you're doing the examination. So not only that you're looking in the ear with the otoscope, but also you're bracing the ear with these fingers which are free for you to make sure that if the patient moves, then they're not coming towards you and then getting an injury in the ear. So you don't hold the otoscope like a hammer, like you'll see in most of the online pictures of otoscopy.

You don't use the otoscope like a hammer, you use the otoscope like a pen. Now when you do it for the first time you'll find that your dominant hand works much better and non dominant hand. You initially struggle a little bit, but you eventually get there. So just keep practicing. Practice on some inanimate objects.

If you're a new graduate or still studying and you haven't done your examination, hold it like a pen. Try to practice it holding properly in your non dominant hand and and it will work and will be much safer than if you hold it otherwise. In terms of the advanced ear examination, you must look at the color symmetry of size of the ears, the angle of the ear, whether they are too much protruding forward or whether they're resting at an acceptable angle. You must look at the texture of the skin, the elasticity

and tenderness as well. If it's too stiff, you want to palpate in the front of the ear, just in front of the tragus, where there are some lymph nodes, pre auricular lymph nodes and at the back of the ear where again there are some postauricular lymph nodes as shown in this little cartoon at the bottom there.

So a couple of lymph nodes at the back and lymph nodes in the front. They can sometimes be painful and harbinger of really bad news for the patient. Sometimes if there's a repeated pain which doesn't go away within two, three weeks, they may need some site of lesion testing. Make sure you palpate around the mastoid. There are some of the conditions I'll show you which you will be able to figure out if you look properly behind the ear.

Then you look at the ear canal and the eardrum, which shows you a light reflex. You make sure you understand where the handle of Melius is pointing, which tells you whether it's retracted eardrum or not. And remember, when you look at the pointed end of the handle of malleus, that tells you which ear you're looking at. So for example, if in this eardrum, that's the right ear that we are looking at, because the handle of Melius is pointing towards the right, you look at the bottom and top of the ear canal. Again, that's very important.

There are pathologies at the bottom of the ear canal. There are pathologies at the top of the ear canal, which we'll discuss that you need to make sure that you understand whether they're there or not. Okay, postorical region. You look at the pinna. I'll show you some things that you can find on the pinna and all the way around the ear.

One of the points I wanted to make here is the depth perception. So when you look in the ear, I think if you try to understand how far your end of the speculum is from the eardrum, that helps you a lot and gives you a lot of information in trying to understand the orientation of the ear, the size of the size of the cavity, which helps you not only in a procedure like earwax removal, if a foreign body is stuck in the ear, you try to make some decision how far they are. When you're looking in the ear, you understand where

the first bend is, where the second bend is. If you get that depth fight so purposefully tell your brain that you want to understand how far the eardrum is from you. And the brain gets the perspective on the depth perception, if you think about it, because remember that perception usually is a binocular phenomenon, right?

So we've got the eyes in front of our face because that gives the brain a better perspective of where things are. Being a predator, right? So the tigers and all the predators, they will have eyes in the front of the face because they want to jump on their prey with incredible accuracy, otherwise they will lose their food. Whereas if you think about the herbivorous animals, they have the eyes on the side of the face, which is more concerning the peripheral vision where the predator is coming from, rather than an accurate depth perception. And when you're looking in the ear with an otoscope, you're invariably using only one eye, right?

Unless you pick up something binocular, something like a microscope or a head worn microscope like oscope sort of system. So if you use only one eye, you lose some sense of depth perception naturally. And your brain has to get more cues from the texture, the size, shape and everything else in the ear to be able to tell how far the eardrum is. Okay? And if you think about it, you get better at it.

Think about, try and note where the first bend, a try note where the second band of the ear canal is. Now the other thing, a clinical tip that I can give you not only for children, but also for adults. If you can get your specula in the ear without touching the tip of the specular to the ear canal, they're usually much more compliant, have much better experience when you're looking in the ear. So try not to touch the tip of the speculum, the tip of the speculum to anywhere in the cartilagenous portion that the speculum will be in the ear canal. And if you're seeing them again and again, they'll be much more compliant.

But otherwise also they'll have much better experience when that tip touches the ear. Nobody likes that feeling. Okay, just make, make a mental note of the answer here. What do you think? Whether this eardrum is normal or abnormal.

Right. So think about it just for a second and make a note of your answer, whether this eardrum you think is normal or abnormal. And now look at my explanation. I'm saying that this eardrum is completely normal. And when I do this presentation with a group of people, most people in the group end up telling me that this is an abnormal eardrum, but it isn't.

It's actually a perfectly normal eardrum with something called vasodilation reflex or vasodilation reflex of the mesh of blood capillaries that are around the eardrum. You can find it in somebody who is coughing or crying. So imagine a child with upper respiratory tract infection coming into your clinic, crying at the top of their lungs because they're in a strange environment and they're already uncomfortable. And then you look in the ear and you feel like, oh, this might be an ear infection, it's all red in the earth. But make sure you understand the history of the person that you're looking in the ear properly in order to make that judgment, whether it could be just a reflex, vasodilation reflex by the virtue of the fact that they might be crying or coughing.

And I'll show you later on what that history will look like. Now, ear irrigation, whether it's with the water or air chloric that we do in the balance testing, that will cause this reflex as well, which you're actually purposefully looking for to see whether you've stimulated the ear with the heat or not. Okay, so not all red eardrums are an indicator of ear infection. That's the point here. And now look at the things that you can find behind the ear.

So in the post auricular region, you can have a large abscess perioste lapsis there. Very painful mastoid infection. Okay? Very painful mastoid infection, which makes the ear stick out a little bit more. A term that's used for ear like this is bat ears, where they're flapping out a little bit more than usual right

now, to be fair, if somebody has this or that, they'll probably end up in a, not only in the ENT clinic, but in A E.

And we as audiologists will hardly see these guys because there'll be pain, there'll be other issues, and they'll hardly come into an audiology clinic with this sort of problem. But this thing here where there's a purplish scar behind the ear that is called battle sign. And if you see that some on someone, particularly a vulnerable adult or a child, you have to be really, really cautious and concerned about it because this is not a natural injury that you can get when people present with this. So if somebody falls, this is not the common site of injury and this usually means that the person has been whacked by something or other, whether intentionally or accidentally. So you need to make sure that you understand the history.

And if there are suspicions, like we had a child who was beaten in the local park and presented with this but would not admit how it happened, where we had to inform the safeguarding team in the past, that picture is not of that child, we didn't take any picture. But the safeguarding team did get involved and later on the police. Okay. And then you can find all sort of different, different growths on the pinna. And to be honest, if there's anything, any growths like that, you will usually get an ENT opinion, although most of them are quite harmless.

If you see a small hole in front of the ear there, this is called preauricular sinus. Now that is generally speaking harmless thing which many, many people have unless and until it gets infected. The track of the sinus is deep into the facial nerve and if there's an infection that can travel to the facial nerve as well. So the usual invite advice for these guys, one that they see an ENT consultant just for general checkup and if they've already seen someone and then you're taking care of them either because of frequent glue year or other issues, you might want to tell them that if there's any discharge, pain or infection in this site, they need to urgently report to a medical professional because that can easily turn into a facial nerve problem and paralyze the face. Okay, now this is a pressure sore that some adults,

particularly older adults will get in summers.

We see a few of them in UK because when people sunbathe and if they sleep on one side or the other, the ear will get hot and due to poor blood supply of the year, they'll get some nodule. This is treated with steroids and sometimes cut off with nitrogen knife or a surgery etc. Very painful but usually very manageable thing and then you can have more horrendous things in and around the ear. Now look at this here, right? So this is quite unassuming spot.

And unless you are actually trying to spot it, you will not be able to spot it the point here is that your job is not as an audiologist, not to diagnose whether they have a slow growing basal cell carcinoma or fast growing cancer. Your job is to try and identify everything around the ear. If you've done any examination, recorded it, then you can be libelous if you miss it. And therefore anything that doesn't fit in within the normal parameters, perhaps reported to their GP or if they have a physician other than the general physician so that you've done your job right. I will usually take a picture and send it to a friendly ENT consultant or somebody else that I know and ask them their opinion.

And usually I will post that picture in the clinical letter as well that I've seen this. And maybe you can monitor it locally when I send the letter to the gp. So. So beware of anything in and around the pinna that you will find because it can be a harbinger of patience. It can happen in children as well.

There are papers around there, not only in adults now, too many hair in the ear. They can be associated with tumor lesions as well. Usually it can be cultural and some ethnicity. They will tend to have more hair in and around the year. But if there's sudden growth of hair, you might want to try and figure out what's going on in that year with the help of their gpu.

Minoxidil is a hair replacement therapy. It helps in the hair growth basically and sometimes you see that because of it, and sometimes there are some localized reasons. So beware of sudden changes in the

number of hair in the ear and around the ear. Now, talking about the ear canal, obviously, as you would know, there are two parts of the ear canal. The first one third which is cartilaginous, and the next two third which is bony portion of the ear canal.

The joint of cartilage and bone is called isthmus. And that's a very important joint. You'll see a problem that can occur at that bend of the echina. So the first bend injury or infection of isthmus can cause cartilagenous stops called false fundus. And then when you look in the ear, sometimes the interior bone comes in the way of the full view of the eardrum.

Here it's only very partially blocking this anterior inferior quadrant, but sometimes this will be blocking it in much more detail. And you it will be impossible to look at the ear even if you pull the ear back and up the way that we need to do for the adults. Right. If you can't see the complete eardrum do mention it that you cannot see it because you don't know that there are any pathologies at the bottom of the eardrum. Okay, now make a mental note what it is.

So that's the picture of inside of the ear, one of my patients. Other one, that's a rubbish cheap camera. But I've got a better picture of this ear as well, but you get the point. So this is false fundus, that's the cartilage in a stop that we're talking about at the first band of the year. So you look in the.

You see nothing but just skin.

Very difficult to manage. So I have a 74 year old female with false fundus on the left side. Remember this is pointing to the right, so that's the right ear. They do have some sort of conductive loss, conductive element in the right ear as well. It's a long standing loss.

And on the left side, this actually looks much more like an eardrum here, but it isn't, it's of false fundus. And look at this hearing loss which recently deteriorated actually and really difficult to manage again.

This is 65 year old female of a patient of mine. They have false fundus on both sides rather than just one. There are lots of different repercussions in terms of what you do for that hearing aid fitting, what you do for their general listening.

So for example, with this particular patient I've asked them to use aftershock, spoon, conduction headset when they're listening to anything from their phone or if they can use it with the television, etc. As well. And that works perfectly well for them hearing device fitting wise it's slightly more difficult because when you block the earth, this ear is always usually having more problem because the origin of the false fundus lies in this recurrent problem in the ear canal with the infection, then dryness, etc. Etc. So when you block this ear, the ear doesn't like it very much.

So you have to be considerate of them. After that there could be various different glorious growths in the ear canal. And usually if you see any of those, whether it's a bony growth like this with the peduncle, or just an epidermal growth like that, which is a cyst or some soft growths like those, you will obviously refer them to an ear, nose and throat physician, something like this if you can identify really well which is a bony growth because of swimming in the cold water. I'm sure that if you are employed audiologist, if you've worked in the clinic for a while. You would have seen people getting really, really surprised when you find this and you tell them, oh, I know something about your lifestyle, that you've been swimming in cold water when you were younger and they get flabbergasted.

How could one know, looking in the ear, that there are growths in the egg now and they were due to the cold water swimming. So basically the idea here is nobody knows for sure what happens, but the mastoidia cells swell up underneath the ear canal and that actually pushes the bone up and there's nothing much you can do about it apart from just monitoring it, how it will affect your impression taking and the transmission of sound, etc. Okay. And then you can have infections in the ear canal, you can have dry infection like a fungal, you can have wet infections. So generally speaking, wet otitis media

more often than not is the result of swimming in contaminated water.

So water has serum as bacteria and people go on holidays and swim in swimming pools which are not treated properly with chlorine, etc. And they get infection. And I remember at least two or three patients who actually will come to the clinic with a handkerchief in the hand and you know, the ear is literally oozing out and they were holding it in their hand.

When it's diagnosed properly, it's not that difficult to manage, but it's a literally pain in the ear basically to manage it, because sometimes they need wicks, etc. Apart from all the other medicines that they usually need in the ear. But if somebody has discharging ear, try and assess in the ear whether you can see the eardrum, if it's intact, if the eardrum is intact and the ear canal looks slightly swollen, then you know that discharge is coming out from the outer ear and not the inner ear, sorry, the middle ear. Therefore the treatment regime will be slightly different. So if you identify it and report it to the gp, it often works better because you as an audiologist would have seen many more years than the GP in general.

I've left you some self help advice from NHS UK that you can look at in your own time or take a screenshot now which you can pass on to the patients. Again, you are not a medical professional, so this is not your advice to the patients, this is an advice from NHS UK, particularly when it comes to the medicine, etc. Although everybody can take a mole and ibuprofen over the counter. I personally sitting in the clinic, won't say that this is what I recommend for them because that's not my job. Recommending medicines could be a pharmacist job or an ENT job.

Right. Again, think about not getting sued for anything and to be fair that you don't know whether they will be suitable for that particular patient, particularly if you don't know their whole history and how these medicines will react to their other clinical or medical potential problems. Okay, now then you can have a chronic otitis externa where there's no discharge or fungal, et cetera, but if you look at the shape of the

ear canal, that changes dramatically. There's some swollen bits, some exfoliated excoriated skin present in there. Now I remember one of the ENT consultants speaking in a CPD event where they were telling us about this patient who was frequently micro suctioned with chronic artitis externa and eventually that clinician was sued because it was chronic artis externa and not problem with the wax, etc.

So you really need to be aware of the patient's history when they present to you with problems. And you need to be looking in the ear with an intent of finding problems rather than finding somebody with normal ears. Right. Fungal growth in the ears are really nasty and they're really difficult to diagnose, particularly by clinicians who are not very used to looking in the ear, which can happen in the primary care. And even if you're not looking for particular problem in the ear in the secondary care, they're really difficult diagnosis.

So something like yeast with fungal hyphae, aspergillus with the sports, you really need to make sure when you do the ear examination you try and understand beyond the fact that these guys have infections, they have fungal infection. And most primary level treatment for infections doesn't contain antifungal chemicals in them. So these have to be treated specifically with antifungal chemicals. Something like canister nc, you know, canister is that powder thingy that you put in the shoes, etc. The sports people, athletes, they will frequently use it not to get a fungal infection in the sweaty toes, etc.

Sometimes a wick is used for about seven days or something and that's the only way to get the treatment to the right place. But before that, everything, the ear has to be cleaned properly and it can be painful, it just keeps growing very, very fast if, if it's not treated. So if you remove for example, this ear in the morning, by the night time, it might just completely fill with the, with the yeast. Again, it's a similar sort of fungus that makes the bread, but this is not Something that you want in your body.

One of the most common causes of fungal infection is actually overuse of antibiotics in the ears. So if somebody presents with pain and infection in the ear and if they're given antibiotic spray and it has been used far too much, then it reduces the overall microbial resistance within the ear canal. So the number of microorganisms in the ear canal reduce because antibiotic will indiscriminately just kill all the bacteria. And fungus is a very opportunistic organism, so it takes over basically of microbes in the ear canal. So imagine somebody presenting with an ear infection, they have a bit of fungal infection in their ear and they are prescribed antibiotics, ear drops, which makes the things worse, not better.

The patients are complaining, oh, it's hurting even more.

So you may be able to save a lot of hassle for a patient if you diagnose these things properly. And then you can have malignant otitis, which can actually spread through the bone above the mastoid bone above to the brain. And that's why the name malignant, because it's a necrotizing otitis. External extreme pain is one of the symptoms which particularly worsens down when you're lying down or turning in the bed is a giveaway. So please take good history and be mindful that lesions in the ear can actually cause problems in the brain as well.

And then you can have. This is the importance of looking at the bottom of the ear canal. This basically is akin to cholesteatoma of the ear canal where it's eating up the bone here, right? So where the keratin starts eating up the bone at the bottom of the ear canal. And these guys will typically be younger and they will have some acute conductive loss, particularly because of the debris in the ear canal.

It usually results in moisture debris. So this is the one without cleaning of the ear. And that's after cleaning severe ear pain because it's potentially eating the bone up and that's really painful. Widens the ear canal again because part of the bone is missing. And sometimes the tympanic membrane will look thickened as well when this happens.

So remember keratosis obturans. And if you don't look for it, particularly people who come to earwax removal clinics, they are more likely to have something like this if there's a problem than the general population which comes in with for ear checkup or hearing device appointments, etc.

Traumas, traumas caused by either the clinicians or the patient themselves while they're Trying to cream to clean the earth. Remember, the staphylococcus A lives on the skin, so any lacerations it can get activated and cause problems. If there is a trauma in the ear, either due to the procedure that you do, ear wax removal or ear impression taking, etc. Etc. Or if something that the patient has done themselves, you need to make sure you know the history and the medications that they're on.

If they're on anticoagulants, blood thinners, then we have a problem. Right, because the blood is thin and it won't easily stop coming out of the ear. Usually the skin of the ear is thin enough and by pressing it a little bit with an instrument like a jobs and so on, with some cotton on it at one end that will have sufficient pressure on the part hard, which is lace weighted and will stop bleeding. You must must do two things if it happens because of a procedure that you've done. One, you always tell the patient, don't hide it from them that it has happened.

And there's 99.9 chances that if you explain it to them why it happened and what they should do, this will be done over with there and then. And if it's hidden from the patient and they discover it either by themselves, if the blood comes out later on from the year, which they spot or their family member spots, or if somebody else tells them, that will be potentially a complaint or in the worst case scenario, a legal suit. So always make sure that you're honest and open about it if it happens in the clinic. And secondly, if you do procedure, then perhaps it's in your interest to get trained in using this Jobson horn and how you can put some cotton wool on it and press that area where the blood is coming from. Otherwise you have to manage it through minor injuries or perhaps the general physician.

Okay, but have some sort of risk assessment and mitigation available in your clinic if you do any invasive procedure, whether that's UX removal or ear impression taking eardrum. So just a little trivia. Which of these attain Adam sizes burst that, as you probably can guess right, is middle ear ossicles. The other organ in the body is the eyes. When the babies are born, their eyes are adult size.

And that's why babies have these big beautiful eyes. Their face grows and it accommodates the eyes a little bit more and they become smaller. But a small baby, big eyes, beautiful picture. Okay, so eardrum has light refracts. It's when it's intact, it's slightly oval in shape, 10 millimeter 1 centimeter in height and 8 millimeter in width.

Now that's again that you want to get used to and tell your brain when you're looking in the ear. Now this is 1 cm and 8 millimeters, about 1 cm and just less than 1 cm in width. Right? Because when you look at the eardrum through any instrument, they're usually magnified and they give you much larger image of the eardrum.

You can usually get better and better at looking at the eardrum when you start thinking about its size and shape and other cues the brain will get from the perspective around the ear canal, if that makes sense. If it doesn't, look at some of the stuff in the optical sciences about depth perception and how the brain makes two and two together. When it looks at things, it's not straight, it's slanted. So there's an anterior and there's a posterior portion. So there's about a 45 degree angle to the eardrum.

Posterior portion. So you divide it into four regions. Posterior portion and the anterior portion. And whether it's the top half or bottom half, superior portion and inferior portion. Okay.

You look at the lateral process of Phandalop Melius where it's pointing, so you know what side you're looking at. So that's the right eardrum. That's the right eardrum. Sometimes you can see the lateral process of incus etc as well through the earm, particularly if it's perfectly opaque. That's the color of the

eardrum.

Again, when you're looking in the ear, you try and note the shape and the slant and the color of the eardrum, which gives you a hint about lots of other pathologies. You think about the handle of malleus orientation and lateral process of incurs and the annulus, so the ring of muscles around the eardrum, that one. So whether that ring is intact or not, that makes a difference. I'll tell you how in a minute.

I love looking at retracted eardrums. I'm a sad audiologist now. My reason is that's the only way I have access to all these beautiful structures. The marvelous, complex engineering the human ear is because I can see the structures which I usually won't see. And the ear nose, throat surgeons will, will have an access to in the operation pages.

So I can see that in my clinic. Don't have to go to an ot, don't have to open up somebody's skull and still see the head of stapes here and the nerve here and everything else that you can see. Through retraction of the eardrum. As bad as these things are for the client who is visiting in the clinic, I secretly love looking at them. Okay.

I don't wish it on anyone. It's a beautiful sight anyways. So in terms of retraction, you have to make sure that you understand whether that retraction of the skin is right on top of the structures of the cochlea or the middle ear ossicles, because that retraction is not going to get patched on its own. You have to make sure you understand whether there's a retraction pocket in the attic, because that can turn into cholesteatoma. So those two things that you must note about retraction.

There's a retraction pocket at the top of the eardrum in the attic. You make a referral if it's on the structures of the ear, middle ear or inner ear. Sometimes it's completely atelectatic. And on the promontory of the cochlear, you will make any anterior feral for that yet so it doesn't turn into some nasty things. There can be holes in the eardrum which are defined either safe or unsafe perforations.

Safe perforations do not include the annulus, the fibrous edge. Okay, so they are in the middle. And then do not include the attic of the ear. Everything in attic is unsafe perforation. If the muscular ring is intact and the perforation is in the center, then it's called a safe perforation.

For example, here they can allow. They still have some risk, although they are safe, they can allow infections in the pseudomonas. Again in the water, if the water goes in the ear. So the ear has to be dry, lo and behold, they take about six weeks to heal. And when they heal, the middle layer is not formed properly.

That's why you see a weak spot sometimes in the ear, which is very clean, cleaner than rest of these, almost transparent rather than opaque. If it's a perforation with an old edge, then it doesn't heal itself. If the edge is not very sharp, it's very blunt, then it doesn't heal itself properly. And you might want to. Well, with any perforation you probably do want to take an opinion from a medical professional.

And sometimes with the old edged perforation, even if they're safe, some ENT colleagues will just sharpen the edge around the ear. So to stimulate it to grow, to stimulate the eardrum to grow and heal itself. So it's always worth checking with them Safe perforation can become unsafe perforation in time. So if someone has seen a medical colleague and has been told that we'll monitor the perforation and for some reason they haven't been to see them again because, you know, if, for example, someone has hearing devices from you, those people you'll hopefully see for the rest of their lives. So, so you'll have much more contact with them than perhaps their GP or a medical colleague.

So it probably falls into your burden of care that you make sure that the safe perforations don't turn into unsafe and therefore requiring more immediate care. What is unsafe perforations? The perforations in attic. So at the top of the eardrum or like, which involve the annular ring. So if that ring is broken, then it becomes unsafe perforation because that can turn into things like cholestytoma, etc.

Okay, so that's the example of safe perforations. So that's in the middle. That's in the middle. It's almost gone, but still in the middle. So safe perforations, safe if.

But here it's an attic and attic and it's breached the annulus ring. That's a problem. And here, look at this. So there's wax at the top of the eardrum, Right? At the top of the eardrum.

Remember, the wax glands are in the first third or the cartilagenous portion of the earth. Now wax is no business to be there really. And if the wax is there, this ear has to be examined by a medical collate because that's particularly. Here is a cholesteatoma. So it can be a potential cholesteatoma.

Do you think it's a safe or unsafe perforation? Look at this. So the annulus is intact. You could say it's safe. But this thing hanging here is cholesteatoma.

So it's not as safe as you think. But this is cholesteatoma, which requires attention from any nt colleague. These little granulation tissues near the stenosed lining of the middle ear. So I wouldn't worry about that. You'll see that in many other cases as well with perforation.

So they respond to the temperature changes, etc. Which easily can happen when the cold or warm air is getting through the. Through the perforated eardrum. Okay, now following on from the eardrum, you can have infections in the ear, right?

If the eardrum has a pimple like appearance, that's called acute otitis media. So this ear will be painful because there's some inflammation involved here, the person who has it may have some fever or sometimes the eardrum gives away discharge as well. And usually the infections will get better within seven to 14 days. I know that some ENT colleagues want to see these ears. In my locality, where I am at least one or two ENT colleagues, they want to see these ears sometimes because this ear is bound

to burst at some point and although that's the start of beginning of the end of the infection, because it relieves the pressure and hopefully pain as well when it bursts.

But they want a controlled hole in the eardrum rather than uncontrolled and therefore at least one or two ENT colleagues have asked that these years can be referred to. So perhaps just liaise with your local colleagues, see what they would like you to do if you diagnose an acute otitis media case, whether they would like to see them or not. That would be a good practice. If you have to use your sense of smell here, if it's gross, but if there is a smelly discharge coming out of the ear, that ear needs urgent attention. So that can be harbinger of bad news.

The infection can actually turn into meningitis and other problems. So you must, must get this ear looked at by a medical professional. Then you can probably find glue ear, as in these two eardrums. So see these air bubbles? That's usually the resolving part of the glue ear when the air just starts to come into the ear and form some bubbles here.

So, and this is a classic thick, yellowish, mucusy gloop behind the eardrum, which stops the eardrum to move properly. Now remember, in children under 6 years old, it's one of the most common medical problems of childhood to have gluey. But in older children and adults, it's very rare problem. And in fact, if somebody has an unexplained unilateral gluyear and they're older than, well, let's say they're adults, then it's a case for referring them to ENT consultants, particularly if they are from South Asian descent, because it's been found that it could be a nasopharyngeal cancer, a benign growth which is sitting on the top of the eustachian tube at the back end, causing unilateral gluya. So you must refer those adults with gluya.

Not every the flat temp will be gluey, which is shown in this case here, there's a reference. So this guy, they kept having glue like fluid in the behind the Eardrum and flat temp, there was ventilation tube involved etc, but eventually it was found that they had a temporal bone fracture. And this actually, the

fluid in there was actually CSF cellulose cell cerebrospinal fluid rather than gluya. So again, take the history, injuries, whiplashes, etc. And make sure particularly adults are referred for medical care if they present with unexplained gluye.

Okay, Traumas inside the earth. If you see any blood in the ear, behind the eardrum or outside the eardrum, it's always a case for a referral, sometimes even safeguarding referral if it's unexplained. So that blood behind the eardrum can come from the head trauma as well.

And the reddish lesions behind the eardrum, they can be harbinger of bad news. Here it represents a glomus tumor which usually comes with a pulsatile tinnitus as well at the same time. And that fairly urgent Referral, this guy, ISO 11 year old cricketer, actually very charming and talented person. He presented with this sort of ear and this sort of audiogram. Imagine this is the left ear and that's the audiogram.

So if his tympanometric trace was type B, I would have still tried to explain the inflammation on the tympanic membrane and a little bit of discharge in the ear. But this type A, with that discharge and tympanic membrane looking like that, this whitish patch on the top of the eardrum, that was something, that was a normal. And I immediately sent him to my ENT colleague who diagnosed him with cholesteatoma and he had a surgery done next week after seeing me. What should worry you in the years, you know, lo and behold, if you see things like that, that will worry you for for sure. That patient will come up with worrisome signs for sure.

So this is not what a typical audiologist will see in the clinics per se, but any discharge or any pain in the ear is worrisome, right? So if there's discharge or pain, you don't take it lightly, you don't think they're going mad or they're overreacting, etc. You always try to find out what is the problem because you see there can be all these different causes of discharge and ear pain in the ear. Now we're going to go through each of them one by one to explain what they mean. I'm only joking.

The point of this slide is solely that discharge in the ear and the pain in the ear can have so many different reasons that are beyond capacity to understand in the clinic or explore in the clinic. Therefore anything. Anyone who presents with these two symptoms need to have some medical support around it. I'll say a few words about the pain though. It's called primary otalgia.

If the ear abnormality is the source of pain. So if they have infection in the funcal, in the ear, etc. And the pain, you can see that it will come from the. If the eardrum is swollen, that's called primary ear pain. Most of the ear pain is actually secondary, so 50% or more is secondary pain which comes from anywhere other than the ear itself.

It's called referred pain. As you know, there are three different nerves in the ear canal and could be associated with any of those. Some of the laryngeal cancers, for example, present with ear pain. So it's a serious thing. 50% of secondary ear pain.

So you look in the ear, you can't find any sign of any infection in the ear and your patient has ear pain. There's 50 chance that actually comes from dental causes. So I make sure that the dentists around me get information about me because, and I get information about them so that we can actually cross make a cross referral pathway. So because of this reason, if I find somebody with no issue in the ear and they have an ear pain particularly associated with jaw movement, etc. Or if I feel that it's associated with clenching of the jaw in the night, the jaw is protruding forward, that is usually a referral to a dentist.

And most people who see me, they will have a dentist or other. Therefore it's quite easy for them to access that pathway. And then you have to make a decision whether you need to send them to another medical professional as well. Because patients who are older than 50, they smoke and drink alcohol or have diabetes or at risk of ear pain because they could have risk of tumor as well. Sometimes some carcinomas, they present as arthritis.

External with a pain in the lymph nodes, remember the lymph node in the front and the back, which doesn't go away within a couple of weeks, etc. One more point to remember here is that inner ear is supplied with a nerve which doesn't have any pain fiber. So if there's a pain in the ear, it's not coming from the inner ear, it's coming from either outer ear, middle ear or some other secondary causes, but not from the inner ear. And that's why inner ear infections, usually where the inner ear gets swollen, they present with Symptoms such as hearing loss and or vestibular issues. So either vestibular neuronitis or labyrinthitis, which is both the vestibular and cochlear part of the ear affected swollen.

They result in symptoms of hearing loss and balance or dizziness issue rather than pain in the ear. Okay. The point to note here is the herpes infection. If somebody has it, the ear pain actually starts a week before the vesicles come out on the etc. So you may want to keep in touch with these patients who present with the ear pain not only to make sure that somebody has looked at them when you referred them, but also to figure out whether they had infection like herpes.

Where you might want to make some sort of adjustments to your thinking around how did you touch them, how did you touch the ear and whether you might have cross infected someone or other. Okay, so we've looked at the white things in the ear, we've looked at the red things in the ears. I have this green thing. Now make a mental note again, what do you think that this green thing could be? There was a perforation here and this is ear impression material that's gone inside the middle ear which was taken out by some surgery.

Anyways, we're gonna move slightly quicker. Somebody who asked how when the webinar will finish. I think I'll be another 10 or 15 minutes at the most. Okay, so congenital cholestoma. If you see a pearly white mass protruding behind the eardrum rather than in front of the eardrum, that's called congenital cholesteatoma.

These get keep missing, kept missing. And I've diagnosed at least one or two of them and during my last 20 years of practice. If you start looking in the ear, behind the ear, inside the eardrum, and you will figure out whether you can spot them or not. Usually if you spot them, you send them to ent. Although they're very slow growing, sometimes nothing gets done about them.

Sometimes depending on their growth and size and structure, they get operated upon. Then you can have these wonderful things on the top of the eardrum which are called cholesteatoma. Again, remember, if there's wax at the top of the eardrum, you worry about it. You make sure that's cleaned. Either you clean it if you have a training in your wax removal, or get somebody to clean it and then have a look at it, because wax has no business of being there.

And what you're looking at in the ear is just a tip of a nice work. So it's much bigger inside and keeps growing and keeps causing problem and eventually it can actually breach that brain ear barrier as well. Okay, this is just a summary slide which you can read in your own time, but make sure you do a holistic ear examination to make Those decisions that we discussed are important in terms of the outcome measurement of the egg. Now, now, I can't let this presentation go and finish without talking about earwax. So earwax consists of secretions of sinuous glands which are the bottom of the hair in the earcina and sebaceous glands which are everywhere on the skin.

Purpose of the wax is it repels water, it traps dust and debris and germs. It has an enzyme which kills the bacteria and viruses going in the ear. So a little bit of it is actually quite helpful. It repels or discourages insects from crawling into the ear because of the particular odor that it has. It has antibacterial, antifungal antibiotic properties.

So wax in small quantity is a good thing. When it's too much, then it's a problem. It's hydrophilic, so it swells up with water. Therefore, you'll see some people who have ears full of wax and they go swimming and it swells up and it starts hurting them. So that's not swimmer there, unless it's

discharging and inflamed ear canal that may be just max if you remove it from the entrance.

There's an argument that the brain wants some wax in the ear because it's protective and therefore it compensates by making more wax. So removing the wax from the entrance with a cotton butter or something is very counterproductive. As you know, it may get affected how much wax you form with the diet, sweating, exercise, etc. But there is a gene which governs the amount of wax, how many kilos of wax you will have in your ear during your lifetime. So if you have too much wax, you can almost blame your parents for having it.

Basically, people with learning difficulties have been reported to have more wax, perhaps because they don't have back molars and the movement of the temporomandibular joint doesn't shift the wax enough outside the ear causes itching in the ear canal which can be calmed with some 2% acetic acid spray. And there's a product called Otinova, Oti and Ovah, I think, which is an old iodine recipe. So again natural and is supposed to work on the itching or irritation or dryness of the. Remember, if the ear canal is dry, then the bacteria have a party there. So they love dry skin, they don't let it get healed.

So with these products you change the ph and makes it difficult for the bacteria to feed on that dry skin and therefore the body can heal that skin point of it. This is just a quick slide to show how wax can be useful. So they found this whale where it had a 25 centimeter long wax plug. And when they analyzed it, they could tell the health whale lives for hundreds of years. So they could tell the health of the ocean water across the time period that we lived by looking at the wax as its own uses.

Epithelial migration of the skin. So the skin of the year grows outside just like your nails, which actually takes the wax outside. And that's the mechanism how the grommets fall out as well after eight to 10 months. So it's considered almost one millimeter per day that it's moving outside. Somebody had the patience to measure it.

So this experiment done by someone where they put two India ink plots and after two months they shifted as per that epithelial growth inside the eggnog. You can distinguish external egg nulls that are normal and pathologic on the basis of that migration. Again, if you start looking at the ear canal as a whole, the patients you particularly see time after another, you will be able to make some decisions on the basis of that. So there are a couple of papers that you can take. Screenshots.

I've given you my five top reasons why somebody shouldn't use cotton buds. Again, you can take a screenshot of it if you want to use it for your patients. But you can end up pushing the wax further in. You can have blunt traumas in the ear with the cotton buds. You remove the protective layer of the ear canal by making the skin more sensitive.

You can help introduce some surface bacteria and surface germs into the ear which are on the cotton buds. And they're good absorbed water and oil. So it makes the ear canal dry, which is generally not a good idea if you want to get rid of the wax.

That's my son. When he was little, I was doing ear wax removal on this year. Three year old. Now he's 12. So much bigger.

Nowadays I use this particular equipment called Roy Scope to remove the wax. This is a paper, if you're interested in this, which looks at all the different things that are available to put in the year to get rid of the wax. They found that olive oil is probably the safest thing that you can put in the year. And sodium bicarbonate short Term is the second safest thing. So about five days or so if you're four years and older.

So out of all the recipes that are available, those two things seem to be the safest. Olive oil. I don't, I'm not a big fan. I do ear wax removal myself. So if I see wax in the year, I try to remove it without using the olive oil because as you can see in this patient, they use the olive oil and the hearing drop

massively.

And after that's just the olive oil, actually, not the wax in the ear. And they thought they had wax in the ear because they had a hearing loss and they thought it was probably because of the wax. So they use olive oil for wax and that gave them even more hearing loss because the olive oil dried up on the top of the eardrum and I managed to remove it. It was much better. The other thing is that not all wax is a problem and will give you a hearing loss.

So this is a 26 year old who I saw about five, six, ten years ago. Now, they presented with wax and this sort of problem. But on the tympanogram, they had a double peak tympanogram, B fit tympanogram. And that's harbinger of bad news again. That means that there's some sort of loading on the eardrum or ossicular chain.

And in this case it was cholesteatoma. So you got the wax removed at that time and then so the cholesteatoma. So not all earwax causes hearing loss and you just have to think through it and use other tools in order to understand the patient's condition. This is a video about how the impression taking should be different in children and adults because they have more softer bone. Children have softer burns.

So if you use very stiff impression material that can distort the shape of the impression and therefore shape the mold. If you're making the mould, you can use this link to watch it in your own time. So I'm not going to show this to you today, but you can take a screenshot again or come back to this slide when Inventus has uploaded it on the Internet.

Okay? And that's me.

Anna, are you still there? Of course I'm here, Dr. Jindal, and I of course, followed the whole presentation. Thank you all for attending and what a fantastic session, Dr. Jindal, as usual.

So we can start. It's time for questions.

Can you see the question, Dr. Jindal? I can, I can. Fantastic. So can you please so kind to read the Questions from the audience and provide your answer.

Thank you so much. They found one of my comments funny. Thank you. If an adult contracts gluya, does this cause eustachian tube dysfunction? So it's the other way around.

So think about it. Eustachian tube dysfunction when the. So there is a tube which connects your ear with the nose. And the function of this tube is to aerate the middle ear, which is an air balloon system. Okay, so behind the eardrum there's an air balloon system.

And for continuous supply of air is connected to the nose by eustachian tube. If that tube gets congested, there's no air in the system, no oxygen. So the mucus lining around the middle ear starts discharging and the discharge is collected in the cavity. That middle ear balloon system is. Okay, now the idea about my slide was where is that eustachian tube blockage coming from?

If you're small, the eustachian tube is floppy and underdeveloped, so it can block easily with any sort of congestion that you get from your nursery, from your school, etc. Etc. With the germs and infections and sometimes on its own, sometimes allergic reaction in the sinuses, those sinus get bigger. Turbinates here they get quite large and other sinuses which sit on the opening of the eustachian tube in the nose so the middle ear cannot get aerated. Okay, so eustachian tube problems can cause glue here.

Glue year in itself is not really, if you think about it, a medical issue. It's a plumbing issue where there's some liquid stuck in the balloon which is usually filled with air. Now the cause of that liquid being stuck there is eustachian tube blockage. And there's different reasons. Allergies, infection, being a child younger than 6 years, tumors and other things which can cause the obstruction.

Okay, somebody's completely fed up asking when the webinar will finish. So we are almost there. And the next question is, it's common for audiologists here in India to have an otoscope, tuning fork and torch, maybe in the clinic. Plus ear impression related tools. What are your recommendations on this?

What are the tools audiologists should have in the clinic? Well, if you're taking ear impression, yes, you need all the impression tools. If you have an audiometer, I'll argue you don't need tuning fork because you can use your bone oscillator, which you can put here and give all different frequencies rather than just one frequency or two frequency tuning forks. Right. Ultrascope.

Yes. So get the highest quality ultrascope that you can get for your eyes. Try it with your glasses on. Without your glasses on, I can usually see better with my ultrascope without my glasses. My power of vision is not too bad and I can see much better with my binocular glasses, the oscope that I mentioned.

And more often than not, I can see much better with my harmonica, which Anna will be very pleased about.

So I take a picture with that and I use different sources depending on the ear that I'm looking at. If you have a good speculum, that does half the job. So you need to have all different size and shapes of speculum. You need to find the biggest one that you can fit in that ear without actually touching the ear. And that works.

Okay. I find that if you're using a manual lotus curve, you actually, if you use the rechargeable one where the battery doesn't dim gradually, it works. Because if you use the use and throw batteries, then after a while the battery will start dimming down a little bit. And the light, it affects the light and you have to change the battery too often. I hope that answers your question, but let me know if I missed anything.

Okay. You cautioned us to be ready to manage bleeding in the pinar ear canal if necessary. Ice cubes won't help as it helpful in epistexis. I think it'll be really hard to try and get ice cubes in the ear canal. I wouldn't, so I probably will pass that.

Could you explain false funders once more? Of course. So at the point where the cartilage joins with the bone, the first bend of the ear canal, if there are infections, irritations in that point which are not treated, that cartilage keeps growing upwards and gives you a flap of the skin at that first bend, which looks like an eardrum, but it actually is the closure of the ear canal, the bony part of the ear canal behind the cartilagenous part of the ear canal. That's called false fundus.

Thank you for your compliment, Troy and Janelle, thank you very much. I'm glad that I was helpful.

Thank you, Anna. Just comments about. They've enjoyed the presentation. If there is vasodilation, but no coughing, crying, chloric irrigation to explain it, what could cause it. So ear infections usually will result in a red eardrum as well.

In my experience, most people who have any upper respiratory tract infection, they will present with some. Some sort of red eardrum in the clinic. And you really want to distinguish it, particularly if you have a Tympanometer. And if they allow you to, they mostly do, because red eardrum doesn't necessarily mean that it's hurting. Okay.

So if you do it in parametry and if you can see that there's no fluid behind the eardrum, chances are there is no infection in the eardrum. Vasodilation that I showed you will look very different than a problematic eardrum where there's inflammation, if there are other symptoms, if they have fever, if they have pain in the ear, that will give you some idea that it's actually not vasodilation and it's inflammation in the ear. Now on the eardrum. Okay. The clinical significance of a congenital canal defect, that depends on what the canal defect is.

But again, think about what you're looking at and what your intervention is. So, for example, if somebody's canal has, I don't know, some growth, let's say, or narrowing of the ear canal, and you're trying to remove the wax, that will have a different repercussion than if you're trying to fit this canal with hearing device. So you want to think about the procedure or intervention that you're going to make and then shape, size, and acoustics, potential acoustics of the canal, and then define what is the clinical significance of it. I hope that makes sense. I'm not trying to ditch that question, but it's very general.

And I'm trying to just give you a general idea of my thought process around it rather than the specific answer for a general question. That makes sense. Okay, next one is patient PTA show conductive hearing loss. Type is normal. So I'm assuming that's tympanogram.

Final diagnosis would be conductive. And something else. Well, if they show conductive hearing loss, is conductive hearing loss. Now, there are more than one pathologies which can cause conductive hearing loss despite normal audiogram, normal tympanogram. Okay.

For example, you could take thinning of the tympanic membrane. There's a case, if I had time, I could have shown it to you. It was very interesting and I actually put it on one of the Facebook forums as well, because initially I didn't understand and I'm still trying to guess that probably is the cause of that problem where the top part of the eardrum was very thin and every time they did Valsalva maneuver, it moved the middle ear system so much that actually we could see about 30 decibel hearing losses of in

tones in the audiogram. So this patient presented with a massive hearing loss in their audiogram and they were doing Valsalva every two minutes in the clinic. And I said, okay, I want you to come back in two days, but don't do that maneuver.

Just don't do it at all. And they came back and there was a massive gap in the audiogram on the next time. The stiffness of the bones, middle ear ossicles, otosclerosis or some other stiffness that can cause conductive hearing loss. With normal tympanogram, there's an X linked syndrome that causes that stiffness, etc. And cause that audiogram in children.

So there are more than one causes. What is your impression of Debrox? I get this question all the time. I'm really sorry, I don't know what Devrox is.

What is your experience with middle ear polyps? Hey, look, I am a lowly audiologist and I don't have much experience with middle ear polyps. I think that something that an ENT surgeon, orthologist, who looks at them a lot of time, they will have much more experience. I would have seen maybe three or four polyps. And mainly in ENT clinics where I don't have any role in management.

My job is to see whether there's something wrong and luckily I can just get the patient away from me and get somebody else to diagnose and treat it. But usually in my experience, they get surgically treated.

If tympanometry in each year is within normal range, but the static compliance or pressure is, is significantly different between the ears, is it a red flag? No, not necessarily. But again, you want to look at the history, symptoms and think about the clinical intervention. Why are you doing it? What are the symptoms of the patient?

Do they have a problem? Do they have a symptom that they came with, which you can explain on the basis of that if there's a symptom, if they say, oh, my ear is always full, I can't hear properly, etc. That's when you think about that being significant. But within the normal range of tympanometric pressure, etc. As long as there is a peak in the ears, you'd find that most of the times this is okay.

What is the best way to treat ETF problems? Is this for physiotherapists or audiologists? Probably for none of us, to be honest. Now, finding why there is an ETF problem, eustachian tube dysfunction, why that's there. So think about it.

Most people who present in audiology clinics, at least with the eustachian tube dysfunction, I'll argue that many of them have a baseline rhinitis and most of them have some sort of allergy that's causing it. Okay, so allergy like hay fever, which comes seasonally, for example, if it's grass pollen allergy, that will come from April to about August or September in this country where I live in uk, but rest of the year they might have some sort of baseline rhinitis and that may not be very healthy for the eustachian tube. So usually if you find somebody with eustachian dysfunction, you want a medical professional, ear, nose, throat consultant to have a look in their nose and if they have a problem in the sinuses or the nose region, and that has to be treated with some sort of spray, whether it's saline, nasal spray or steroids, there's a fast treatment where you can squeeze in some water and clean the nose and with saline water, etc. Which helps as well. So figuring out why that is there in the first place is a good start.

And in my personal as well as professional experience, I find that lot many people are walking around with some sort of baseline allergy that they don't know about and treating that actually is very helpful for their symptoms. Okay. Using auto ventin. Yes. Great.

So there's lots of evidence. There's a, I think there is a Cochrane review that mention is mentions it as well. But you can go on PubMed and have a look. There's lots of evidence that auto inflation of the ear does help. So usually when I see children in my clinic, even if they have normal hearing, particularly the

age group of three or four, I advise their parents to teach them blowing the nose as soon as they can because I always say blowing the nose is good for the ears.

And Otovent is this next step in blowing the nose. In the last few hundred people who have recommended Otovent to, there will be one or two who will have some blood discharge coming out from the nose, either because the membrane is thin or some other problem. But mostly it's a safe procedure to do. But I usually mention that if there's any problem, if there's any discharge, etc. Of the blood, don't panic, just lift your own head up so that that blood discharge stops and then stop doing oto vent and talk to your medical professional that.

Anna, how long can we go on for?

As you prefer, Dr. Jindal. Okay. As you prefer. I think we have time for a two more two or three questions, so please keep going.

It's amazing to hearing your tips and suggestion Your insights are always truly invaluable. Thank you. I'll go on for a couple of more questions. I think we are sure we are going outside the area of advanced ear examination at the moment. So I'll just read through a couple of more of them.

Sure. Sometimes while taking the ear impression, lacerations can be seen with blood discharge. So any recommendations how to deal with it perfectly and take maximum care not to lace rate it, please. So try and make sure that you use an auto stop which fits the size of that ear canal. So again, remember, make sure you get a very good perspective of how big or small the ear canal is, etc.

Etc. Choose an auto stop which is going to fit in that ear canal perfectly well, not too tight and not too loose. That's the trick here.

I'm not saying it with a big head, but I can suggest to you that I've never in my life have lacerated somebody's ear with either ear impression or ear wax removal. And that's not because I'm so great, etc. But I constantly think about the eagle size and shape and the stuff that I'm using in there and how will I feel it if I push it so hard or so soft in the ear and that just works. So try and start thinking about what you're looking at and how big it is and what size of autostop you need to get in there and that will help. That's number one.

Number two, if you don't have any training in dealing with blood discharge, you shouldn't really. So explain it to the patient. Within your clinical risk management, you have a procedure ready. If somebody has a blood discharge, what will you do? So where I work there is a minor injury unit that I can send the patients to if they have any problem.

And there is at least in one or two clinics there, there are medical colleagues that I can ask people to look at and otherwise there's always accident and emergency where I can send patients to. So have this in mind if it happens. What are you going to do next? But because I am trained in it, I. I can actually use a Jobson's horn to with some cotton on it and to press the area where the discharge is coming from.

As long as I have really good tool to look in the visualize the ear canal, which I do with the head wound microscope that I use in the clinic. Okay, Sandra says let's have more lectures like this. Anna, that's the message for you. And in your experience does the toy envy and Valsalva technique for tympanometry. Ever come and use diagnosing middle ear disorder?

I actually use them quite often. So I use tympanometry and then I ask them to do Valsalva three times. C whether there's pressure change and proin B three times and see there's pressure change. That's a really good function of whether the eustachian tube is patulous or it's closed, etc. Literature will suggest it's from 40 to 60% effective.

The decision to diagnose somebody with eustachian tube dysfunction is still clinical, which is made by a qualified clinical professional based on the history, the appearance and everything else in between. But yes, as an audiologist, that's the tool that I have in my clinic. It doesn't take much time. There's no harm in doing this to most patients and therefore on that basis I'll do it and I'll report it to whoever I need to after doing the test. Okay.

Lots of amazing helpful information. Thank you. And nice presentation. What are the sign of earwax impaction? What may contribute to tinnitus?

So if the ear is completely blocked, then the patient can't hear the noises from outside. And when they're trying to stress to hear the sounds around them in that process, they start hearing the noises in the brain. That's what the contribution is, I think. Anna, we must stop here. Thank you.

I'm sorry to all those who've asked the questions and I couldn't answer. That's fine. Thank you all for attending and thank you so much once again. Dr. Jindal will deeply appreciate your contribution to inventis academia and see you soon for another class together, right?

Absolutely. Thank you so much for inviting me to do this. It was very enjoyable. The great audience here. A great audience.

And I'm also excited to share that our next webinar is scheduled for February 6th and will once again be hosted from the UK. This time we will welcome Professor Sami Dasgupta who will lead a session on etiology including genetic disorders causing vestibular hyperfunction in children. So stay tuned for more updates by visiting the academia section on your way on our website and following us on our social media channels. Thank you all and see you at the next session. Can I just add that sameit is absolutely brilliant and everybody who is interested in balance, they must must attend that webinar without fail.

They learn a lot. Thank you. Thank you, Dr. Jinder, once again. All right, take care.

Thank you. Bye bye everyone.