Infection Control: Preparation and Risk Prevention for Hearing Healthcare Professionals

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Hello everyone and welcome to Infection Control and Prevention in Hearing Healthcare. I am your host for this event, Dr. Michele Hurley, senior Education and Training Audiologist with Starkey and I really look forward to spending the next hour with you about this very important topic. But first let's cover a few housekeeping notes. If you do have a question, please feel free to type in, type that into the Q and A area and hit send and I'll be able to review those I will be answering at the end of our session so that I can ensure that we can keep focused during the course and then provide the answers at the very end.

If you are looking for the handout for this event, it is in a PDF form and it can be accessed through your pending courses on Audiology Online as well as by clicking on the link in the chat area within the classroom here. CEUs are available with a paid Audiology Online unlimited CEU Access membership. After completing the course, simply go to your pending courses on Audiology Online and pass the multiple choice exam. If you are having any technical difficulties throughout the course of our session, please call audiology online at 800-753-2160 and you may wish to jot that number down as this will be the last time we'll see it during the course of the presentation. You can also use the Q and A window as well as email customerexperienceontinued.com we have three learning outcomes for the course today.

At the end of the course, the expectation is that you'll be able to identify the most effective way to prevent infection spread, be able to outline potential routes of disease transmission, and be able to identify strategies for the ongoing prevention of disease spread in the hearing health care practice environment.

Infections and viruses are certainly not new to us, but the impact that COVID 19 has had on the world and as a whole, it really took us all by surprise. On March 11, 2020, the world changed when COVID 19 was declared a pandemic by the World Health Organization and Life as many of the world population knew, that changed dramatically and almost instantly. This emergent disease has really drawn attention to the need for infection control and that's a concept that should really be a standard in our practices as

hearing healthcare professionals. But its relevance and routine patient care has really been driven home by the impact that the virus has had and continues to have worldwide. And even though we are seeing lulls and peaks and valleys as it regards COVID 19, there are always things that we need aware of that will be, you know, coming forward.

So it's important for us to recognize that infection control is always an important part of our practice. One of the lessons that was really learned from the experience that we had with the COVID 19 pandemic was really about, you know, practice routines and infection control. Practice routines really depend on our knowledge, our perception, and our awareness of disease and how to protect ourselves and others. Most healthcare professionals experienced the need during the pandemic to change their clinical practices and their environmental settings, and they did that in response to what we were seeing in the moment. With that pandemic, perception and awareness wasn't really sufficient.

And the pandemic really changed the course of how actively infection control was practiced, not only in healthcare environments, but also in everyday life.

I think one of the really positive things that we saw out of the result of the pandemic was a whole new realization that hearing is essential. And, you know, the last several years have really made many individuals realize its importance and the importance of hearing healthcare services as well. When we consider the patient population that we are typically serving, whether they're young or the very elderly, they're often in a category of greater vulnerability for infection.

Statistics don't lie. And there is a tremendous correlation between the presence of hearing loss and quite a number of comorbid conditions, certainly, such as balance issues, diabetes, cardiovascular disease, loneliness, and even dementia. Hearing loss has so many comorbidities and conditions that are frequently found in the elderly population, and that makes patients that are exhibiting these conditions especially vulnerable to opportunistic infection of any, any kind. And especially we saw that

with COVID 19. Many patients who come to see us for better hearing may be experiencing one or even more of these comorbid conditions.

And while our focus certainly is on protecting ourselves and others, you know, from COVID 19 or whatever is the next concern that we may have in terms of infections. We need to be ever vigilant about the potential of any number of infectious diseases or, or bacteria that could impact the health and the safety of our patients and staff.

Factors that make the senior population more predisposed to infection include those anatomical changes that we see with skin and with body mass, things such as our functionality, our dexterity, and the risk that we will now probably face for balance concerns to be much more prevalent and those types of injuries that can occur that may be, you know, sort of a open doorway for infection and bacteria and just, you know, the amount of exposure to infection that we often see with the elderly population that may be seeking more health services and being more frequently found in an environment, you know, Such as a hospital, you know, a senior citizen type of assistance, living environment, those are all much greater risk factors when we think about the potential for infection. You know, of course, the nature of our jobs and the population that we are often serving certainly puts a burden on us as the hearing professional to be educated, to be prepared, to protect ourselves, our staff, and those patients that we're seeing.

We think about, you know, infection control. You know, why is it so critical when we think about hearing? Healthcare blanket starts with really kind of understanding what infection control is.

Infection control involves the development, the implementation and consistent execution of procedures that are specifically designed to manage the clinical environment and reduce the potential spread of disease. It's a non discriminatory process. This means that we're assuming that every microbe could potentially be infectious and could make our patients, staff members, or even clinicians such as

ourselves ill. Infection control involves not only controlling exposure between people, but between people in the work environment as well. The concept of infection control is certainly not new, but its relevance is periodically reemerged in tandem with the recurrence of diseases that were once thought to be eradicated, such as measles or a discovery of a completely new infectious disease.

And that was the reality that we certainly found ourselves in with the outbreak.

COVID 19 in our own communities, much less, you know, traveling more readily and more easily and more globally than we ever have before in our history. And when we think about disease, it really knows no borders. You know, in the past, outbreaks were often kind of confined to a specific geographic area because we didn't travel very much. But today, infectious microbes can hitch a ride from one corner of the world to another as we travel.

And you might not realize that the patient in front of you has been to a region of the world, another region in our own country, or even the community that may be more at risk. And that has the potential to bring that to your doorstep. The identification of HIV AIDS, whose first cases were reported by the CDC in 1981, was really a catalyst for change. When we think about the healthcare industry and infection control, the concerns related to the transmission of the disease led to OSHA and the other regulatory bodies developing a guideline for healthcare workers to adopt to reduce the risk of exposure to infectious agents. You know, unfortunately, disease patterns change and, you know, that can have a dramatic impact.

And, you know, then they cycle out and, you know, as cases decline, our focus becomes, you know, much less on something like COVID 19, for example. We see that ebb and flow with most diseases, Certainly something such as the flu, in particular, H1N1, which is known as swine flu, is one of the numerous flu strains. And, you know, its emergence in 2009 was really, you know, you know, kind of a, you know, recent pandemic as it relates to flu. But we know that the flu and the different strains of that

really kind of reemerge almost every fall and winter. And, you know, we need to be vaccinated to protect ourselves about that particular, particular type of flu, because one flu is not necessarily like the other.

We think about, you know, a disease like measles. It was considered to be eliminated in the United States in 2000, but it's actually returned. And this has been related to that increase in travel to countries where the disease is still active and the decrease in vaccinations for the disease in our own country and as well as elsewhere in the world. In pre vaccination years, there were 3 to 4 million cases of measles and 400 to 500 deaths from the disease every year in the United States. And the measles, mumps and Rubella vaccine, or MMR, was introduced in 1963.

And so by 2000, we were seeing that that was decreasing the measles cases by 90%, and it had virtually been eliminated here, yet it's rising again. And so we always need to be concerned about seeing those ebbs and flows of these types of diseases. You know, vaccine rates have dropped since the 1980s, you know, and that has been certainly related to vaccine misinformation. And this is no, you know, soapbox to speak on that. But that is definitely something that, you know, has, you know, created some difficulty in, you know, monitoring and controlling some of these diseases.

When we think about, you know, COVID 19, it kind of feels a little bit like a science fiction movie. But unfortunately, you know, I think many of us know that it was entirely too real. It's, you know, existence was just sort of inferred. When we think about, you know, late December in 2019, it wasn't really clearly defined. You know, there was just sort of this, you know, evidence of some individuals, you know, worldwide that were experiencing some shortness of breath and fever.

And in January 20th of 2020, the CDC actually confirmed the first US laboratory case of COVID 19 in the United States, and that was in Washington State. Very quickly, we saw that there was an identity that was applied to this COVID 19 virus, that iconic red and white virus image that we see here. And by

March 11, 2020, it had been declared a pandemic by The World Health Organization. So that was a really quick ramp up, became truly a global event.

Infection controls existed for a long time in the healthcare community and should have previously been a part of any healthcare practice, especially hearing healthcare. But now I think it's really top of mind, not only with us as healthcare professionals, but also the general public as well. And there continues to be an urgent need for not only healthcare professionals, but every individual to maintain a stringent infection control program so that we can guard against the transmission of infectious patient interaction. There's behaviors that we often use to demonstrate care, such as shaking hands, gentle touch on the shoulder of our patients. These are things that, you know, when we are looking at having these types of spikes in infectious diseases, do we need to maybe look at curbing those behaviors?

You know, as we discuss procedures and protocols? Some of them may be necessary as a result of what we knew from the pandemic that we all experienced. But our long term reality is that, you know, we may need to manage our work environments much differently and how we kind of approach our patient care may be forever changed by something like the COVID 19 pandemic.

I think the way we look at how we manage patient care is a lot different today than it was prior to the COVID 19 pandemic. And as I travel, I notice that there is ebbs and flows in how masks are being used in public spaces. As we see the risk of COVID 19 surge or any other infection risk, such as our yearly flu concerns, we need to be thinking about the vulnerable population that we see.

You know, I can't say the word pivot without thinking of the TV show Friends and the Ross Couch and the stairwell episode. So it always brings kind of a chuckle to my mind. But, you know, I think that was a key part of when we started to experience the, the ramp up of COVID 19 and how our practices had to pivot and literally change how our services were delivered. And, you know, what we did to implement that in practices was something that was, you know, pretty unique at that time, but, you know, may

actually be things that, you know, we've continued to carry forward past that point of that pandemic, you know, being at its peak. I think it's really interesting to think about, you know, how our practices all change procedures as a result of COVID 19 and that pandemic.

You know, we saw a rise in things like curbside services, you know, remote limited services, you know, the change to maybe mail in or dropship services in terms of intake of hearing aids, for example. And telehealth was something that certainly has been a key part of, you know, the healthcare community for some time, but it really saw a rise as a result of COVID 19. When we think about, you know, as we just go through our world, you know, on a daily basis, we come in contact with a lot of items like doorknobs, handles and railings. And, you know, that list really goes on everywhere we are, not only, you know, in public spaces, as we're maybe going to and from our offices, but also, you know, once we are in our office itself and we don't know the health condition of those who have handled those items before we use them. And that's why we need to be conscious of this in an environment such as our office, where we can control that.

So I'd like for you to take a look at a video that I think really brings into the focus the everyday risk of disease transmission evidence. This great risk, you know, better than the one with all this green slime that we see. And I think it just really drives home the point of how, you know, easily it can be to transmit disease. In many types of healthcare communities, we think about our hearing healthcare environment. There's a lot of tools that we use throughout the course of our business day.

Typically we may be sharing them with our co workers. They come in contact with patients and could have the potential to transfer and transmit harmful microbes if they're not clean and cared for appropriately. Some of the procedures that we perform, such as otoscopy, cerumen management, and taking impressions, involve actions that could nick or injure an ear and that creates a pathway for bacteria to invade.

There are four modes of transmission that we're going to review next. They are contact vehicle, airborne and vectorborne. Contact transmission is the most frequent mode of transmission of disease and refers to the potential of spreading disease by way of touching or coming in contact with infectious objects. It can be divided into three subcategories. The first of which is direct and that's direct transmission involving exposure to microbes via direct contact without intervening person's barriers or conditions.

In the second subcategory of indirect, the microbe is transferred from a secondary surface to an individual. And an example of this in our type of work environment might be otoscopy or listening to hearing aids with a infectious microbe on that listening scope and without cleaning and disinfecting it. We could be passing that along if we then check another hearing aid. The third subcategory is droplet transmission. This means that we're going to transmit that infectious microbe through particles that are expelled by coughing and sneezing.

These infected particles, they land on surfaces that are then contacted by a susceptible individual. This is the first identified mode of transmission for the coronavirus. And studies demonstrate the range of sneezing, coughing and even talking could be a key concern. The momentum of a cough and, you know, the air droplets that it can push can go quite a distance. And that all depends on the room, ventilation, humidity.

So a lot of variable factors there. There's been some debate over the distance that particles can travel, but following the CDC recommendations of staying 6ft apart or social distancing was a really good practice. When we thought about COVID 19, the next form of transmission is vehicle. This is the potential spread of disease through a contaminated food, water, or Bali substance such as ceruven. And we know that contaminated food and water can certainly be a key way that many viruses have been transmitted.

Next is airborne transmission. And this is the transmission of disease through the air via dust particles that are suspended in the air. Very often airborne and droplet may seem the same, but they are not. Initially, COVID 19 was not thought to be transmitted airborne, but that thinking changed, and it is now known that that virus can live in the air for up to three hours and could be inhaled or shared via breath in and out. Vectorborne is the final mode of transmission.

This is spread of disease by insects or animals that transfer that pathogenic agent through contact with a susceptible host. And certainly good examples of this might be like a West Nile type of virus. A study that was published by the National Institute for Health looked at loud talking and the potential spread of COVID 19. They determined that loud talking for a single minute at 85dB at 30cm or 12 inches, could leave at least 1000 virus containing coronavirus droplets in the air for anywhere from 8 to 14 minutes. And I thought that this data was really of special interest.

When we think about hearing health, you know, loud talking generates more potentially harmful droplets, and we certainly should stop yelling. But when we also think about, you know, the hearing impaired and, you know, how often, you know, individuals will speak at elevated levels to make sure that those individuals can hear them, that certainly puts everybody at greater risk. And it's a good reminder of, you know, why masks were certainly so critical in limiting the transmission of those droplets. And something that, you know, we see, you know, kind of come and go in terms of usage. Still to this day, we think about the common ports of entry for infection in the hearing healthcare practice.

You know, we look at these main orifices, our area of expertise, the ears, the external ear canal is more prone to infection than any other skin surface. And I think that's not surprising given how thin that area is. We know that cerumen's role is to inhibit microbial growth and impede foreign objects from invading the airspace. And it's not usually considered an infectious agent per se, unless it becomes contaminated with mucus or blood. The typically dark color and the viscosity of cerumen actually make

it difficult to distinguish the presence of those types of bodily fluids.

So for this reason, we should consider cerumen and, you know, treat it as a potentially infectious substance because, you know, we can't make that determination of the content of it just by visual inspection. Cerumen is extremely common, of course, in our, you know, work environment. And all dispensing professionals should utilize universal precautions when exposed to this substance. A recent study actually attempted to identify the presence of COVID 19 in the sermon of. Of COVID 19 positive patients.

60 COVID 19 patients were evaluated. And even though COVID 19 was not detected in the cerumen samples in all 60 patients, the authors of the study concluded that, you know, care should be taken during cerumen management due to the possibility of infection from the resulting contaminants. We think about specula or gloves, you know, the curettes that may be used, catch basins. Any of those might have that potential for risk. A second recent study, actually, that was published about the same time as the previous one, addressed the presence of COVID 19 in cerumen as well as the presence of the virus in saliva and tears.

The authors rationalized that in order to better understand COVID 19, there's a need to know which body parts and body secretions might contain the virus. The viral load of COVID 19 was evaluated in 38 different individuals. And, you know, in contrasting that previous study that we just mentioned on the previous slide, there was evidence of the virus in cerumen in 15 of the 38 patients that made up this study. This table shows the incidence of COVID 19 and the bodily secretions that were evaluated during this sample size. The authors concluded that the COVID 19 virus was detectable in cerumen as well as saliva and tears, and that was seen in both symptomatic and asymptomatic patients.

And so this really kind of highlighted the need for personal protective equipment and universal precautions when we're performing procedures that include contact with any of these bodily secretions.

When we think about our world, Today, how are we dealing with something like cerumen management in terms of disposing this very common material, but yet one that has the potential to carry disease? When we think about a study that was done online, it actually demonstrated that 96% of the audiology respondents who were part of the study of how they were disposing of cerumen with COVID 19 positive patients was that they were typically disposing of it in the trash, putting it down the drain or the toilet, as they would normally do for a patient. Regardless of whether they had a positive history of COVID 19 or not, only 4% were actually taking an extra precaution by using a biohazard bag and disposing of the contents accordingly. Consequently, if audiologists are disposing of potentially infected cerumen into a sink or flushing it down the Toilet, could that COVID 19 also be detected in wastewater? Several studies have demonstrated that it could.

So that's been a little bit of back and forth in terms of whether it might be possible in wastewater or not, but I think that, you know, it's definitely something that, you know, we need to be thinking about in terms of how we're disposing of this material. There also was a second study or survey that was done as part of this study that was looking at did the respondents know that the possibility of cerumen being, you know, having COVID 19 present and could that transmit the disease? And only 50 actually knew of the transmission risk of cerumen. So, you know, when we think about cerumen removal procedures, we should consider treating all COVID 19 survivors as if the virus was still present. You know, especially since, you know, we've seen much more, you know, flexibility in terms of vaccination rate, you know, being maybe kind of downplayed in terms of, you know, the seriousness that disability disease.

So we should be taking extra precautions and, you know, make that part of our office protocol to always use PPE when we are going to be working with cerumen. We also think about, you know, the hearing world. We know that there are many products that are part of our, you know, healthcare strategy in today's world. You know, it's not just the devices that we use to maybe remove cerumen, examine the

ears, but it's also the hearing aids, the accessories, the smartphones that all play a key role in all of this. And microbial growth has actually been found on hearing device services surfaces.

And, you know, this means that we need to be looking at not only hearing aids, but also all these Other products that make up part of that patient, you know, tool kit for their better hearing.

We think about germs, they lurk on all kinds of surfaces. And I think, you know, we don't really think about that as we go throughout our days. And we certainly talked about knobs and handles. But, you know, think about these other devices that we come in contact frequently with, such as our cell phones. We know that they go everywhere with us.

They're at the dinner table, they're on the commute, they're in our offices. And I think it's very, you know, interesting to find out that Americans actually check their phones about 47 times a day.

That's probably a conservative estimate in today's world. And that's a lot of opportunities for infectious microbes to jump aboard. Paper currency is also a common way to transmit bacteria because it's changing hands all the time. And because most currency is made up of a combination of linen and cotton, these are fibers that can easily sort of play host to a variety of infectious microbes. The longer a bill remains in circulation, the more bacteria it could pick up.

And of course, lower denomination bills are exchanged the most, meaning that they are going to be the leading culprits. And you may say that you never carry change in paper currency, and that's quite common in today's world. But that means that we're using credit and debit cards, and those can be a source of disease transmission because they're passing through hands and the machines that they come in contact with during those car transactions. And a 2009 study from the American Journal of Infection control actually cited that the white coats of healthcare workers could be contaminated with pathogenic and resistant bacteria. And another study confirmed that workers washed their white

clothes kind of infrequently, making that workplace place of peril a likely source of contamination.

So it may really have you rethinking, you know, how often you're washing those white coats that you may be using. So what steps do we need to take or continue to take to protect our patients, the staff around us, as well as the environment as we continue our services? Well, it's important to recognize that there is no one correct way of doing things as it relates to infection control. And OSHA provides the requirement list that we can really outline for our specific work environment. So in the interest of time, I'm going to focus on those, you know, who should be participating in infection control and engineering work, practice controls.

But know that all six of these are part of the plan that is required by our governing bodies to be incorporated. So we'll focus on just a couple of those that really are specific, I think, especially to hearing healthcare. When we think about OSHA requirements in terms of categorizing employees, each employee is classified on the basis of their potential exposure to blood and infectious agents. A category one employee involves audiologists in our case, and other health care professionals who typically are involved in interoperative monitoring as well as post operative monitoring and diagnostic procedures of patients with head or ear trauma month. Category two would be those where dispensing professionals, student externs, and any patient care coordinator who has patient contact potentially cleaning instruments in their workplace would fall.

So that's probably most of us. Category 3 is your administrative staff that doesn't have patient contact. And I think, you know, when we look at hearing healthcare, that's probably a relatively small number. So it's important that all staff understands infection control protocols for that specific office in which they work and what to do in the case of an incident. Even those that are not in the critical categories of 1 and 2 may be required to practice infection control.

So I think it's very important that, you know, everybody in the office is very well versed on what they would do in the instance the potential spread of infectious disease. When we think about our professional specific procedures, engineering controls and work practice controls are where we can really see a lot of variability depending on how we operate in our office. Engineering controls are those procedures that really isolate or remove those bloodborne pathogen hazards from a workplace. And when we think about hearing healthcare, that could be related to how we store reusable instruments that are going to be sterilized at the end of the day, how we are designating a specific space to be performing those sterilization procedures and does it need to be labeled as hazardous? Work practice controls are where we really get specific this, you know, it can be how your plaque practices, deciding how and when they're going to wear gloves, you know, altering the manner in which maybe we are performing procedures such as cerumen management so that we can reduce the risk.

So this is where we're really drilling down with each specific procedure that we are practicing. And we know that that has a high variability from practice to practice.

We should include, you know, all details that make up the steps for infection control for each particular activity.

And we should make those very clear, keeping in mind that, you know, if it's not manageable and not easy, it's not going to be followed consistently. So it's very important that we make those very repeatable from one professional to the next.

The universal precautions are the guidelines that were established by the center for Disease Control. They truly are the hallmark of infection control and they're related to things such as personal protective equipment, hand hygiene, cleaning and disinfecting surfaces, sterilizing, critical instruments, and appropriate waste disposal. So we'll talk about all of these a little bit more in depth.

We think about personal protective equipment or ppe. You know, in a hearing healthcare practice, you know, glasses, masks and gloves may be important protection when we're thinking about ear molds and hearing aid modification. Gowns should maybe even be considered in cases involving work with materials that are obtained from a known infected individual or in the presence of known infectious agents. So that may be another level that some clinics are needing to implement. You know, current circumstances, when we think about, you know, where we are today post pandemic, is that, you know, those pieces are probably still very much part of our daily practices as they really should be.

We think about, you know, using glasses, you know, when we've got, you know, splashes and sprays that might happen. When we think about cleaning different types of environments, those are things that we need to consider as well as when we're working on, you know, the dust and debris potential of modifying hearing aids. CDC uses the terminology source control. What does that really mean? Well, it references the general public's use of face coverings, including respirators and face masks of all types, as an additional public health approach so that we can help slow the spread of disease.

And in particular, you know, when we think about COVID 19, there are a number of different types of masks. And you know, as the pandemic evolved, the recommendations for use of these changed as well. So there were quite a few choices. You know, maybe they were the cloth masks that many people were making at home, surgical masks that we know are used in hospital types of environments, in many medical environments on a daily basis. But also when we think about those upper level protectors such as KN95 or N95 respirators, when we think about, you know, the type of material that these masks are made of, it's very, very important.

You know, cloth masks are really designed for kind of that source control in the community. They should be multi layer and they should, you know, maybe be worn over a surgical mask for another protective layer when we are potentially working with somebody who is highly contagious or highly at

risk. Disc cloth masks are not personal protective equipment, so they're not considered suitable for use by healthcare professionals. You know, in a work type of environment, if you can hold a cloth mask up to the light and see the light shining through, then it is too thin. And, you know, we saw that, you know, as we've continued with other variants of COVID 19, you know, discontinuing the use of cloth masks as that level of protection even in general public spaces is highly recommended.

A surgical mask certainly is an upgrade from cloth mask, but it could still be a concern because it isn't always as secure on the side. And this might provide that space for those larger droplets to be aerosolized, you know, droplets and particles that we see with something such as COVID 19. The current CDC recommendations support the use of KN95, N95 or 3 ply surgical methods, masks that are well fitted. This is going to prevent those leaks and going to be the best source of action for healthcare workers. But what's the difference between N95 and KN95?

We know that they are designed to provide that more secure seal around the nose and the cheeks. That's why they're the preferred choice. But when you're shopping for them, what you should be looking for is, you know, an N95. Thinking about that type of mask, it's manufactured here in the United States. The KN95 is manufactured in China.

And there's a third option that may be found, the KF94. And it's similar to the KN95, but it's manufactured in Korea. And both the KN95 and the KF94 have ear loops. That certainly makes them easy to don and doff. The true N95 will have the strap that goes around the head and this creates a great seal.

Also makes them a little less easy to don and doff and a little bit less comfortable. So, you know, we may think of the KN95 as the easiest for use and protection, but you need to be cautious about whether you're getting the real deal or not because there are counterfeit items that are found and that is something definitely be concerned about. I think, looking for a N95 mask produced in the United States.

It's supposed to have a niosh seal or niosh seal stamped on the side of the mask and that should be spelled correctly. So it should be N I O S H.

And that would certainly be a real giveaway that maybe is a counterfeit if that is misspelled. There are no child size N95s, but there are for KN95 and KF94. So definitely something to keep in mind, when we think about who we need to provide the protection for and who will be using it.

When we think about masks, they certainly impact speech understanding because of how we use that visual cue so often in our communication. We saw a lot of interest in clear face coverings. And, you know, there were a number of options that were available, but they, you know, definitely had some impact on our speech understanding and they weren't always as protective as well. And so sometimes the use of both the clear mask and A, you know, KN95 was certainly a good choice. But again, that could impact our ability to communicate.

And, you know, how can we bridge that gap, especially when we think about, you know, who we're dealing with on a daily basis basis, where communication and especially hearing loss are, you know, wreaking havoc At Starkey. One of the things that we did was actually took a look at the common face masks that were in use at the time of the COVID 19 pandemic and their impact on speech. What we learned really quickly was that masks were not created the same as it led to a communication impact. We made measures of the latest commercially available medical and fabric masks. And this graph really, you know, illustrates the differences for the sample that we used.

The. The black is going to be the, you know, use of no mask. What's. And certainly we get all the visual cues as it comes to speech communication. The kind of dusty blue is the use of more of a surgical type of mask mask, and the lighter or turquoise blue is the use of a more fabric type of mask.

And so we can see that there are definitely some variabilities in terms of, you know, the areas of speech that are being impacted. And the one that actually had, I think, very surprisingly, the greatest impact on speech understanding was the clear mask in terms of where it created the biggest decrease in those higher frequencies, especially an area that we see very important, we think about speech.

Face shields were originally kind of considered a viable substitute when traditional masks were unavailable. However, over the course of the pandemic, this recommendation really changed. Face shields do not provide the same level of protection as face masks and alone are not recommended. So they really should be used in combination with face mask. If you are using a face shield, you know, especially one that is reusable, it needs to be cleaned and disinfected if it's going to be reused.

And, you know, we certainly know that it gave a great, you know, visual, you know, space for us to be able to see what was going on with lymph reading and facial expressions, but not Equally affected and so should be used in combination with a mask. Mask for best protection, especially when we're dealing with somebody who may be highly contagious or is at high risk of infection. When we think about what we wear, that can be very important in our clinical environment as well. Short sleeves are preferred because that means that we don't have those cuffs and things that can get contacted by the infectious microbes. Ties and neck scarves are not recommended for that very reason.

They can come in contact as they sort of move around as well. Well, jewelry and the use of watches and bracelets and things on our wrist is not recommended in that type of environment. Again, because of the types of contact that it may have. When we think about if we work in a really, you know, high risk type of environment, maybe a hospital, perhaps, any clothing that's worn in the office should really be removed before entering the home for best protection of our loved ones. The same is true with shoes.

And really disposable gowns are a great option when we think about direct contact with patients in that type of work environment. Gloves are a key part of our practices, and they should be worn anytime that

there's open wounds or visible blood present, whenever we're cleaning and disinfecting instruments, especially when they've been contaminated with bodily substances, whenever we're submerging or removing those instruments from that sterilant type of material, and anytime that there's a potential for, you know, potential infectious materials to come in contact with us. And that could be cerumen. Of course, gloves should always fit snugly around the fingers, the wrists and the palm. So we should get a really snug fit like we see in this image on the hand on the right, you know, when we look at the image on the left with, you know, the gaps, got the wrinkles, we've got a, you know, loose fit around the wrist.

Those are all areas that, you know, those types of microbes could find their way in. Gloves are really designed to be used once and then disposed of. And, you know, certainly reusing those is definite something that we should not do. Whenever we remove the gloves, our hands should be washed immediately. You know, if we are, you know, just using them on a regular basis, we can certainly dispose of them in our regular receptacles.

But if they are contaminated, contaminated with blood or other bodily fluids, they need to be disposed of in a more appropriate way because they're more hazardous. It's really important to think about the types of gloves that we're using in the Hearing healthcare space Latex gloves are not advised for impression taking, you know, because that chemical interaction between the material and the latex glove could keep that impression material from setting up. Nitrile gloves can be used safely with impression material. So that would be a great recommendation, especially if we're dealing with somebody who may have a potential latex allergy. So in that case, the nitrile or a non latex vinyl glove would be preferred.

When we think about ppe, some of it is designed for one use and then dispose of it, such as gloves, gloves. Others, you know, may be designed to be reusable. And if they are, we need to be cleaning and disinfecting between each use. You know, if something appears to be damaged, soiled, then it needs to

be disposed of. And we should really think about, you know, daily washing or replacing, swapping out things like those white coats to make sure that they are, you know, cleaned and appropriate for the next day's use and keep them separate from other clothes.

We should always be using EPA registered disinfectants and the CDC recommended protocols whenever we're working with our ppe. Of course, none of it matters if you are not wearing it appropriately. So there are great instructions available on the CDC's website in terms of how all the types of PPE that we've been talking about should be appropriately donned and doffed and disposed of.

We think about our hand sanitization and certainly this is something that, you know, should be part of our daily lives whether we're in the office or not. Soap and water and of course proper technique are still the most effective way to keep hands clean. And, you know, yet we see a lot of hand sanitizer in use and there's nothing wrong with that. In some instances, you know, when we look at antibiotic resistance experts, they prefer soap over sanitizer, but we might not always have access to a sink. And so hand sanitizer can be a good solution.

What we would recommend antimicrobial, no rinse all day sanitizers. You want to use an appropriate amount. You don't want to go crazy. And you don't want to, of course, skimp either. You want to be sure and rub your hands together.

After you get that dab of hand sanitizer out, you want to rub between the fingers and down into the fingernails and down at the wrists, just as we would if we were washing our hands. You want to continue to rub until the solution dries. And do not use a towel or dry your hands off when you're Using those no rinse types of products, you do want to avoid a product that is labeled as antibacterial and look for alcohol based products, products that contain 60 to 95% alcohol. Some bacteria are becoming even more resistant to those lower doses because we know those little guys are smart and they're always

looking to find ways to evade. So we need to make sure that we are using the highest level of protection possible.

We also have to be vigilant when we think about, you know, touching our faces, you know, with our hands, because, you know, if we haven't just washed our hands, then we're likely to. To be potentially spreading something to our faces. We should be using barriers between our fingertips and surfaces. And, you know, we can be creative when we think about how we do that in terms of how we use elbows and things to open doors so that we can protect our fingertips from exposure. According to a study from the American Journal of Infection Control, on average, we touch our faces at least 20 times an hour.

And about 44% of that involves contact with the eyes, the nose, and the mouth, of course, key paths for infection to work its way into our bodies. So wearing gloves, keeping our hands busy, and supporting each other by discouraging face touching are great ways that we can break a habit that I think often is very ingrained into us as humans and that we do reflexively. Don't even really think about this really, I think, drives home the importance of hand hygiene so that we can reduce that risk. Desk by not touching our faces. And we should, you know, be thinking about, you know, making barriers readily accessible for us as the professional, for our staff, as well as patients in this area as well.

When we think about surfaces, it's important that, you know, we look at them both from the air and the surface to be a potential spread of bacteria.

Touch and splash surfaces are classified by the CDC as needing to be cleaned and disinfected. And if you think about it, virtually any surface in a waiting room or treatment area could be a source of cross contamination. When we think about touch and splash, touch surfaces are those that come in direct or indirect contact with hands. Splash surfaces are those that could be hit with those bodily substances or those flesh fluids from a potentially contaminated source. We look at the different categories of, you know, cleaning, disinfection and sterilization.

They can be broken down into, you know, they're very distinct definitions. Cleaning is just the removal of the gross contamination. You know, it's not necessarily killing the germs. We're just kind of getting that top layer off. And this is essentially the initial step in the process.

Process cleaning can be done with warm water and detergent or soap disinfection. When we do that, we're killing a percentage of the germs. And there's a number of products on the market that are designed to disinfect. Disinfection requires the use of an EPA approved hospital grade disinfectant. Cleaning doesn't always precede or should always precede disinfection.

So we want to get that gross layer off before we really go in and disappear. Disinfect. Disinfection is appropriate for items that aren't coming in contact with blood or other potentially infectious agents. Sterilization is where we're killing 100% of those germs. And this is going to include those endospores and should occur for any instrument that does come in contact with blood or other potentially infectious agents.

So this, you know, I think would be where we would think about things like curettes and such that are being reused used. Sterilization should occur with either an autoclave or cold sterilization. And that involves soaking instruments in an EPA approved solution for the length of time that is specified by the manufacturer. And it's always important to be sure and check the manufacturer's guidelines for that effective use of that. How long does that need to be soaking before we're, you know, actually sterilizing those instruments?

When we think about our workspaces, we should be looking at that in terms of what's critical and what's non critical. When we have non critical items, they can be disinfected. And this can be things like our headphones, ear. We may be instruments and surfaces connected with blood, ear drainage or cerumen or other bodily fluids. Fluids we can use things like liquid disinfectants.

You know, there's different types of, you know, ear mold disinfectants that are designed for that specific type of, you know, more porous type of product. And there's also towelettes that are designed specifically for our hearing healthcare world as well. And we should always use gloves when we're cleaning and disinfecting. We also need to be thinking about our office surface. We need to clean that gross contamination.

Then we need to disinfect. And when we think about hard surfaces, those that are non porous, you know, often we can think about using something like a UV light sanitizer. Those became quite popular during the pandemic and they're effective. For those more flat types of surfaces, such as a desktop Things like door handles and, you know, sink faucet handles, toilets, even our phones. And again, we need to follow the manufacturer's instructions for best use of those.

We also know offices have a lot of soft surfaces, and these are very porous. And so we should be laundering these items, you know, know, using the appropriate manufacturer's instructions and making sure that they are dried completely or thinking about limiting the number of soft, porous surfaces in our workspace. Sterilization involves the use of, you know, something like an autoclave or again, a, you know, cold sterilant, which is probably more common when we think about our type of work environment. This is where we're going to, you know, submerge those items that need to be sterilized in that EPA approved sterilization material for the specified length of time. We think about hearing aids and ear molds.

How might we best protect ourselves and our patients with these in terms of handling them? We should be wearing gloves and we should be wiping those surfaces down. We should be disinfecting the items with a non alcohol based disinfectant. And there are a number for our type of work environment. And we should be using a receptacle when we are accepting and returning these devices with our patients.

And it should be lined with a disposable material. Even a Kleenex will do.

When we think about cleaning the different products, you know, we want to use the appropriate types of materials to do that. UV was something that, you know, came up a lot when we thought about the pandemic because it does kill bacteria and viruses. But its effectiveness can be impacted by a number of factors, including surface contamination. If there's a lot of organic material on there, that may mean that those UV lights can't get to where they need to try and kill bacteria. So this could be cerumen dustin, you know, other types of particles that might be on the hearing aid product.

So these should be cleaned first and then a disinfecting wipe should be used prior to that. UVC bulb strength and distance between the bulb and the surface can also impact effectiveness. You know, when we look at higher intensity bulbs, they don't require as long an exposure as a lower intensity bulb would. And distance can always play a role. The CDC continues to state that transmission of COVID 19 and the other types of diseases that are going to come along by a contaminated surface, you know, is fairly unlikely.

So we should just be using our best practices. And in your practice, that could be something like uv. Just know that the use of it really depends on you know, a lot of factors. And so, you know, we need to be thinking about, you know, using other methods, you know, either in lieu of or in addition to uv. When we think about waste materials, we can typically dispose of those in a regular waste receptacle.

But again, if that material has become contaminated, we want to be sure and dispose of it appropriately as a more hazardous type of material. And if we have those types of, you know, hazardous disposal units, we need to follow the manufacturer specifications for the use of them. How should you prepare your clinical environment and maybe modify the patient experience as we continue to move forward to ensure patient safety as well as safety for all in the environment? Well, I think it's important to prepare and plan and there are certainly a number of resources that really came to light as a result of COVID

19. But we also know that we need to be aware of our local, state and federal guidelines as well, because those are much more subject to change.

If you're looking for, you know, what's current, you know, great places to look for that are on the OSHA website as well as the cdc. And it's important to have a plan in place for your practice. When we think about our practices, how can we make that entire service experience, say, positive for our patients and how do we get that in workspace? And when we think about, you know, each phase of care, we need to be looking at that and how we need to be prepared for delivering the most, you know, infection controlled experience at each level of that. And, you know, when we think about some of those phases of care that were part of, you know, that strategy, how did we do that, you know, back then when we were taping things in, you know, with curbside, you know, how are we managing things where going into home types of environments and, you know, really be thinking about, you know, your services and of course, your local guidelines in particular, we think about, you know, finding out about our patients.

You know, a good place to really start is when we are making those appointments, when they're calling in to be confirmed. You know, these are great options where we can really triage what's going on. Maybe your patient has something going on in terms of their health and, you know, it would be best for them to wait before they come in. So finding that out before they get into the office would be a really valuable, you know, bit of information. And maybe we need to, when there are spikes of something, you know, like COVID 19, be asking a little bit different questions.

You know, have you had a cough or a fever recently? You know, have you traveled to a certain area of the world that may be, you know, at greater risk? You know, maybe they need to wait before they come into the clinic. And the telephone's an easy way to find that out. We think about delivering curbside services.

Again, using a separate receptacle is really important. We think about doing this and making sure that you are using appropriate, appropriate PPE as you engage with that curbside experience. If we're going into patients homes, we really should have a go kit that has all of the necessary pieces in terms of, you know, not only our, you know, programming and, you know, cleaning types of tools, but we also need to have PPE and disinfecting types of materials with us as well. Thinking about, you know, even how you are walking into that space, how, how you are standing and where you are as you are around that individual is going to be very, very important. So we always should be viewing our practice through that lens of infection control preparedness and how that can change as the world changes around us.

And that should all start from as your patient arrives and walks into that waiting area. We should be minimizing what they might come in contact with in the office in terms of materials. We should be thinking about the types of surfaces that they're going to be interacting with. Cleaning those on a regular basis. Do we need any barriers in place for our front office staff?

Decluttering the practice, I think, can be really important. Just less for them to touch can be really key. Thinking about having signage related to what our strategies are is critically important, important and maybe we need to minimize the number of individuals that are in that waiting area at certain times as well. We also need to think about our treatment areas. You know, when we think about areas where there's a lot of traffic, like the hallways, those can be key areas for the transmission of disease.

So minimizing, you know, who all is in that space at any given time can be important. Thinking about your airflow in your practice can be really critical as well. And what can be done to maximize the protection by use of HEPA filters. Thinking about, you know, as we move from one room to the next, how's the best way to do that safely for everybody involved? Well, we can leave a door open.

We should do that because that's going to create more ventilation and, you know, that's going to be helpful. When we think about trying to avoid these types of, you know, infectious environments, thinking

about how we are touching other devices and maybe minimizing that and looking at that differently now in terms of sharing things, I think is really important. And, you know, when you're thinking about working with your patients, do we need to modify our stance, especially if we have some concerns about them being, you know, either at greater risk themselves or more contagious? Maybe we need to make sure that we are positioning ourselves a little to the side and behind if we can do that safely. Now, I think, you know, the key is really thinking about, you know, that, you know, it's not the next, you know, pandemic of, you know, if it's going to happen, it's when it's going to happen.

You know, when we think about that, we know that, you know, the world around us is a highly risky environment and we never know what's right around the corner in terms of diseases. And I really love this, you know, this quote here about, you know, we're living on a street full of corners. We never know what's right around the corner that we may be traveling to next.

Priya Noori, you know, an MD and a leading infectious disease physician is concerned about, you know, when we think about the resistance that, you know, bacteria and fungi are developing to our antibodies, antibiotics, you know, once COVID 19 kind of calmed down, you know, we started to look at, you know, letting down some of those guards, you know, like masks and other sorts of protective types of practices. That means that, you know, there's the potential for some of these other, you know, undiscovered or re emergent viruses and diseases to step in and, you know, take hold. And there are 1.7 million undiscovered viruses that exist in mammals, birds, and about 827,000 of those have the ubil ability to infect humans. So it's not just us, it's also the world and the animals and creatures around us that we need to remain ever vigilant about. So as we think about navigating that path forward, we became very adept at pivoting.

What do those roles need to be looking like in our practices? How do we need to be able to pivot if something changes, as we know is very likely to happen in our world world? One of the things that I

think is incredibly important is communicating how your practice is managing their infection control protocols for your patients. They need to be aware of what you're doing and they need to know what they maybe need to do prior to coming into the office based on what your protocol is at that point in time. It's so important that we as hearing healthcare professionals establish trust with our patients and we Know that the public is now much more educated when it comes to infection control and the hygiene around that than they ever were in the past.

And so they're keeping a watchful eye on what's going on, what you and your staff may be doing in your practice to protect their health and safety. And, you know, we need to make sure that we stress that they follow guidelines and that they can see us doing that as well. And, you know, this was something that I received as a Colorado, you know, licensed professional that I think is very important for us to always be thinking about they are watching what we're doing and they may be reporting us if they feel like we and our staff are falling short in our practices in terms of how we are implementing infection control. And so, you know, know that, you know, that could certainly come back to impact us if the patient sees something and reports it.

Another way that I think is really important for us to consider being more well rounded in the information that we gather is updating our case histories. Does that include, you know, have you had COVID 19? Were you hospitalized? You know, what types of medications were you prescribed? You know, what are you taking?

Of course, now is always something that we should be finding out so that we can understand how that relates with what we're doing. But, you know, when we think about, you know, COVID 19 and, you know, long Covid, you know, what might that impact as we are thinking about our treatment of our patients, patients, and, you know, we don't know a lot still, but we have learned so much about the impact of COVID 19 and hearing health and the areas of that where it's seen some impact. Certainly

we've seen that with vestibular symptoms, you know, tinnitus. So there's, you know, a lot of talk in our area of hearing healthcare around the impact of COVID 19. So definitely something to always be looking for more information.

You know, we don't know what the future holds, but we do know that the pandemic that we all experienced was an example of the importance of the ongoing infection protocol that we should be practicing and strictly adhering to as hearing healthcare professionals. And, you know, there, of course, has been a lot of focus on COVID 19 over the last number of years. But I think it's always important to know that there's the potential for other outcomes, outbreaks, you know, and other risks that occur seasonally on an annual basis that could impact the health of both patient and professional. And the consequences of complacency could be very life changing for all involved. So I certainly encourage you to go forth and remain safe.

Protect yourselves and others. I took a quick look. I don't see any questions that we need to provide an answer for. But thank you for joining me today about this very important topic, one that I'm very passionate about. And I look forward to seeing you again in the future at another audiology online event.