Infection Control: Strategies for Protection and Prevention in the Dispensing Workplace

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- [Michele] Hello and welcome everyone to Starkey's presentation today of Infection Control: Strategies for Protection and Prevention in the Dispensing Workplace. Just a couple of housekeeping notes as we get started, I am speaking now, so hopefully you are able to hear me, but if you have any technical difficulties throughout the course of this session, I encourage you to please stay logged in and contact Audiology Online at 1-800-753-2160. You may wish to jot this number down so that you have reference for it throughout the course of the session as this will be the last time that it'll be visible during our session today. Today's session is available for one hour of continuing credit. You must remain logged in for the entire session and successfully complete a short quiz to obtain your credit.

Our objectives for the session today are the participants will be able to identify appropriate hand washing procedures, define material data safety sheet, identify potential modes of disease transmission, and identify dispensing practice staff that should be participating in infection control. If you have any questions during the course of our session, please type those in the chat box and I'll answer those as we go throughout the course. As well, there's a PDF of the presentation that is available in the file share box that is found below the chat section. Please click on the title and follow the prompts to download that to your computer. So let's go ahead and get started. The concept of infection control is really an important one in the delivery of healthcare. The threat of infection is a real concern, considering that individuals are more mobile, more well-traveled and living longer than ever before. So we'll discuss why we as hearing healthcare providers should be vigilant in protecting ourselves and others when it comes to preventing the spread of disease in the workplace.

So why should we care? Well, let's take a look at a quick video that I think will give us a good example of why infection control is so important. So as we see in that video, we are constantly at risk of sharing germs and bacteria everywhere we go. So what is

infection control, really? Well, infection control involves the development, implementation and consistent execution of procedures that are specifically designed to reduce that potential of cross-contamination specifically in the dispensing clinic in our scenario. Infection control is a non-discriminatory process, assuming that every microbe is potentially infectious and can make patients, staff members and clinicians ill.

Infection control involves not only controlling the exposure between people, but between people and the work environment, and we certainly saw a good example of that in the video. Although the concept of infection control isn't new, its relevance is periodically re-emerged in tandem with the recurrence of diseases that were once thought to be eradicated in our country, such as mumps and measles, or the discovery of a completely new infectious disease. Well, why is this topic important in hearing healthcare? Well, infection controls really existed for a long time in the overall healthcare community, but there is increasing awareness of the need for hearing healthcare professionals to maintain a stringent infection control protocol and guard against the transmission of infectious disease.

So let's talk about why it's so important in our particular workspace. Well, hearing professionals use tools throughout the day that will come in contact with a variety of individuals, both staff and patients alike. More dispensers and audiologists as well as patient care coordinators have roles that have changed based on what the laws allow in their particular states, and this increases contact with patients and tools for more staff. We see a variety of individuals throughout the day, and many may have health concerns that may not be readily obvious. This could have negative consequences if infectious microbes are unwittingly transmitted to other patients. A microbe is a term that you'll hear often throughout this course, and it may be defined as a minute organism usually causing disease. So we come in contact with a lot of things throughout the course of our day, doorknobs, handles, railings and the list really goes

on and it's literally everywhere that we go, so do we know the health condition of those who handle them before us? That's why we need to be conscious of this in an environment such as an office that we can control. Tools such as headphones, otoscopes, tips, and many of these items, they're necessary in our practices, but they also have the potential to transmit harmful microbes if they're not cared for appropriately.

Some of the procedures that we perform throughout our day such as otoscopy, cerumen management, taking impressions, they involve actions that could nick or injure the ear, and this creates a pathway for bacteria to invade. Hearing aids themselves could be that source of contamination. When dispensing, we're all about focusing on patient outcomes and satisfaction, but we also need to consider the health of both the patient and the clinician. So we see a variety of individuals in our practices, and some may have health issues that go beyond hearing loss, imagine that. So while some patients, they may be forthcoming about other health concerns that may put them at risk, others may be completely unaware of a condition that could be dangerous if exposed to infectious microbes and bacteria. So most often, there really is no way of telling just by looking that someone is an at-risk individual. Of the patient population that we interact with, the elderly is probably the most common in our profession, and there appears to be a direct correlation between advancing age and susceptibility to infection. In fact, 1/3 of deaths in seniors over 65 result from infectious diseases, and this is data from the American Academy of Family Physicians.

So factors that make the senior population more predisposed to infection include an potentially impaired immune function, anatomic and functional changes and the degree of exposure to infection. Compromised immunity, anatomic changes such as thinner skin, functional changes such as the loss of body mass that we commonly see in the elderly contribute to frailty, which in turn increases the risks of falls and other injuries. The environment of the elderly can influence his or her exposure to infection as well.

Those who've spent time in long-term care facilities or hospitals or suffer from dementia bring greater risk than those that live in a traditional home environment. These individuals may be unwitting carriers of disease from their particular environment to your office. The nature of our jobs and the population that we frequently serve put the burden on us, the hearing professional to be educated, prepared to protect ourselves, our staff, and the patients that we see.

So how did infection control become such an important topic of discussion in the healthcare world? Well, humans are more mobile in their own communities and also travel more readily and easily than ever before in our history. Disease truly knows no borders. In the past, outbreaks were often confined to a very specific geographic area, but today, infectious microbes can hitch a ride from one corner of the world to another as we travel, so you might not realize the patient in front of you has been to a region of the world that is more at risk. The identification of HIV and AIDS whose first cases were reported by the CDC in 1981 was really the catalyst for change in the healthcare industry. The concerns related to the transmission of this particular disease led to OSHA and other regulatory bodies developing guidelines for healthcare workers to adopt to reduce the risk of exposure to infectious agents.

So unfortunately, disease patterns kind of change, and we see and ebb and flow in the type of diseases that emerge. H1N1, which is also known as swine flu, is one of numerous flu strains, and each year it seems that there are new strains that emerge and vaccinations that become readily available, but yet they're not always effective in fighting every strain. 2017-2018 was a particularly devastating year for flu cases with over 4,000 deaths a month related to the flu during the peak of the season. The Zika virus, which is commonly spread by a specific type of mosquito generally has little impact on most individuals, but in recent years was catastrophic in warmer climates in both the United States and Latin America when transmitted during pregnancy to unborn children.

So as diseases infect more people, they have a dramatic impact and then they cycle kind of out of our focus as these cases decline, but does this mean that the disease has really been eliminated? Well, measles is this truly back. This was a disease that was considered to be eliminated in 2000, but yet it has returned, and the return of measles has been related to the increase of travel in countries where the disease is still active and a decrease in vaccinations for the disease as well in the United States. From January 1 to August 8th of 2019, there have been 1,182 individual cases of measles confirmed in 30 states, those that we see in the darker blue, the greatest number of cases since measles was considered eliminated in 2000. Well, those at higher risk to measles are children, the elderly, and those with compromised immune systems, and complications can include pneumonia and encephalitis.

So should adults be re-vaccinated? Well, the potential really is yes. The live vaccine was introduced in 1963 and it appeared to work very well, but between 1963 and 1968, another version referred to as the killed version was administrated that was not nearly as effective. So if you were vaccinated during that time, you wouldn't know if you received the effective version or not. And recently, a 43 year old international flight attendant died from a case of measles that resulted in encephalitis. This flight attendant had traveled between the United States and Israel and it's not known if the disease was found as an infection on the flight or in one of the countries that was visited. And the death of a healthy adult from a disease that's considered to be primarily a childhood one has really drawn a lot of attention to the importance of booster shots and the changing vaccination requirements that we've seen in recent years. So anyone who really has a concern about their risk for measles and certainly other diseases that are becoming more prominent should certainly speak to their physician. Norovirus, which has commonly been incorrectly referred to as the winter flu is actually a variety of gastroenteritis. So while cruise ships are really a small percentage of outbreak locations, norovirus has been in the news frequently in recent years for its ability to negatively impact cruise vacations. The infection is mostly

transmitted by consuming contaminated food or water, touching an infected person or contaminated surface, and then touching your face with unwashed hands. It's highly resilient and it thrives in both hot and cold environments. Noroviruses are the leading cause of foodborne illnesses. And over two dozen states have reported hepatitis A outbreaks in the past three years, with more than 22,500 cases and 221 deaths. Vaccines have typically been administered to children, yet many of these new cases have been in adults. The virus is spread through food, water, and close contact. Its flu-like symptoms last several months and can lead to liver disease. On September 30th, 2014, the first US case of the Ebola virus was diagnosed in Dallas, Texas. This horrific disease that always seemed like a faraway problem had migrated to our shores and literally to the neighborhood practically that I live in. Ebola has been making headlines again as more cases have been reported in Africa in recent months.

And so while this disease seems like it is far away, I for one can speak to the fears and concerns that happened when this disease came to our shores. And the emergence of antifungal resistant diseases such as MRSA and candida auris really poses a serious global health threat. MRSA or methicillin-resistant staphylococcus aureus is a strain of the very common staph bacteria and it's often referred to as a superbug because it doesn't respond to many antibiotics. MRSA is spread by touching an infected person or exposed item when you have an open wound, cut or scrape. It can also be spread by a cough or a sneeze. Actually, two in 100 people carry the bacteria, but usually don't get sick. Those that are more at risk are those with a recent hospital stay or surgery, as well as the elderly, those living in nursing homes, and people with weakened immune systems. Hospitals are the main source of MRSA due to the high traffic of ill or wounded patients. In high risk environments, the use of barriers such as gloves, masks, and good hand hygiene are paying off. The number of MRSA infections are actually down an estimated 50% in healthcare settings, and we'll talk a little bit later about the use of these barrier types of items, as well as good hand washing techniques.

So how does an infection make its way from one person to the next? Well, I think we certainly saw some good examples of that in the video, but if you think about it, often when we ourselves are under the weather, we still venture out into public and we're spreading germs. This is another reason why it's so important that you really should stay home when you're not feeling well and there is a concern of being contagious. So there are four modes of transmission that we're going to review; Contact, vehicle, airborne and vectorborne. Contact transmission is the most frequent mode and it refers to the potential of spreading disease by way of touching or coming in contact with infectious objects. Contact transmission is really divided into three subcategories, and the first of those is direct. Direct contact transmission involves exposure to microbes by a direct contact without intervening persons, barriers, or conditions. In the case of direct contact, a microbe is transferred directly from its resting place to a susceptible person.

The second subcategory is indirect contact, and in this case, the microbe is transferred from a secondary surface to an individual. So an example of this for us might be otoscopy or listening to a hearing aid that has infectious microbes on it and then without cleaning and disinfecting the listening piece, using it to check another hearing aid. The third subcategory is droplet contact, and this refers to the transmission of infectious microbes or particles that are expelled via coughing and sneezing. These infected particles land on a surface that is then contacted by a susceptible individual. The vehicle transmission refers to the potential spread of disease through contaminated food, water, or bodily substances such as cerumen, and we talked earlier about several diseases that were commonly transmitted by contaminated food and water. In the case of norovirus, that was the route of transmission, and soon we're gonna discuss the impact of our old nemesis, cerumen, and how it can be used to transmit disease. Airborne transmission involves the transmission of disease through the air via droplets or particles. And finally,

vectorborne transmission is the spread of disease where insects or animals actually transfer those pathogenic agents through contact with a susceptible host.

So this is certainly an example of why mosquitoes so commonly transmit disease, but there are certainly other insects and animals that can be a source of transmission as well. The most common port of entry for infection in our practice is one of these four orifices, the eyes, nose, mouth, or ears. There are other ways that transmission is certainly taking place, but our focus is ears, so we're gonna look more closely at the role that it actually plays in infection transmission. Well, I think this is an interesting but kind of daunting statistic that the external ear canal is more prone to infection than any other skin surface. Although cerumen's role is to inhibit microbial growth, its effectiveness could be challenged for hearing aid wearers or those wearing hearing protection, or even those that use earplugs for cellphone use, iPods, et cetera. So for those who consistently occlude their ear canal, this occlusion creates a darker, more moist environment in that canal, and as the ear canal retains moisture, the ear canal's pH level changes to a more neutral or alkaline level, and this is one that's more conducive to bacterial or fungal growth.

So if we think about the concept of hearables and even the use of cellphones, we have an ever-expanding array of devices that have close contact with that external auditory canal. Well, cerumen's role is to inhibit microbial growth and impede foreign objects from invading the ear space, and it's not really an infectious agent per se unless it becomes contaminated with mucus or blood. The typically dark color and viscosity of cerumen make it really difficult to distinguish the presence of these bodily fluids in cerumen. So for this reason, cerumen should always be treated as an infectious substance because the hearing professional can't make that determination of the content just by visual inspection. Cerumen is extremely common of course in the hearing healthcare workplace, and all dispensing professionals should utilize universal precautions when exposed to this substance. Well, an opportunistic infection is one

that originates from common microorganisms. They wouldn't typically infect an intact immune system, but they can have a devastating effect on a compromised immune system. This would be one that we would see with the very young, the elderly, or those with reduced immune capacity such as those suffering from HIV or AIDS or other types of immunity impactive diseases.

So the microorganisms that cause an opportunistic infection are commonly found in our environment and they gain access to the body via those standard routes of transmission that we talked about just a few slides ago. These microorganisms move easily throughout our environment and especially if we're not using appropriate infection control as we touch surfaces, use instruments on several people without disinfecting, we could be passing the potential for an opportunistic infection on to those with a compromised immune system. And a good example of this is when we were talking about the staph bacteria which is carried by many individuals, yet many of those are not necessarily impacted by it, but somebody with a compromised immune system very well could be.

So those who are really are at risk for this type of opportunistic infection would be those who have that reduced immune capacity. We talked about the elderly being at greater risk than the younger population, and while some of these diseases that we see displayed here such as SARS and tuberculosis are pretty uncommon, diabetes is not, and individuals with these conditions are at considerable risk of picking up an opportunistic infection. So great care really must be taken with all patients and clinicians in our workplace. Well, infection control is certainly a critical issue in a hearing healthcare practice, particularly a dispensing practice for a number of reasons. The nature of dispensing predisposes both the professional and the patient to numerous potentially infected microbes. In addition, hearing aids and ear molds are known transmitters of microorganisms that might be harmless to some, but deadly to those with a compromised immune system that may be sitting in our fitting chair.

Microbial growth found on hearing device surfaces represents a critical infection control concern, and with the increase in accessories and made for smartphone technologies, the number of items that make up our world of hearing products actually continues to grow as does their potential to spread disease.

So there may be something growing on that hearing aid that your patient is wearing and bringing into your office for a follow-up or service, so there are a number of common opportunistic infections that do have hearing disorders or diseases that are a common offshoot of that infection. So we can see that there are number that are tied to otitis media and otitis externa, certainly conditions that are not necessarily uncommon in a hearing practice. And a study done by Bankaitis back in 2002 found that there were quite a number of infectious microbes that were recovered from the surface of hearing aids and ear molds, and these are infectious microbes that are associated with a number of really serious health conditions that certainly could be very deadly for an individual, especially those that are in a more at-risk category, so it's really important that we keep in mind that the surface of these products that we deal with typically on a day-to-day basis can be a real source of transmission.

So how do we protect ourselves and others? It's not necessary that we have to don a hazmat suit before we go to work, but it is critical that we recognize the inherent risks for infection transmission in the hearing healthcare workplace. So universal precautions are the guidelines that were established by the Center for Disease Control, and they're really the hallmark of infection control and they relate to items such as personal protective equipment, appropriate steps for hand hygiene, cleaning and disinfecting surfaces, sterilizing what is classified as critical instruments, and appropriate waste disposal, and we're gonna talk about the details of all of these and especially how they relate to our workplace. In the dispensing clinic, the use of glasses, masks and gloves can certainly be important protection especially when we're working with ear molds and hearing aids and using modification type of techniques. We also may want to

consider gowns in cases when we're working with materials that are obtained from a known infected individual, or in the presence of known infectious agents.

So it's certainly important that we have all of these readily available in our work environment. Gloves in particular are of high importance in our workspace and they should be worn when there are open wounds are visible blood present, when we're cleaning or disinfecting instruments contaminated with bodily substances and that would certainly include hearing aids and ear molds, whenever we're submerging or removing instruments into or from cold sterilant, and whenever we think that the potential for interacting with infectious materials is likely. So it's important to note that wearing gloves isn't a substitute for clean hands, but gloves and hand washing go hand-in-hand. No pun is intended, but this really is an important thing that we have to keep in mind is that it's not one or the other, it could potentially be both to protect ourselves and others.

So when you're using gloves, they should fit like a glove. Gloves should fit snugly across the fingers, the backs of hands, wrists and palms, closely adhering to the skin, as we see in the image on the left. Audiometric and lab areas should be equipped with gloves and they should be easily accessible for those who clean surfaces as well. Gloves are designed to be used once then disposed of. Improper use could result in contamination, and if we look at an improperly fit glove as we see on the right, this glove is clearly too large for this hand, and that means there's lots of wrinkles, there's gaps at the wrist, and so there's a lot of potential for that glove to easily tear and be invaded, so it's important that we have a variety of sizes of gloves available to suit all the different individuals that are working in your practice. So over 150 years ago, a Hungarian physician by the name of Ignaz Semmelweis tried to convince colleagues that hand washing could prevent infection. His research was rejected, and he actually was ostracized. Today, good hand hygiene is known as the hallmark of infection control, and medical professionals have really embraced the idea of hand washing to

prevent the spread of disease, but if we consider hearing healthcare, are we fully embracing the importance of good hand hygiene and considering the potential for nasty germs to hitch a ride on other surfaces that we contact as well?

Well, hand washing must occur before every patient appointment, and also after every patient appointment, after glove removal, after we're cleaning instruments, and any time as a professional really feels that it is necessary, so by no means do you have to only do it in certain situations. If you feel it's appropriate given who you're dealing with or what you're dealing with, then by all means, you should wash your hands. A study was done by Dr. Amyn Amlani in 1999 surveying 640 audiologists using a five page questionnaire on the topic of universal precautions in the professional setting, professional's protective measures that they were using, and their familiarity with nomenclature related to infection control. And in 2008, a similar study was undertaken by Burco to evaluate changes in perception and performance since that initial study. So let's take a look at some very interesting results.

In 1999 when Dr. Amlani completed the first study, how many audiologists do you think washed their hand after each patient? So in the chat box with a show of hands, if you will, do think that number was 26%, 40%, or 65%? Well, the survey says 26%, that's pretty shocking. Even more shocking, the number of audiologists who washed hands after visiting the restroom. Do you think in 1999, that number was 66%, 50%, or 74%? And the survey says 50%, that's truly scary. Well, let's take a look at the follow-up study that was done in 2008 to see if the hearing profession made any behavioral changes in that span of time. So in the study conducted by Burco in 2008, the number of audiologists who washed their hands after each patient, do you think it was 78%, 92%, or 82%? The actual number was 82%, so that certainly is a noticeable improvement from the 1999 study. Now, what about the number of audiologists who washed hands after visiting the restroom? Is that number 87%, 72%, or 93%? Survey says 87%, and while that is a dramatic increase from the 1999 data, that certainly is

not 100%, as we would certainly all hope. So let's take a look at a quick video about appropriate hand washing technique so we make sure that we know how we should be performing this process most effectively.

- Get a good amount of soap, lather up, and then focus on washing your hands for about 20 seconds, about the time it takes to sing Happy Birthday twice. Focus on washing the front of your hands, the back, in between the fingers, around the nails and so on, and then rinse everything off. Use something to wipe your hands after that, preferably something disposable like a paper towel, and then use that to turn off the tap as well. If you get a chance, use that to also open the door to the bathroom as you leave. The best way to wash your hands is using running water and soap, but sometimes, we don't have that available, so think about carrying with you a hand sanitizer that should have at least 60% alcohol content.

- [Announcer] For more information, visit www.cdc.gov, or call 1-800-CDC-INFO.

- [Michele] So it's very important that we're using appropriate technique and taking the appropriate time. Essentially, we should be able to sing Happy Birthday twice as we're performing this process for it to be its most effective, so it shouldn't be like a quick dash as we wash our hands.

So as you heard in the video, there is certainly an acceptance of the use of sanitizer, and while soap and water and of course the proper technique is the most effective way to keep hands clean, we know that more and more people are relying on the convenience of hand sanitizers. And antibiotic resistance experts do prefer soap over sanitizer, but if you don't have access to a sink, it is certainly appropriate to use a good hand sanitizer solution. The CDC says there's no clear winner in the debate, it just really depends on the activity that you're doing. So if your hands aren't visibly dirty, sanitizer is truly fine. So when you are using a no rinse alternative, it's appropriate to

use a nice amount, so we certainly don't want to skimp on that, but there's no need to use an entire bottle in one sitting either. We squeeze that into the palm and we rub the hands together, rubbing in between the fingers as well and essentially kind of using the same type of technique that we saw during the use of soap and water hand washing. You want to continue to rub until the solution dries, and you don't want to use a towel to dry the hands when you're using a no rinse product, you want to let it evaporate. You want to avoid using products that have the word antibacterial, and instead look for alcohol-based products that contain 60 to 95% alcohol. Some bacteria are becoming more resistant to lower doses. You definitely want to keep the hands wet for about 20 seconds after that application, allowing that alcohol enough time to kill those germs, and again, letting it evaporate.

Well, washing our hands is a great start, but germs do lurk in other places and things that we come in contact with on a daily basis. We think nothing about using cellphones everywhere, at the dinner table, on our commute, in the office and other places, and actually, Americans check their phone about 47 times a day, providing many opportunities for infectious microbes to jump on board. Paper currency is a common way to transmit bacteria as it's changing hands all the time. Because most currency is made up of a combination of linen and cotton, those fibers can easily play host to a variety of infectious microbes. And the longer a bill remains in circulation, the more bacteria it can pick up, and of course, lower denomination bills are exchanged the most, so that means that they are the leading culprits.

So you say you never carry change or paper currency, and we certainly see that and being more common these days, but credit and debit cards can be a source of disease transmission, and that's a given because they are passed between hands and machines frequently during our card transactions. So despite not using cash or coins, that doesn't mean that you're not highly at risk to pick up infectious microbes. And finally, a 2009 study of the American Journal of Infection Control cited that white coats

of healthcare workers can be contaminated with pathogenic and resistant bacteria, and another study confirmed that workers wash their white coats infrequently, so this really makes workplace apparel a likely source of contamination. In some cases, up to 2/3 of the above-mentioned items tested actually carried hard-to-treat MRSA or gram-negative bacteria, so we do really need to be, think about the other objects that aren't necessarily part of our healthcare regimen that could be a source of contamination.

So many people now spend more than 90% of their time in buildings or closed environments, and in many of these enclosed environments, we're using circulated indoor air, and it contains a mixture of contaminants, germs, and chemicals from many sources. And as staff and patients move from one environment to the next, both air and the surfaces are at risk of spreading bacteria. So we need to be thinking in our healthcare environment that we work in that touch and splash surfaces should be cleaned and disinfected. And virtually any surface in a dispensing office and waiting area could be that source of cross-contamination not just the hearing aid work areas. Touch surfaces are those that come in direct or indirect contact with hands, and splash surfaces are those that may be hit with bodily substances or fluids from a potentially contaminated source.

So anything that is classified as a touch and splash surface should be cleaned and disinfected. So let's talk about those three terms. Cleaning involves the removal of gross contamination from contaminated instruments and areas without necessarily killing the germs. This is essentially the initial step in the process 'cause it removes the gross contamination. Cleaning may be done with warm water and detergent or soap. Disinfection kills a percentage of the germs, and there are a number of products on the market that are designed to disinfect. So when we are looking to disinfect, we should be using a EPA-approved hospital grade disinfectant. Sterilization involves killing 100% of the germs, including endospores. So we need to make sure that we understand

these three terms and when to apply them. Before we disinfect items that should be disinfected, cleaning should take place to remove kind of that gross level, and then we should disinfect most items that don't come in contact with blood or other infectious agents, and sterilization should take place for those that potentially do.

So now let's take a look at our study again, and if we think back to 1999, do we think that most hearing professionals could define the difference between those three terms, cleaning, disinfecting and sterilizing? Do you think the number that knew those were 74%, 50%, or 89%? Well, 74% said yes, but they were actually incorrect, so they couldn't appropriately define those three terms that are so important in understanding how we need to manage our work environment. So if we fast forward to 2008, what did Burco find out? Could the professionals now correctly identify those three terms? Were those that could 65%, 94%, or 77%? Well 77% said that they could, and in fact, were correct. So in the span of that 10 years between those studies, there was a noticeable improvement across all aspects that seem to speak to the increased understanding and awareness of the importance of not only understanding the nomenclature related to infection control, but also the importance of good hand hygiene and appropriate procedures in our particular type of workplace. It would be very interesting to see if the study were done now that we're past another 10 years what type of clients there would be in the hearing healthcare environment.

So let's talk a little bit about disinfectants, 'cause there's a wide variety of products that are on the market, and you've probably seen them at your local pharmacy or grocery stores, but the most appropriate disinfection agents for our workplace would be a hospital grade disinfectant. These are stronger and kill a wider range of germs than those that are found kind of in the more generic environment. It's also critical that cleaning occurs first, then disinfecting. Items that can be disinfected are referred to as non-critical items, and these would include headphones, specula, ear molds, or instruments and surfaces that aren't contaminated with blood, ear drainage, cerumen,

or bodily fluids. There's a number of ways that disinfectants can be applied whether it's liquid spray or towelette, there are choices that may make sense depending on the particular type of application. The critical instruments in the dispensing workplace would be those that come in contact with bodily substances, and this could be curettes, specula, immittance and OAE tips for just a few examples. These must be sterilized, and this involves killing 100% of those germs. Sterilization options include the use of either an autoclave but what's more common in a dispensing workplace would be cold sterilization, and cold sterilization means that we're soaking the instruments in EPA-approved solutions for a certain number of hours, and this will be specified on the packaging for the particular solution that's being used.

Part of the universal precautions is the implementation of appropriate waste disposal, and infectious waste in the dispensing environment would typically be cerumen. And that can usually be disposed of in a regular trash receptacle and discarded as trash typically would, but if the material contains a significant amount of blood, the waste should be disposed of in a separate package and care taken to prevent cleaning staff from having casual contact with this material. We hope that this situation is extremely rare, but we do know that if an office does cerumen management or takes a lot of impressions, they do need to be prepared for the eventuality that there could be infectious waste materials and have a plan for disposal of these materials. If we're thinking about ear impressions and especially deep insertion types of instruments, there may be greater potential for ear trauma when making these type of impressions, so again, we need to be thinking about the type of activities that we are doing on a daily basis in our offices and making sure that we're prepared for an eventuality, even if it is quite rare. Engineering and work controls are part of the universal precautions as well, and engineering controls are seen in our workplace as essentially establishing containers for storage of those reusable items that need to be sterilized at the end of the day, designating a specific room for sterilization procedures and labeling it as hazardous would be considered engineering controls as well. Work practice controls

are profession specific procedures that are performed to reduce the risk of cross-contamination.

So some examples of work controls, maybe altering the manner in which procedures are performed such as cerumen management to try and reduce the risk, and this could be by wearing appropriate barriers like gloves when you're performing these types of procedures. We need to always be thinking about when we're doing these types of procedures that they should be implemented with each patient and situation because we don't really know the known or sometimes unknown health status of the individual that is in front of us, so consistency really is key. Material safety data sheet is an informational label, and it outlines the hazards that are associated with the use of chemical products that are found in our work environment. MSDS sheets include information on the chemical composition, the physical and chemical characteristics, acute or chronic health effects related to it, precautionary measures and first aid procedures that are related to the use or contact with that particular material, and it'll also contain emergency contact information. MSDS sheets should be obtained for all chemicals that are used in the workplace, and in our context, we would think of things like impression materials, disinfectant and sterilization compounds, monomer and polymer. These forms can all be obtained from the manufacturer, and in some instances, it may be included as an insert with the product as well, if not, it is certainly available through customer service and the company resources. In a dispensing practice, OSHA requires that these forms should be stored in close proximity to where the materials are used.

So MSDS sheets are available from your manufacture, it's important that you have those in the area where those particular materials are used. So an example of impression material, that documentation should be readily available where impressions are being taken in your workspace. So who actually regulates infection control? Well, OSHA of course is the gateway for the implementation of safety procedures in the

workplace, and OSHA requires the implementation of a written infection control plan in the healthcare setting. The plan should include six items that cover everything from employee classification and training, plans and record-keeping protocol for cases of accidents, and exposure to infection.

It's also important to note that state agencies may have regulations that actually meet or exceed those of OSHA, so it's important to be educated about your specific state. For the purposes of this talk, we're really discussing the federal guidelines of the Occupational Safety and Health Administration. So what things should we consider when we're implementing an infection control plan as stated by OSHA in our workplace? Well, the written infection control plan requirements should include employee exposure classification, hepatitis B vaccination plans, annual training plans, plans for accidents, implementation protocols, and plans for post-exposure. And so we'll talk about all of these in just a little bit more depth. In terms of employee classification, it's really the first OSHA requirement and it's really based on the potential exposure to blood and infectious agents.

Category one would involve audiologists and other health professionals that are typically involved in inter-operative and post-operative monitoring, and diagnostic procedures for patients with head or ear trauma. While this is not necessarily typical in a dispensing practice, it may occur in other work environments, so it's important to know if you fit that category. Category two is where most dispensing professionals, student externs and any patient care coordinators with patient contact reside, and this of course includes patient care coordinators that have direct patient contact, or clean instruments in the workplace. Category three staff would be administrative staff that doesn't have patient contact. So all of those that fall into category one and two are required to practice infection control procedures in the workplace, and so this would have course include all dispensing professionals. The second OSHA protocol is actually related to the subject of hepatitis B vaccinations and record-keeping. And

hepatitis B is the most common form of hepatitis, with one in two persons in the US exposed to the virus. In the majority of cases, the infected individual doesn't manifest symptoms, they're not even aware that they're infected. Healthcare workers routinely exposed to blood or blood products are at risk since it is routinely transmitted through contact with contaminated blood or bodily fluids, and this includes saliva. HBV has been shown to live outside of the body on surfaces and instruments for a span of one week.

So in the dispensing clinic, it could be transmitted by handling hearing instruments removed from ears with bare hands, or handling unsterilized instruments that have maybe made contact with cerumen or contaminated surfaces that are infected with hepatitis B. A vaccination does exist for HBV, and it's a series of three shots that are administered over a six-month interval. And OSHA requires that all category one and two employees are offered the HBV vaccination at no charge. They can certainly decline that, but there is a form that is required to be signed if that declination occurs. Employees must maintain these records for the duration of employment plus 30 years, and that certainly is a lengthy time, so I think it points to the seriousness of preventing the spread of hepatitis B. OSHA mandates that a specific training plan and record-keeping protocol be established. Training should occur initially within 90 days of employment. It should occur annually as reinforcements and also updates if there is new information related to infection control.

And those records should be maintained for each employee. So OSHA's fourth protocol involves the development of actual steps to be implemented in the case of exposure. Each dispensing office should have a plan in case of the event of an accident. What happens if a patient or a staff member gets a nosebleed or vomits? The office staff at all levels should know what to do. This implementation protocol should include directions to avoid touching blood or bodily fluids, and appropriate aid and cleanup steps. While rare in a dispensing clinic, accidental exposure to bloodborne

pathogens can happen and do require follow-up. So if exposure occurs, that follow-up is required, and OSHA expects that we keep record of whether there was a confirmed transfer of disease or not. If there was, was treatment needed? And what was the outcome of that treatment?

So again, while infrequent in a dispensing environment, it is not outside of the realm of possibility, so it is important that we have a plan in place. In the case of accidental exposure, those records should be kept, and should include the circumstances of the exposure, the route, the treatment plan, and the outcome of that treatment. So all staff really needs to understand, whether they are providers or whether they are administrative staff, they need to understand the plan, where they fall into that level of category for exposure, and the appropriate steps that they should be taking to not only prevent the spread of infection in the environment but also if that were to take place, the protective measures that must be implemented as well. All of this is done through execution of those appropriate work practice controls, the use of correct cleaning, disinfecting and sterilizing materials, and most importantly, education about risk and how to prevent it.

So if we think about an infection control plan in a dispensing practice in particular, we really need to think about the appropriate steps for when we're taking impressions and dispensing hearing aids how we are actually accepting and receiving these products from our patients, what we're doing in the course of listening checks and sterilizing and disinfecting as we use different equipment from one patient's products to the next, also when we think about equipment that we use for real ear immittance testing, audiometric testing and modifications, we need to have a plan in place that looks at a comprehensive approach to all aspects of our patient care. So is an infection control plan really necessary, or is this kind of a lot of hype? Well, there has been evidence of OSHA investigation in hearing healthcare, so we as a profession aren't necessarily immune to OSHA coming and calling. If they do pop in and find a violation, the financial

penalty could be significant, and the best course of action is to have a plan and for all staff to act upon it.

First and foremost, we need to be thinking about the health and wellness of our patients, and of course, ourselves. And so regardless of the risk of OSHA coming to visit, we need to be thinking about the best practices of having a plan in place and acting on it. So best practices in the dispensing clinic should certainly be washing hands before and after patient contact. Cleaning tools and any type of product that we're using across patients after each use. Having the appropriate storage device to accept hearing aids from patients and transferring them around the office, we don't want to just do that with bare hands. We also need to be thinking about and ensuring that we have the appropriate personal protective equipment in place to be used when handling and modifying hearing instruments. That may include that we need to consider donning gloves before handling new hearing instruments. It's highly recommended that we do so because we don't always know not only about the condition of the patient who just handed the hearing aids, but even if they're brand-new, we don't necessarily know about the infection control procedures that took place at the manufacturing level. Manufacturers as well are supposed to be gloved when handling hearing aids, especially those that are sent in for repair as they certainly are at considerable risk for cross-contamination, especially if the aids were removed from an ear within 24 to 72 hours, we think about the time frame that bacteria can reside, and it varies from one disease to the next.

Prior to dispensing any product, we should clean it with a disinfectant towelette, and we should don gloves as we're educating patients on insertion and removal. That certainly is a good protection measure and it's also a good example of the best practices of our potential practice. We also need to disinfect horizontal surfaces that are used during dispensing, so we need to be thinking about anything that comes in contact with hearing aids and tools that could be contaminated and ensuring that that

is disinfected before we see the next patient. So are you using best practices in your work environment? Does your practice have a plan? Do they implement it? Do the professionals review that on an annual basis and even more frequently as needed based on incidences that could occur? And if you have something that happens, do you know the type of action to take if exposure were to occur in your environment? Really, can you afford not to know these important points related to infection control? So I want to encourage you all to stay healthy, be thinking about your workplace and how you can take a more active role in protecting yourself, your patients, and everyone that you come in contact with, and I will remain in the room to answer any questions that may come up. I thank you very much for your attention talking about this I believe very important topic, and I look forward to seeing you again at a Starkey event in the near future.