

ABC's of Infection Control

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Infection control is a process that involves the conscious management of the clinical environment for the specific purposes of minimizing the potential spread of disease (Bankaitis and Kemp, 2003, 2005). As such, it requires practitioners to not only critically assess how clinical procedures are currently delivered, but to then identify how those procedures may need to be modified to meet the goals of an effective infection control plan. The process is not arbitrary; rather, it is based on established standards that workplaces, including environments where hearing instruments are dispensed, must demonstrate compliance. Implementing effective infection control procedures in the clinical environment provides an opportunity to educate patients about proper hearing instrument care and maintenance. The purpose of this article is to reiterate the relevance of infection control to the practice of dispensing hearing instruments, to outline required infection control guidelines, and to provide practical information to assist in educating hearing instrument wearing patients on the importance of infection control.

A: Accountability and Awareness

Hearing healthcare professionals are held accountable for ensuring infection control procedures are part of routine clinical practice. The Occupational Safety and Health Administration (OSHA) has issued specific guidelines on how to reduce exposure to potentially infectious agents in the workplace. These requirements apply to environments where patient care services are provided, including the dispensing of hearing instruments; as such, hearing healthcare practitioners are legally and therefore ethically obligated to uphold federally-mandated infection control standards established by OSHA. Completely ignoring or not sufficiently meeting outlined infection control requirements will not only result in OSHA issuing significant fines, but will initiate further audits of the clinical environment to assess the extent of infection control noncompliance.

Beyond legal and ethical accountability, professionals must acquire a keen awareness regarding the relevance of infection control. Thirty years ago the need for infection control in the dispensing environment remained virtually unrecognized (Roeser, 2005). While the discovery of HIV during the mid-1980s served as the catalyst for change in infection control, recent outbreaks of Severe Acute Respiratory Syndrome and methicillin-resistant *Staphylococcus aureus* serve as reminders as to the importance of infection control (Bankaitis and Kemp, 2003, 2005). The nature of hearing aid dispensing is inherently associated with a high degree of disease exposure (Bankaitis and Kemp, 2003, 2005; Bankaitis, 2002). The services provided by the hearing healthcare professional and the corresponding infection control principles that he or she chooses to apply (or ignore) will influence not only their own health, but the overall health and well-being of their patients and coworkers.

Research in the past decade has revealed microbial growth on hearing instrument surfaces that further perpetuates the importance of controlling the spread of disease in the dispensing clinic (Bankaitis, 2002; Sturgelewski, Bankaitis, Klodd, and Haberkamp, 2006). While some of the microorganisms (i.e. *Staphylococcus*, *diphtheroids*, and occasional fungal spores) were consistent with normal ear canal flora (Jahn and Hawke, 1992), most of the recovered microorganisms were not (Bankaitis, 2005). Furthermore, several hearing aids were contaminated with microbial growth consistent

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with fecal matter (Bankaitis, 2002). In other words, hearing instrument practitioners are not only handling hearing instruments contaminated with potentially infectious microbes, but other contaminated reusable objects that can easily be transferred from one patient to the next if appropriate infection control measures are not followed.

B: Basics

Hearing healthcare practitioners must have a command of the basic requirements associated with an infection control plan. OSHA requires every dispensing practice to maintain a readily-available, written infection control plan. This written plan must be comprised of the following six sections as follows:

1. Employee Exposure Classification;
2. Hepatitis B (HBV) Vaccination Plan;
3. Infection Control Training Plan;
4. Work Practice Controls (Implementation Protocols);
5. Emergency Procedures; and
6. Post-Exposure Evaluation and Follow-up

It is beyond the scope of this article to address the specific requirements of each section and the reader is referred to several resources that not only provide detailed information on section requirements, but also provide access to a written infection control plan template (Bankaitis and Kemp, 2003, 2005). Of the six sections, particular attention is called to section four, which addresses work practice controls.

Work practice controls refer to written procedures that outline how a clinical procedure will be performed in a manner consistent with the implementation of standard precautions (Bankaitis, in press). Originally referred to as Universal Precautions, the Centers for Disease Control and Prevention (CDC) issued a number of standard precautions that were designed to minimize the potential for cross-contamination and/or spread of the disease (CDC, 1987), which may be summarized as follows:

1. Use of personal barriers;
2. Hand hygiene;
3. Cleaning and disinfecting;
4. Sterilization; and
5. Infectious waste

When developing a work practice control for a procedure related to dispensing hearing instruments, it is necessary to determine which of the above five safety measures must be incorporated in the written work practice control. To better recognize when a specific safety measure should be accounted for in a work practice control, each will be briefly addressed.

Personal Barriers

Personal barriers in the form of gloves, masks, eye protection, and/or gowns must be worn by the hearing healthcare professionals when performing procedures that may expose the practitioner to potentially infectious agents or substances. For example, handling hearing instruments and/or earmolds removed from the patient's ear without cleaning and then disinfecting such surfaces should be done so with gloved hands. Similarly, eye protection and masks should

be worn during hearing instrument modification procedures when using buffing wheels.

Hand Hygiene

Hands must be washed using either traditional liquid soap and water, or no-rinse hand degermers immediately prior to the patient appointment, immediately following the patient appointment, immediately after glove removal, and at any time the practitioner feels it is warranted (CDC, 2002).

Cleaning and Disinfecting

Touch surfaces that come in direct or indirect contact with patients and/or clinicians must be cleaned and then disinfected prior to the next patient appointment. For example, countertops, tables, service areas, and armrests of chairs must first be physically wiped with a cloth or towelette (i.e. cleaning) and then subsequently disinfected with a disinfectant product. To clarify, cleaning is a process whereby a surface is wiped in preparation for disinfecting and may not necessarily involve killing germs; in contrast, disinfection refers to a process whereby germs are killed (Bankaitis and Kemp, 2003, 2005).

Sterilization

Instruments or objects that make contact with mucous membranes or bodily fluids (i.e. cerumen, saliva, ear drainage) intended for reuse must be first cleaned and then sterilized prior to reuse. Sterilization is not the same process as disinfecting. Whereas disinfection kills a number of germs, the sterilization process kills all germs (including endospores) each and every time and, therefore, requires the use of specific techniques or products. Most dispensing clinics will be limited to utilizing cold sterilization techniques. This technique involves soaking instruments in liquid chemicals approved by the Environmental Protective Agency (EPA) for a specified number of hours according to the manufacturer's instruction. Only two ingredients have been approved by the EPA as sterilants: (1) glutaraldehyde, and (2) hydrogen peroxide. Products containing the active ingredient glutaraldehyde in concentrations of 2% or higher or those containing the active ingredient hydrogen peroxide (H_2O_2) in concentrations of 7.5% or higher may be used to sterilize instruments.

Infectious Waste

Disposable items contaminated with saliva, cerumen, blood, or blood by-products may be disposed of in the regular waste; in the event a disposable item is contaminated with copious amounts, it should first be placed in a separate, impermeable bag (i.e., biohazard bag) and only then discarded in the regular trash (Bankaitis and Kemp, 2003, 2005). Disposing of sharp objects such as razors or needles requires special consideration and must be disposed of in a puncture-resistant, disposable container (sharps container).

C: Counsel Patients

The principles of infection control extend beyond the confines of the dispensing environment. Counseling hearing

instrument wearers about proper cleaning and disinfecting techniques is important; however, making patients recognize why cleaning and disinfecting their hearing instruments is necessary represents an equally important component of the counseling process. To facilitate this process, free educational tools are readily available in the form of a patient counseling reference and prescription pads. The counseling reference is a laminated page designed to reside in the clinical environment to guide patients through various cleaning and disinfecting steps. One side of the reference card outlines proper hearing instrument care and maintenance using visual illustrations and a simple explanation of each of the three steps involved in the process. The other side showcases a detailed explanation as to the importance of hearing instrument hygiene which was designed to be used either as a script or guide for the practitioner to use when reviewing the importance of infection control with patients, or it may be something patients may read on their own. Similarly, the prescription pads illustrate the three basic steps involved in cleaning and disinfecting hearing instruments outlined on one side of the laminated counseling reference previously described. When counseling patients on proper hearing instrument maintenance and care with the laminated counseling reference, the top sheet of the prescription pad may be torn off and handed to the patient to take home as a reference and reminder about cleaning and disinfecting their hearing instruments.

Furthermore, carve out a few minutes during the patient appointment to educate patients about other hearing instrument care products and make sure that those products are readily available to your patients at your clinic. Making appropriate product accessible to your patients will not only reflect that the professional dispensing environment is in compliance with established infection control practices, but will send a message to your patients that you and your clinic serve as their primary resource for all their hearing instrument care needs. Although not an exhaustive list, some infection control product suggestions to make accessible to your patients may include the following:

Non-Alcohol Based Disinfectants

Non-alcohol based disinfectants are ideal disinfectants for the hearing healthcare industry as these products do not contain alcohol. While alcohol is considered a disinfectant, it chemically denatures rubber, plastic, silicone, and acrylic and is, therefore, not appropriate or recommended for disinfecting hearing instruments or earmolds. Non-alcohol based disinfectants are packaged in a variety of forms and are the most appropriate disinfectant to use on hearing instrument surfaces.

Active Hearing Instrument Dehumidifier with Ultraviolet Light for Germ Killing

Some hearing instrument dehumidifiers not only remove damaging moisture from hearing instruments, but are designed to disinfect hearing instrument surfaces. For example, some models are equipped with UV lamps and a newer dehumidifier is also equipped with a UV lamp. When ei-

ther unit is first turned on, a UV lamp located at the top of the unit engages, initiating a germicidal cycle. Since the UV lamp is located at the top of the dehumidifier, disinfection will only occur to those hearing instrument surfaces directly exposed to the light; to achieve maximum benefits of the germicidal cycle, it remains paramount for users to manually clean and then disinfect all hearing instrument surfaces prior to placing the instrument into the unit.

Lubricants

For those patients who are in habit of lubricating their hearing instruments by placing the devices in their mouth, make lubricants available for resale at your office. Lubricants offer the most hygienic means for making insertion of hearing instruments or earmolds easier. In addition, some lubricants actually help seal the fit of hearing instruments when feedback is an issue. A wide-range of lubricants are commercially available.

Concluding Remarks

Infection control is an important component of routine clinical practice. Hearing healthcare providers are obligated to ensure that current standard practices incorporate infection control procedures as outlined by OSHA. It also provides practitioners with an opportunity to not only educate patients about the importance of infection control as it relates to hearing instrument maintenance and care, but to also provide patients with access to appropriate products that will assist in achieving the goals associated with an effective infection control program.

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1. Infection control is necessary in the dispensing environment because:

- a. it is the law
- b. the nature of hearing aid dispensing practice increases potential for cross-contamination
- c. both a and b
- d. none of the above

2. Profession-specific procedures designed to reduce the likelihood of cross-contamination are called:

- a. standard precautions
- b. work practice controls
- c. training plans
- d. emergency procedures

3. Hands must be washed:

- a. immediately after glove removal
- b. immediately prior to the patient appointment
- c. at any time the practitioner feels it is necessary
- d. all of the above

4. Cleaning is:

- a. preparation for disinfecting and may not kill germs
- b. killing germs
- c. killing 100% of germs, including endospores
- d. all of the above

5. Disinfection means:

- a. removing gross contamination
- b. killing germs
- c. killing 100% of germs, including endospores
- d. all of the above

6. Sterilization means:

- a. removing gross contamination
- b. killing germs
- c. killing 100% of germs, including endospores
- d. all of the above

7. Touch surfaces that come in direct or indirect contact by the practitioner or patient must be:

- a. cleaned or disinfected between patients
- b. cleaned first and then disinfected between patients
- c. disinfected and then sterilized between patients
- d. cleaned and then sterilized between patients

8. Critical instruments must be:

- a. cleaned or disinfected prior to reuse
- b. cleaned first and then disinfected prior to reuse
- c. disinfected and then sterilized prior to reuse
- d. cleaned and then sterilized prior to reuse

9. The most appropriate disinfectant to use on hearing instrument surfaces is:

- a. alcohol
- b. non-alcohol based product
- c. cold sterilant
- d. none of the above

10. Which of the following is not part of the standard precautions issued by the CDC?

- a. hand hygiene
- b. work practice controls
- c. cleaning and disinfecting
- d. sterilization

ABC'S OF INFECTION CONTROL

Name _____

Address _____

City _____ State/Province _____ Zip/Postal Code _____

Email _____

Office Telephone _____

Last Four Digits of SS/SI# _____

Professional and/or Academic Credentials: _____

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2. a b c d	7. a b c d
3. a b c d	8. a b c d
4. a b c d	9. a b c d
5. a b c d	10. a b c d