

Infection Control related to Steel Burs used for Modifying Hearing Instruments

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Background Information:

Infection control refers to the conscious management of the environment for purposes of minimizing or eliminating the potential spread of disease.^{1,2} In response to the AIDS epidemic, during the mid to late 1980's, the Centers for Disease Control and Prevention (CDC) issued a number of recommendations and guidelines for minimizing cross-infection of bloodborne diseases to healthcare workers. These guidelines were based on the principle that every patient is assumed to be a potential carrier of and/or susceptible host for an infectious disease. Eventually, these pronouncements were officially formalized into the Universal Blood and Bloodborne Pathogen Precautions. More commonly referred to as universal precautions, the general pronouncements are as follows:

1. Appropriate personal barriers (gloves, masks, eye protection, gowns) must be worn when performing procedures that may expose personnel to infectious agents
2. Hands must be washed before and after every patient contact and after glove removal
3. Touch and splash surfaces must be pre-cleaned and disinfected
4. Critical instruments must be sterilized
5. Infectious waste must be disposed of appropriately

CDC 1987³

Differentiation of Terms:

Cleaning refers to procedures in which gross contamination is removed from surfaces or objects without killing germs.^{1,2} It does not necessarily involve any level of germ killing but cleaning is an important prerequisite for other processes in which killing germs remains an objective. Cleaning must occur prior to disinfection or sterilization as the effectiveness of these procedures may be compromised without it.

Disinfection refers to a process in which germs are killed.^{1,2} The term encompasses a wide range of germ killing. Levels of disinfection vary according to how many and what specific germs are killed. Household disinfectants kill a limited number of germs commonly found in the household. In contrast, hospital-grade disinfectants are much stronger and kill a larger number and variety of germs. As such, hospital-grade disinfectants should be incorporated in infection control protocols implemented in patient care settings, including clinics, hospitals, or private practice facilities where audiology services are provided.

Sterilization involves killing 100% of vegetative microorganisms, including associated endospores.^{1,2} When microbes are challenged, they revert to the more resistant life form called a spore. Sterilants, by definition, must neutralize and destroy spores because if the spore is not killed, it may become vegetative again and cause disease. Whereas disinfection may kill some germs, sterilization, by definition, kills all germs and associated endospores each and every time.

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| Cleaning: | removal of gross contamination |
| Disinfecting: | killing a percentage of germs |
| Sterilization: | killing 100% of germs including endospores |

Steel Burs - Preferred Infection Control Recommendations:

According to the CDC, critical instruments must be sterilized. Critical instruments refer to those instruments or objects introduced directly into the bloodstream (e.g., needles), non-invasive instruments that come in contact with intact mucous membranes or bodily substances (e.g., blood, saliva, mucous

discharge, pus), or instruments that can potentially penetrate the skin from use or misuse. Non-critical items are those instruments or objects that either do not ordinarily touch the patient or touch only the externally intact skin. ***Steel burs used to modify hearing instruments are not considered critical instruments since they are not designed to be inserted into a patient's ear. From this perspective, steel burs must be first cleaned and then disinfected prior to re-use. Furthermore, the hearing instrument should be cleaned and then disinfected following any procedures incorporating steel burs.***

Disinfection of Steel Bur

- Immediately following the use of a steel bur, clean the bur by wiping the surface completely using either a paper towel, disinfectant towelette, Kleenex, or cleaning brush.
- Dispose of paper towel, disinfectant towelette or Kleenex into the regular trash
- Disinfect the same surface by wiping the surface complete using a fresh disinfectant towelette or spray the surface of the entire probe tip with disinfectant spray and then wipe the surface with a paper towel.

In the event it is determined that the steel bur needs to be sterilized:

- Following the use of steel bur, place in the designated container for later cleaning and sterilization.
- Immediately after the last appointment of the day, designated covered containers holding contaminated burs are to be brought to the hazard area by designated personnel. Designated personnel must wear gloves while transporting the closed containers.
- While wearing gloves, clean the surfaces of bur with a paper towel or disinfectant towelette. The same towel or towelette may be used to clean all instruments.
- Once the instruments are cleaned, with gloved hands carefully place bur in the appropriate tray containing sterilant.
- Cover the tray and allow instruments to soak according to manufacturer's directions.
- Remove gloves and wash hands according to designated procedures.

Retrieval of bur

- After sterilization is complete, put on a fresh pair of gloves.
- Remove bur from the solution
- Rinse bur in a sink designated as a cleaning sink. Allow instruments to air dry
- Return bur to appropriate location(s) for reuse.
- Sterilant should be changed according to manufacturer's instructions or sooner if the solution becomes visibly soiled.

For more information, contact A.U. Bankaitis or Robert Kemp of Oaktree Products.

References:

1. Bankaitis, A.U. and Kemp, R.J. (2003). *Infection Control in the Hearing Aid Clinic*. Boulder, CO: Auban.
2. Bankaitis, A.U. & Kemp, R. J. (2005). *Infection Control in the Audiology Clinic* (2nd edition). St. Louis, MO: Auban, Inc.
3. CDC. (1987). Recommendations for prevention of HIV transmission in healthcare settings. *MMWR*, 36(2s).