COLLEGE OF DENTURISTS OF ONTARIO

Infection Control: Instrument Cleaning and Sterilization Guidelines

Infection control techniques based upon the current knowledge of disease transmission demand that all instruments and devices used in and around the oral cavity should either be sterilized or subjected to high level disinfection. Nearly all instruments that are used in a Denturist practice are classified as "semi-critical" (those items that contact but do not penetrate the oral mucous) or as "non-critical" (items or surfaces that are touched during treatment but are not directly in contact with the oral mucosa). Semi-critical items require a minimum high level disinfection, not necessarily sterilization.

- **Sterilization** refers to the killing of all life forms.
- **Disinfection** is the destruction of some - but not all- micro-organisms, and varies from a low level (when only minimally resistant organisms are destroyed) to a high level (when all but very resistant organisms are destroyed).
- **Cleaning** is the removal of visible debris, blood and saliva from an instrument, reducing the number of - but not all micro-organisms.

In the practice of Denturism, there are four methods of sterilization which are recognized as acceptable techniques. Each method has distinct advantages, disadvantages and applications. No single method of sterilization is suitable for all items or materials; therefore, a combination of methods is required.

The acceptable methods of sterilization are:

- Water Vapor under pressure - AUTOCLAVE
- Chemical Vapor under pressure - CHEMICLAVE
- Dry Heat - DRY HEAT OVEN
- Chemical - CHEMICAL STERILANTS

All recommended methods except for chemical sterilants allow for biological monitoring to ensure that the sterilization process is effective. Biological monitoring is critical; "colour change" indicators on packaging do not indicate or guarantee sterility. Each sterilization procedure is tested using a different spore tester and it is imperative that the appropriate product be used to test sterilization equipment. A written record of the monitoring results should be kept. Chemical sterilants must be properly mixed and maintained at the recommended temperature for the recommended length of time to be effective. There is no way to monitor a chemical sterilant; therefore, it is the least desirable method of sterilization. If chemical sterilants are to be used, the frequency with which solutions are used and changed must be monitored and documented.

No Instrument or Item can be Effectively Sterilized unless it is Thoroughly Cleaned First

The most effective method of cleaning an item prior to sterilization is ultrasonic cleansing. Ultrasonic cleansing is preferred to hand scrubbing because it is 16 times more efficient and it significantly reduces the potential for the splashing of contaminants during scrubbing. Utility gloves should be worn when hand scrubbing instruments.

After cleaning, instruments can be rinsed, dried and visually inspected for debris. If the item is still dirty, it will be necessary to hand scrub it. Once clean, the items are placed into sterilization bags and sealed. Bags must have either a chemical indicator on the paper side or have a piece of indicating tape placed on the bag to verify that it has been exposed to the sterilizing cycle. Staples or paper clips should not be used to close the bags, as they do not provide a seal.

Your Sterilization Techniques are only as Good as Your Cleaning and Packaging

SUMMARY OF STERILIZATION CONDITIONS FOR PACKAGED ITEMS			
Sterilizer	**Temperature**	**Pressure**	**Time**
Steam autoclave	121 °C	15 psi	20 minutes
Steam autoclave	132 °C	30 psi	10 minutes
Chemical vapor	132 °C	20 - 40 psi	20 minutes
Dry Heat	170 °C		60 minutes
Dry Heat	160 °C		120 minutes
Dry Heat	150 °C		150 minutes
Dry Heat	121 °C		12 hours
Dry Heat (rapid flow)	190 °C		12 minutes

Heat has been recognized as the most reliable method of dental instrument sterilization and should therefore be used for all instruments and items that can withstand repeated exposure to high temperatures. Only when an item cannot withstand steam, chemical vapor or dry heat sterilization should it be sterilized using a chemical sterilant. It is recommended that GLUTARALDEHYDE be used as a chemical sterilant. Choose a product which is 3.2% Alkaline, 2% alkaline or 2% Acidic and totally immerse the cleaned item for a minimum of 10 hours at the manufacturer's recommended temperature. Use of a chemical sterilant should be followed by aseptic rinsing with sterile water, drying, and, if the instrument is not used immediately, placement in a sterile container. Occupational Health and Safety issues dictate a need for adequate ventilation.

Attention must be paid to the use-life of a product, as it can be affected by the number of loads of items sterilized in a particular batch of solution. Consult the product label and package insert to verify the active ingredients of a product and the instructions for use. Non-critical items which have not had direct contact with the mucosa can be disinfected using an approved high-level disinfectant solution.

STERILIZATION AND DISINFECTION OF INSTRUMENTS AND EQUIPMENT USED IN THE DENTURIST PRACTICE				
ITEM	**STEAM AUTOCLAVE**	**DRY HEAT OVEN**	**CHEMICAL VAPOR**	**CHEMICAL STERILIZATION & DISINFECTION**
Articulators	-	-	-	*(D)
Bowls				
stainless steel	*	*	*	-
rubber	-	-	-	*
Burs				
carbon steel	-	*	*	+
steel	+	*	*	+
tungsten/carbide	+	*	+	+
Fox Planes	+	*	+	*
Hand Instruments				
stainless steel	*	*	*	-
wooden handled	-	-	-	*
plastic handled	-	-	-	*
Impression Trays				
aluminum	*	+	*	-
chrome plated	*	*	*	+
custom acrylic	-	-	-	+
stock plastic	-	-	-	*
Intraoral Tracers	-	*	*	-
Mirrors	-	*	*	+
Pliers				
stainless steel	-	*	*	-
with plastic parts	-	-	-	+
Polishing Wheels				
rag/felt	*	-	+	-
brushes	-	+	+	-
Wax Items, Dentures, Occlusion Rims etc.	-	-	-	+