



Title: Disinfectant and Sterilization Methods

PREPARATION:

- It is important to understand that for many of these methods to be effective, gross debris such as blood or other organic matter must be removed prior to use
- This document is meant to be used as a guide only. Manufacture recommendations for specific products must be followed with regards to contact time, refreshing solutions, and personal protection.
- * indicates the veterinary preference

PROCEDURE:

Table 1: Hard-Surface High-Level Disinfectants

Disinfectant	Examples	Comments
Peracetic acid/hydrogen peroxide/acetic acid solutions	Spor-Klenz®*	Low toxicity. Effective. Should be used inside a hood or when wearing eye protection if sprayed/splash hazard.
Isopropyl alcohol and 2-Butoxyethanol	Opti-cide 3*	Low toxicity. Effective.
Chlorine (sodium hypochlorite, chlorine dioxide)	Sodium hypochlorite: Clorox® 10% Chlorine Dioxide: Clidox-S®, Alcide®	Corrosive; organic material decreases the effectiveness
Quarternary Ammonium	Roccal-D®, TBQ®, NPD®	Detergent properties
Phenolics	Lysol®	Corrosive; less affected by gross organic material than other disinfectants
Chlorhexidine	Nolvasan®	Not affected by the presence of organic material
Aldehydes	Cidex®	Toxic, exposure limits are set by OSHA; very effective
Aldehyde/phenol solutions	2% gluteraldehyde plus 7.05% phenol: Sporcidin®	Toxic, exposure limits are set by OSHA; very effective, Toxic to cats



Table 2: Sterilization Methods

Method	Common Uses	Required Time	Comments
<u>Steam Sterilization*</u>	Steam autoclave is the most common method. Used to sterilize surgical instruments and other equipment that is tolerant of moisture and heat.	30-40-minute cycle plus cooling time	Specific time, temperature, and pressure are dependent on the system (standard 30 minutes at 121°C and 15 psi) Contact of materials with the steam is essential
<u>Gas Sterilization-Ethylene Oxide (EtO)*</u>	Used on medical and pharmaceutical products that cannot support conventional high temperature steam sterilization such as devices that incorporate electronic components, plastic packaging or plastic containers. Limitations apply.	May need up to 15 hours to complete a preconditioning, sterilization, and aeration phase.	Safety of personnel is an important issue due to the harmful effect of EtO on humans. Limited availability.
Liquid Chemical Sterilization-Peracetic acid	Spor-Klenz® is an example. Useful for heat-sensitive, nonporous materials when access to sterilization equipment is limited.	5 1/2 hours of contact time (items must be submerged)	Corrosive to metal instruments. Irritating to tissue. Rinse with sterile water/saline prior to use on animal tissues
Liquid Chemical Sterilization-Chlorine	Clidox-S® and Alcide® are examples. Used on nonporous materials, heat-sensitive materials when access to sterilization equipment is limited.	6 hours of contact time (items must be submerged)	Corrosive to metal instruments. Rinse with sterile water/saline prior to use on animal tissues.
Liquid Chemical Sterilization-Glutaraldehyde	Cetylcide-G® is an example. Used on nonporous, heat-sensitive materials when access to sterilization equipment is limited.	10 hours contact time (items must be submerged)	Rinse with sterile water/saline prior use on animal tissues.
Liquid Chemical Sterilization-Chlorhexidine	Nolvasan® is an example. Used on nonporous, heat-sensitive materials when access to sterilization equipment is limited.	24 hours of contact time (items must be submerged)	Rinse with sterile water/saline prior use on animal tissues.

Table 3: Skin Disinfectants

Name	Examples	Comments
Chlorhexidine	Nolvasan®, Hibiclens®	Excellent for use on skin
Iodophors	Betadine®, Prepodyne®, Wescodyne®	Organic material reduces activity.
Alcohols	70% ethyl alcohol, 70-99% isopropyl alcohol	NOT ACCEPTABLE AS A PRIMARY DISINFECTANT. Not a high-level disinfectant, alcohols must be used in conjunction with an iodophore or chlorhexidine.



Table 4: Batch Surgery (between animals) Requirements

1. All instruments must be sterilized (TABLE 2) prior to the first surgery of the day.
2. Sterility of instruments must always be maintained (placement on a sterile drape or other sterile field)
3. Prior to the use of these methods, all blood or similar organic matter must be removed using sterile swabs, gauze and sterile saline/water

Agent	Examples	Required Time	Comments
Dry Heat Sterilization-Glass Bead		10-20 seconds plus cooling time	Requires beads to be heated to 240-270°C 9 (usually 15-20 min). Should be used to re-sterilize tips of clean instruments between multiple surgeries;
70% Isopropyl Alcohol		2 minute immersion time required	

RESOURCES:

- IACUC Policy – Rodent Survival Surgery
- ULAR Vet Best Practices – Rodent Survival Surgery

REFERENCES:

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