



University Committee on Animal Care

Sterilization of Instruments and Supplies for Aseptic Procedures on Animals

Survival surgical procedures on all mammalian species must be conducted using aseptic technique which requires the use of sterile instruments and supplies. Many supplies such as gloves, surgical blades, and suture materials are commercially available in sterile packs. However, it is frequently necessary to sterilize, in house, items such as surgical instruments, drapes, gowns, and catheters for chronic implants.

In considering methods for sterilization procedures, it is important to differentiate between sterilization and disinfection. Sterilization kills all viable microorganisms while disinfection only reduces the number of viable microorganisms. High level disinfection will kill most vegetative microorganisms but will not kill the more resistant bacterial spores. Commonly used disinfectants such as alcohol, iodophors, quaternary ammonium and phenolic compounds are not effective sterilants and, therefore, are not acceptable for use on items intended to be used in survival surgical procedures.

The preferred methods of sterilization are high pressure/temperature (in autoclaves) for items that can withstand high temperature and ethylene oxide gas for items that cannot withstand high temperature. However, cold chemical sterilants may be used effectively for many items.

The following are recommended sterilization procedures:

1. High pressure/temperature steam sterilization using an autoclave and appropriate monitoring systems to assure sterility. The Division of Laboratory Animal Resources can provide this service upon request at no charge.
2. Dry heat using a hot bead sterilizer. This is a fast method to sterilize instruments. However caution is advised, the instruments must be cooled before tissue contact.
3. Gas sterilization with ethylene oxide using an approved gas sterilizer and appropriate monitoring systems to assure sterility and personnel safety.

Ethylene gas is irritating to tissue; all materials require appropriate airing time.

4. Chemical sterilization:

a. Effective and proper use of chemical sterilization is dependent on many factors including:

- 1) The use of chemicals classified as "sterilants." Those classified only as "disinfectants" are not adequate.
- 2) The physical properties of the item being sterilized. It must be clean, relatively smooth, impervious to moisture, and be of a shape that permits all surfaces to be exposed to the sterilant.
- 3) Exposure
 - a. All surfaces, both interior and exterior, should be exposed to the sterilant. Tubing must be completely filled and the materials to be sterilized must be clean and arranged in the sterilant to assure total immersion.
 - b. The items being sterilized must be exposed to the sterilant for the prescribed period of time.
- 4) Use of fresh solutions. The sterilant solution should be clean and fresh. Most sterilants come in solutions consisting of two parts that when added together form what is referred to as an "activated" solution. The shelf life of activated solutions is indicated in the instructions for commercial products. Generally, this is from one to four weeks.
- 5) Rinsing chemically sterilized items. Instruments, implants, and tubing (both inside and out) must be rinsed with sterile saline or sterile water prior to use to avoid tissue damage.

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