Use of Alcohol as a Disinfectant

Purpose: This standard describes the use of alcohol as a disinfectant during aseptic surgery.

Background: The USDA regulations and the *Guide for the Care and Use of Laboratory Animals* (NRC 2011) require that all instruments used in survival surgery be sterilized. Similarly, implanted devices should be sterile. According to APIC (Association for Professionals in Infection Control and Epidemiology), ethyl alcohol and isopropyl alcohol are not effective in sterilizing instruments because they lack sporicidal activity and can't penetrate protein-rich materials. Isopropyl alcohol also lacks the ability to kill hydrophilic viruses. For these reasons, alcohol is classified as an intermediate level disinfectant. The *Guide* upholds the position that, "Alcohol is neither a sterilant nor a high-level disinfectant." Recent evidence, however, indicates the use of alcohol may be acceptable for some animal procedures if prolonged contact times are used or for limited numbers of serial rodent surgeries under specific conditions. The IACUC must evaluate the use of alcohol on a case-by-case basis with due consideration for animal welfare and scientific outcomes based on a review of current relevant literature, and consistent with expected surgical outcomes.

Definitions:

1. *Disinfection*- The chemical or physical process that involves the destruction of pathogenic organisms. All disinfectants are effective against vegetative forms of organisms, but not necessarily spores.

2. *Sterilization*- The process whereby all viable microorganisms (including spores) are eliminated or destroyed. The criterion for adequate sterilization is the failure of organisms to grow if a growth-supporting medium is supplied.

Standards: All materials and devices used in survival surgery, including surgical instruments and implanted devices (e.g., catheters, flow probes, electrodes, etc.) should be sterilized appropriately, regardless of species. Sterility should be maintained throughout a surgical procedure through proper aseptic technique. Alcohol is not a sterilant. Acceptable sterilization methods include heat (dry or steam, including glass bead sterilization of instrument tips between animals), gas (usually ethylene oxide gas), radiation (usually gamma radiation), chemical (e.g., cold/liquid sterilants), and physical (e.g., filter sterilization of liquids). Principal investigators (PIs) must justify the use of alcohol as the sole surgical instrument or device disinfectant from both scientific and animal welfare perspectives.

Methodology: The principal investigator will describe the method of sterilizing materials and devices used in survival surgery in Section G of the animal use protocol. Sterilization will be performed by an appropriate method described above. The PI must specifically justify use of alcohol disinfection instead of an approved sterilization method in Section M. The IACUC will review exceptions on a case-by-case basis considering scientific and animal welfare perspectives.

References:

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