

AAALAC GUIDANCE STATEMENTS

Aseptic Surgery

Aseptic surgery and good surgical technique are crucial partners in ensuring patient safety and welfare, promoting healing, and minimizing infection risk. Aseptic surgical techniques and surgical proficiency (e.g. hemostasis, gentle tissue handling, accurate identification of tissue layers, minimization of dead space, appropriate suture size and tension) support successful surgical and research outcomes. Institutions must ensure surgical programs follow aseptic practices and that all individuals performing surgery are appropriately trained. Documentation of both surgical and aseptic technique training should be maintained.

The Institutional Animal Care and Use Committee or Oversight Body (IACUC/OB) and Attending Veterinarian (AV) are responsible for working with the researcher when aseptic technique cannot be achieved (e.g., field surgeries), or may not be practical (e.g., short terminal procedures, non-survival rodent surgeries, etc.) and identify alternative approaches that model best practices.

During the protocol/procedure/policy review the IACUC/OB and veterinary team should take the following into consideration.

1. Surgical Area

An IACUC/OB approved dedicated surgical area/room is preferred and may be required for large animals. The space should be arranged to support aseptic technique, isolated from other activities during the procedure, free of drafts, and be free of supplies and equipment not required for the procedures performed.

[Special Consideration, Laboratory Spaces: For rodents and other small species, an appropriately managed laboratory space may be acceptable. Appropriate use of such space may vary with procedure, complexity and duration. For lengthy or invasive procedures, suspending other laboratory activities or using a dedicated surgical suite may be appropriate. Spaces and practices should be periodically reviewed by the IACUC/OB and veterinary team.]

2. Preparation of Patient and Surgeon

Patient and Surgeon pre-operative preparation is key to ensuring asepsis. As part of procedural review and approval, the IACUC/OB must evaluate and ensure aseptic procedure is conducted, when appropriate. This review should include consideration of: proper surgery site preparation of the animal (including providing an area away from the surgical performance location for the removal of hair and skin preparation), using an appropriate antiseptic regimen, surgeon preparation (considering appropriate personal protective garments e.g. cap, mask, clean coat/scrubs, and sterile gloves, and training in aseptic and surgical techniques.

3. Sterilization of Instruments, Supplies, and Implants

For survival procedures, all instruments and materials that penetrate skin or are implanted must be sterilized before use, using validated methods (e.g., autoclave, ethylene oxide, or manufacturer-approved liquid/vapor systems). Routine monitoring of sterilization processes using indicators appropriate to the sterilization method ensures asepsis is maintained. Biological indicators are the gold standard for verifying sterilization. Alcohol is neither a sterilant nor a high-level disinfectant and should only be considered under IACUC/OB

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review with consultation of the veterinary team. For non-survival procedures, instruments must be clean, free of corrosion, and be in proper working order.

[Special Consideration, Serial Surgeries: Ideally, one sterile instrument set is used per animal. If instrument reuse is necessary, flash sterilization between animals is preferred. In rodents and other small animals, use of “tips-only” technique with glass bead instrument sterilization is common but variable in effectiveness. If employed, the IACUC/OB should approve its use, define the maximum number of animals on which a single instrument set can be utilized prior to re-sterilization, ensure that glass bead sterilizers are maintained and utilized in accordance with manufacturer recommendations, and periodically verify the effectiveness of the process.]

4. Maintenance of the Sterile Field

Aseptic technique involves the maintenance of a sterile field throughout the surgery by draping the animal and surrounding area, exposing only the surgical site. For stereotaxic procedures, draping of the frame or use of sterilized coverings is recommended; a non-sterile assistant may perform non-aseptic tasks.

5. Perioperative Monitoring and Records

Animals must be monitored intraoperatively to ensure an adequate plane of anesthesia and identify physiologic changes requiring intervention. Parameters may include temperature, respiratory rate, heart rate, mucous membrane color, and other metrics depending on species, complexity, duration, and anesthetic regimen. Non-survival surgeries also require appropriate monitoring. Personnel performing concurrent surgical and anesthetic tasks must be appropriately trained and competent in the procedures conducted. Documentation should reflect the monitoring performed and support clinical interpretation, scientific integrity, and IACUC/OB oversight, including tracking of multiple survival procedures. AAALAC does not prescribe a single format or level of detail; rather, documentation and monitoring must be tailored to the procedure and animal condition and should be addressed in pre-surgical planning.