

**PORTLAND VETERANS AFFAIRS MEDICAL CENTER
SUBCOMMITTEE ON ANIMAL STUDIES (PVAMC SAS)
ANIMAL CARE AND USE GUIDELINES**

CHECK ONE:

I agree to comply with the following guidelines.
I have attached written justification for deviation from these guidelines, and a description of the methods to be employed.

Principal Investigator

Date

GUIDELINES FOR SURVIVAL SURGERY -- RODENT

Background. Surgical procedures are strictly regulated, as put forth in publications from the Office for Protection from Research Risks (OPRR) *Institutional Animal Care and Use Committee Guidebook* (NIH Publication No. 92-3415), the *Guide for the Care and Use of Laboratory Animals* (NIH publication No. 86-23, revised 1996), and USDA regulations. The *Institutional Animal Care and Use Committee Guidebook* defines major surgery as any procedure that invades a body cavity or has the potential for producing a permanent handicap; minor surgery is defined as any procedure which does not invade a body cavity or produce permanent physiological or physical impairment. Aseptic technique should be used on all rodent survival surgeries.

Guidelines.

1. Multiple surgical procedures. Multiple major surgical procedures may not be performed on the same animal. If the Investigator feels it is necessary to perform more than one **major** surgical procedure on the same animal, scientific justification must be provided in writing in the animal protocol approved for the study. All surgical procedures must be described in the animal protocol approved for the study. Cost may not be used as a justification for multiple survival surgeries.
2. Facilities. Separate facilities are not required for rodent survival surgery, and it may be performed in a laboratory or portion of a laboratory designated for that purpose. However, this space must be easily sanitized and the immediate surgical area should not be used for other purposes during the time of the surgery. Surgery should be conducted on a lab bench or table which is impervious to liquids. The work surface should be wiped with disinfectant (e.g., Sporocidin™, Cidex™, Cide Swipes™, Clorox™, Alcide's ABQ™, or Clidox™) before and after each use or covered with a clean drape.
3. Preparation of instruments. Surgical instruments should be sterilized using steam (autoclaving), dry heat (e.g., glass bead sterilizer), or chemical methods (see Appendix A). Instruments soaked in chemical sterilants should be rinsed in sterile water or saline before use on animals.

4. Preparation of the animal. Hair should be removed from the surgical site (clippers, razor, or depilatory cream); vacuum or otherwise remove loose hair. The skin should be cleansed with disinfectant for at least 1 minute (e.g., dilute betadine, Nolvasan™ brand chlorhexidine, or 70% ethanol). –If the animal will be anesthetized > 30 minutes or if Ketamine is used, lubricating ophthalmic ointment (e.g., Lacrilube™) should be applied to the anesthetized animal's eyes to prevent drying. Sterile surgical drapes are recommended, especially for procedures which require exteriorization of the viscera or procedures performed on immune suppressed animals. Anesthesia appropriate to the procedures being performed should be utilized (refer to Guidelines for Anesthesia, Analgesia and Tranquilization). Paralytic agents may not be used without anesthesia (refer to Guidelines for Use of Paralytic Agents).
5. Preparation of the surgeon. Hands should be washed with an antiseptic surgical scrub preparation (e.g., Betadine Scrub™, Nolvasan Scrub™). Sterile surgical gloves and a clean scrub shirt, lab coat or gown should be worn. Wearing of a face mask and surgical cap are is encouraged.
6. Intraoperative monitoring. The animal must be monitored regularly (e.g., at least every 15 minutes) during the surgical procedure. Assessment of the following parameters should be performed and any deviations from normal recorded in writing: anesthetic level, mucous membrane color, and respiratory rate/character. Assessment of heart rate and body temperature is encouraged. Administration of drugs must also be recorded in writing (include dosage, route and time of administration). The VMU has developed a form to facilitate this documentation (refer to “Post-Procedural Monitoring Record,” with the Guidelines).
7. Postsurgical care and monitoring. Postsurgical care must include observing and providing supportive care to the animal until it is fully ambulatory, at intervals not to exceed 15 minutes; administering fluids, analgesics (refer to Guidelines for Anesthesia, Analgesia, and Tranquilization) and other drugs as required; observing animals for normal behavior; and monitoring of surgical wounds.
 - a. Hypothermia should be prevented by placing the animal in a warm cage or room, providing a warm water bottle or circulating warm water blanket, or by radiant heat from a light bulb. Be cautious with supplemental heat sources as they can easily cause thermal injury if used inappropriately.
 - b. To prevent dehydration, warm fluids (0.9% saline or equivalent, ~37°C) may be administered subcutaneously at 1-2 ml/100 gm body weight. If blood loss occurred during the surgery additional parenteral fluids may be provided.
 - c. To prevent cannibalism house animals individually until fully ambulatory.
 - d. If recovery from anesthetic will be prolonged (i.e., over one hour), the animal should be rotated from side to side every 15-30 minutes to minimize hypostatic pulmonary congestion. This practice should be continued until the animal is able to maintain sternal recumbancy or sit.
 - e. Post-surgical animals should be seen every day by the Principal Investigator or his/her designee until all sutures, wound clips, or other implanted devices have been removed. All sutures and wound clips must be removed within 14 days of the surgical procedure.
8. Sequential surgeries. Aseptic technique must be maintained when performing sequential surgeries.

- a. Optimally, two sets of sterile instruments should be used. While the first set of soiled instruments is being disinfected, the surgeon may use the second sterile set. After using a set of instruments, all organic material should be removed and the instruments sterilized by an approved method (see Appendix A). Instruments soaked in chemical disinfectants should be rinsed with sterile water or saline before use on animals. Chemical disinfectant solutions should be replaced when they become contaminated with blood or other body fluids. If only one set of instruments are available, the instruments may be soaked in an approved chemical disinfectant solution for the listed period of time (Appendix A) between surgeries.
- b. Sterile gloves should be changed or disinfected by wiping with an appropriate disinfectant between animals.

APPENDIX A. STERILIZATION METHODS FOR SURGICAL INSTRUMENTS

1. **Autoclaving**
2. **Dry Heat Sterilization**
This method employs dry heat for 20 seconds in a small glass bead sterilizer. Advantages of this device include rapid sterilization, ease of use, and affordability. For additional information, contact the PVAMC VMO at x57610.
3. **Chemical Sterilization**
Acceptable methods for chemical sterilization include soaking of instruments in:
 - a. 0.133% benzalkonium chloride for 10 hours, or
 - b. 2% glutaraldehyde for 10 hours, or
 - c. 8% formaldehyde/70% alcohol for 18 hours, or
 - d. 6% stabilized hydrogen peroxide for 6 hours
4. **Chemical Disinfection (for sequential surgeries):**
Acceptable methods for chemical disinfection include soaking of instruments in:
 - a. 2% glutaraldehyde for 30 minutes
 - b. 0.08% peracetic acid for 25 minutes

All instruments treated for chemical sterilization or disinfection must be rinsed with sterile water or saline before contacting living tissue.