



# SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

## Institutional Animal Care & Use Committee

<b>IACUC Policy #:</b>	<b>520</b>
<b>Policy Title:</b>	<b><i>Survival Surgery</i></b>
<b>Date Approved:</b>	<b>December 19, 2018</b>
<b>Date Reviewed:</b>	<b>June 26, 2024</b>
<b>Who must know:</b>	<b>All Principal Investigators, researchers, and/or personnel participating in surgery involving live vertebrate animals or cephalopods</b>

### **Purpose:**

The *Guide to the Care and Use of Laboratory Animals (The Guide)* describes the required elements for successful outcomes of surgical procedures on live animals used in research, teaching, or testing. The purpose of this policy is to provide requirements and guidelines for survival surgical procedures and postsurgical care and monitoring of animals used in research, teaching or testing at Southern Illinois University Carbondale campus.

### **Definitions:**

Aseptic Technique: Aseptic technique is defined as the use of surgical practices that restrict and minimize the number of microorganisms in the environment and prevent contamination of the surgical wound to the lowest possible practical level. To reduce or eliminate the likelihood of infection practices such as preparation of the animal, preparation of the surgeon, use of sterile instruments, supplies are used.

Clean Non-sterile Field Surgery: Certain standard agricultural practices or field procedures may be conducted using clean techniques rather than adhering to strictly aseptic procedures. Details must be outlined in the animal care and use protocol for review.

Major Survival Surgery: Major survival surgery is any surgical intervention that penetrates and exposes a body cavity or has the potential for producing a substantial physical or physiologic impairment in an animal that is expected to recover.

Multiple Major Survival Surgeries: Multiple major survival surgical procedures should be related components of a single research or instructional project. Cost reduction alone is not an adequate reason for performing multiple major survival procedures on an individual animal.

Researchers: In addition to principal investigators and other personnel, the term researcher also includes volunteers and/or students approved to complete research in the designated protocol.

### **Policy:**

Survival surgery must be conducted by qualified personnel in an appropriate facility using



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aseptic technique. Regardless of an individual's qualifications or educational background, all personnel performing surgery must have thorough knowledge and understanding of the approved IACUC protocol procedures and must be trained by someone who possesses a knowledge of surgery policies, proper surgical technique, and familiarity with the relevant surgical procedure and with the anatomy of the species.

It is the Principal Investigator and/or Lab Manager's responsibility to maintain training records for all members of the research team. At a minimum, training of surgical personnel must include:

- A thorough knowledge of aseptic technique.
- Administration and assessment of anesthesia
- Appropriate tissue handling (tissue trauma contributes to postoperative infections).
- Appropriate use of instruments
- Effective methods of hemostasis.
- Correct use of sutures and/or skin staples
- Postsurgical care and monitoring, including the ability to recognize and alleviate pain and distress.
- Completion of the Aseptic Surgery module of the CITI training is required for all personnel that will be performing surgical procedures.

Survival surgery must be conducted in an appropriate facility.

Non-rodent mammals:

Major survival surgical procedures performed on non-rodent laboratory animals **and** agricultural animals in biomedical research and teaching must be conducted in a dedicated surgical facility (i.e., a facility that is intended for that purpose, is maintained, and operated to ensure cleanliness).

Rodents bred for research and non-mammalian vertebrates:

Major survival surgical procedures with laboratory rodents and non-mammals do not require a dedicated surgical facility. Although the campus Institutional Animal Care and Use Committee (IACUC) may approve the conduct of survival surgical procedures in specific laboratory settings, a separate laboratory space used primarily for aseptic procedures is desirable. When approved by the IACUC, the area of the laboratory or facility where surgery is conducted should be maintained in a manner that ensures cleanliness and minimizes unnecessary traffic and activities during the times that animals are present.



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### Agricultural animals:

Surgical procedures and standard agricultural practices conducted with agricultural species used in food and fiber research and teaching may be performed in agricultural animal facilities or in a field setting when approved by the IACUC. Note that even when conducted in an agricultural setting, surgical procedures require the use of appropriate aseptic technique, but they may not require the intensive surgical settings and facilities.

### Wildlife and Fish:

Surgical procedures, both major and minor, performed on wild animals may be conducted in field settings when approved by the IACUC but aseptic principles must be followed. Animals must be monitored until fully recovered to ensure protection from predation or limit exposure to environmental factors. Species-specific monitoring procedures must be included in an animal use protocol. Analgesia and antibiotics must be provided where appropriate.

Survival surgery must be conducted by using aseptic technique.

The principal investigator and/or surgeon is responsible for maintaining accurate and complete records of surgical procedures and perioperative care. These records must be maintained for three years beyond the termination date of the protocol.

Adequate veterinary care must be provided for all animals. Appropriate anesthetics and analgesics must be selected in consultation with the Attending Veterinarian and used properly to prevent or mitigate pain, distress, and discomfort.

The investigator must provide a detailed written description of methods used to assess and alleviate postoperative pain or distress in animals undergoing potentially distressful or painful procedures in their protocol.

When animals undergo a survival surgical procedure, routine provision of post-surgical analgesia is required unless withholding analgesics is scientifically justified. The justification should include the rationale and evidence that agents, if given, would compromise the scientific validity of the research. Investigators must consult the Attending Veterinarian during the planning of surgical procedures to identify appropriate use of analgesics.

### Procedures

#### 1. Aseptic Technique:

##### a. **Preparation of the animal**

Preparation of the animal must be described in the protocol and includes



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removal of hair or feathers and skin cleansing with sequential washes of species appropriate antiseptic agents.

**b. Preparation of the surgeon**

Clean or sterile surgical attire must be worn. Selection of attire is based on the species and the procedure being performed and must be outlined in the animal care and use protocol. Hands should be cleansed, and sterile gloves must be worn.

**c. Preparation of the instruments**

All surgical instruments and devices must be sterilized by a method appropriate for the material.

**2. Special consideration for procedures on multiple animals:**

a. Surgical procedures may be performed on multiple rodents, non-mammals, and agricultural animals used in food and fiber research during a single session using one sterile surgical pack, providing that:

- i. Care is taken to minimize contamination; and
- ii. Instruments are soaked in an approved disinfectant for the recommended exposure times and then rinsed in sterile saline or are heated in a hot bead sterilizer before being used with the next animal.

**3. Surgery Records**

a. All records must be readily available to the personnel involved in post-surgical monitoring, the veterinarian, the IACUC and federal regulatory officials. Forms useful for this purpose are available on the IACUC website.

b. Pre- and Post-Operative Records must include the following information:

- i. Animal identification-- species and animal identification.
- ii. Animal characteristic(s) as appropriate (body weight, etc.)
- iii. Name of the surgeon.
- iv. Description of surgical procedure.
- v. Details of all medications given to the animal, including dosage, route, and time of administration
- vi. Details of recovery from anesthesia:
  - a. Anesthetized and unconscious animals must be monitored until they are conscious and exhibit species-typical mobility.
  - b. Unconscious animals may not be housed in a primary enclosure/ cage with other animals that are fully or partially awake.



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- c. During recovery, animals must be kept in an appropriate environment that does not pose a risk of thermal shock, injury, or suffocation.
  - d. If any animal develops unexpected complications from surgical or post-surgical procedures, appropriate veterinary care must be provided and documented.
  - vii. Notes concerning any complications encountered.
  - viii. Euthanasia method (terminal surgeries only)
4. Considerations for rodent surgery:
- a. It is recommended that eyes be lubricated with a sterile ophthalmic ointment or mineral oil to prevent corneal drying.
  - b. For rodent surgeries that involve prolonged time under anesthesia, supplemental heat should be provided during surgery and recovery as animals lose their ability to regulate body temperature while under general anesthesia.
  - c. Sterile gloves must be used for all survival surgery.
  - d. All instruments must be sterile at the start of surgeries. A single set of surgical instruments may be used a maximum of five times. Use of alcohol as the primary means of sterilization is NOT adequate.
  - e. Skin sutures or staples must be removed 7-14 days after surgery once the incision has healed.
  - f. Sutures may need to be removed earlier if inflammation or other adverse effects are present.

### References:

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[https://oacu.oir.nih.gov/system/files/media/file/2023-05/b6-rodent\\_survival\\_surgery.pdf](https://oacu.oir.nih.gov/system/files/media/file/2023-05/b6-rodent_survival_surgery.pdf)
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