

**DREXEL UNIVERSITY COLLEGE OF MEDICINE
ANIMAL CARE AND USE COMMITTEE
POLICY FOR PREOPERATIVE AND POSTOPERATIVE CARE
FOR NON-RODENT MAMMALS**

OBJECTIVE: This policy is to ensure that appropriate provisions have been made for preoperative and postoperative care of non-rodent animals (rabbits/pigs, or) in accordance with the "Animal Welfare Act" and the Association for Assessment and Accreditation of Laboratory Animal Care, International's guidelines, as outlined in the "Guide for the Care and Use of Laboratory Animals."

RESPONSIBILITIES

Veterinarian's Responsibilities:

The veterinarian shall provide guidance to the PI for preparation of the protocol and surgery, and provide the IACUC with assessments of the following:

1. Preparation of the animal for the surgical intervention, to include the use of pre-anesthetic drugs where indicated, and appropriate anesthetic agents;
2. The individual performing the surgery has adequate experience or training for the specific procedure outlined in the study;
3. Aseptic procedures are appropriate for the surgery;
4. That adequate post-operative care, to include post-operative analgesics where indicated is provided and
5. Veterinarian has implicit responsibilities to assess the potential for pain and distress that might be associated with the proposed animal activities, and to recommend the use of pain alleviating drugs, whenever possible, to alleviate those conditions.

Investigator's Responsibilities:

- 1 The responsibility for proper preoperative, surgical, and postoperative care (including weekends) is that of the Principal Investigator. The veterinarian and ULAR personnel shall provide guidance and train personnel in these three general areas of care. The Principal Investigator is responsible for training or arranging training on the specific surgical procedure;
- 2 Regulations require that investigators proposing procedures that may cause more than momentary or slight pain or distress to the animals must consult with the veterinarian or his/her designee. The veterinary staff of the ULAR will be available to provide guidance in the care and use of animals regarding handling, immobilization, anesthesia, analgesia, tranquilization and euthanasia;
- 3 Federal regulations and our internal institutional policies require that protocols must be implemented as approved by the IACUC. Any deviation from the approved protocol must be approved by the IACUC before they are implemented;
- 4 Investigators shall utilize the standard ULAR anesthesia monitoring form and animal record form to sufficiently document animal care and use that meets regulatory requirements and veterinary practice.

PROCEDURES

All survival surgery must be performed using aseptic procedures, including sterile surgical gloves, masks, gown, cap, sterile instruments, and aseptic techniques. Major operative procedures* must be conducted in an aseptic surgery suite. Non-major procedures may be performed in IACUC approved dedicated areas in laboratories and must be performed using aseptic procedures as noted above. Exceptions to these procedures must be approved by the IACUC.

*Any surgical intervention that penetrates and exposes a body cavity or any procedure which produces permanent impairment of physical or physiological functions in an animal which is expected to recover from anesthesia.

ACCLIMATION PERIOD

Newly received animal should be given a period for physiologic, behavioral and nutritional acclimation before their use. Prior to surgery, animals should have 7 days to acclimate unless otherwise described and justified in the IACUC protocol.

PREOPERATIVE PERIOD

Preoperative preparation involves determination of the health status of the animal, removing food from the animal's cage if required for that species, and organizing for surgery and for the postoperative period.

Decisions concerning the choice of surgical instruments, suture material and intravenous fluids for surgery as well as the need for antibiotics and analgesic administration postoperatively should be made when preparing the IACUC protocol. The ULAR staff is available to advise you in these areas.

The use of sterile instruments, suture material and supplies is required. Instruments should be sterilized by autoclaving. If surgical instruments are going to be sterilized using an autoclave, the use of autoclave tape alone, on the outside of instruments packs, to monitor the effectiveness of such sterilization procedure is inadequate. Surgical packs must contain a sterilization indicator INSIDE of the pack. These strips should be kept in a log book along with surgical records. The outside of the pack should be wrapped with autoclave indicator tape. The ULAR staff is available to advise you in these areas.

Implanted medical devices must be sterile. If these are unable to be heat sterilized, other methods of sterilization should be considered. Contact the ULAR veterinary staff for more information.

SURGERY

Following the induction of anesthesia, the site of the surgical incision and the area surrounding it should be shaved so that there is enough of an area in which to work comfortably and aseptically. Always intubate animals with an appropriately sized endotracheal tube. Check the tube prior to insertion to ensure that the cuff is intact and after insertion to make sure that the tube is within the trachea. The anatomy of pigs and rabbits makes intubation difficult for non-experienced personnel. Consult with the ULAR veterinary staff if you are interested in intubating pigs and rabbits. Corneas must be protected from drying with an ophthalmic ointment such as LacriLube®. Catheterization of a vein is strongly recommended. This enables fluids such as Lactated Ringers Solution to be delivered if there is blood loss during surgery, to supplement fluid loss during the procedure, as well as for emergency drug administration.

The animal should be placed on a water-circulating heating pad or forced hot air pad (Bear hugger) for all surgical procedures to maintain body temperature. The surgical area should be wiped with a suitable skin disinfectant. Gauze pads or cotton tipped applicators should be used to prep the surgical site by alternating a surgical scrub (such as Betadine or Chlorohexidine) and 70% alcohol. The scrub should begin at the center of the shaved area and moved outwards towards the periphery. The alternating scrubs should be repeated a minimum of three times. For major operative survival procedures, the surgeon prepares for surgery by scrubbing for 5 minutes and donning appropriate attire. The animal is draped with a sterile drape. Surgery can then commence.

If at any time during surgery your glove touches a non-sterile surface, you must change gloves before proceeding. Similarly, if an instrument touches a non-sterile surface, it must not be used until it is re-sterilized.

The monitoring of anesthesia depth is important to ensure the animal not experiencing pain or distress during the procedure. Before surgery begins, the surgeon must ascertain that the animal is in a surgical plane of anesthesia and unresponsive to painful stimuli. To ensure anesthesia, follow the monitoring procedure described in the IACUC protocol. Records of anesthesia and monitoring must be maintained by the investigator and/or staff using the ULAR Anesthesia and Monitoring Form

RECORDKEEPING

Recordkeeping is a key element of surgical and post-operative care and is considered critical for documenting animal well-being and for tracking animal care. **ULAR surgical record forms must be maintained.** Records must be carefully maintained for each animal undergoing either survival or non-survival surgical procedures.

All surgical records should include the following information:

- the date
- time of day
- procedure
- the surgeon (and anesthetic monitor if a different individual)
- the animal identification
- the anesthetic agent(s) including the date of expiration and dose
- analgesics and any preanesthetic agents including the date of expiration and times of administration
- monitoring parameters as specified in the protocol

A surgical template with spaces for all necessary information has been included on the end of the policy.

Post-surgical records must also be maintained for each animal and include:

- the time when the animal awakens from anesthetic
- animal observations including any adverse signs during the post-operative period
- agent, dose, expiration date, and time of analgesic administration
- the name of the individual performing the post-operative care □ other information as stated in the protocol

Certain protocols require long term care of animal, and may require analgesics on an as needed basis. In such cases, individual animal records should indicate the observation, care given, and if analgesia is administered, the agent, dose, expiration date, and time of analgesic administration, and the name of the individual performing the care and treatments. These records should be available for veterinary and IACUC review.

Surgical records should be maintained for the duration of the activity and for an additional 3 years from the completion of the activity.

POSTOPERATIVE PERIOD

Postoperatively, the animal should be supplied with supplemental heat either with a heating pad or by being draped. The animal must be monitored at least every 15 minutes until it regains sternal recumbency. Records indicating that the animal has been observed must be kept during this period on the Anesthesia monitoring form. Do not return an animal to its housing room until the animal has fully recovered.

The endotracheal tube should not be removed until the swallowing reflex reappears. Depending on the surgical procedure, postoperative fluid administration may be necessary to speed recovery.

Antibiotic administration may be appropriate at this time.

The use of preemptive analgesia (the administrative of pre-operative and intra-operative analgesia) should be utilized as it enhances inter-operative patient stability and optimizes post-operative care and well-being by reducing post-operative pain. Analgesia should be continued post-operatively and recorded in the animal record. Exceptions may occur only if scientific justification for withholding analgesics is stated and approved in the IACUC protocol.

Suggestions for appropriate analgesics may be found by consulting a member of the veterinary staff.

Once the animal has regained sternal recumbence and is awake, the animals should have access to water. If a bowl is used, fill to approximately 1/2" depth. This allows an animal to reach water, but will not be dangerous to the animal while groggy.

The date of surgery must be marked on the cage card.

Skin sutures or wound clips must be removed at 10-14 days post-surgery, assuming normal healing.

Animals must be checked at least daily by the research team for general health, pain, discomfort, infection and body temperature (if appropriate for the species) during the post-operative period described in the IACUC protocol. Entries should be noted in the animal record documenting these clinical evaluations. Contact ULAR if you need assistance.

NON-SURVIVAL SURGERY

Definition:

Non-survival surgery can be categorized as major or minor, and the animal is euthanized before recovery from anesthesia.

Procedures:

At a minimum the surgical site should be clipped, the surgeon should wear gloves and the instruments and surrounding area should be clean. For non-survival procedures of extended durations, attention to aseptic technique may be important to ensure stability of the model and successful outcome.

The monitoring of anesthesia depth during non-survival surgery is important to ensure the animal is not experiencing pain or distress during the procedure. Records of anesthesia and monitoring must be maintained by the PI and/or staff on the ULAR anesthesia form. Euthanasia of the animal should not be delayed following the procedure to ensure that the animal does not awaken from the surgical plane of anesthesia.

Date approved: August 20, 2003

Review date: January 9, 2013

Review Date: July 2018

Last Review Date: March 2019