Approved by the UGA IACUC
Effective September 16, 2010
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Anesthesia, survival surgery and post-procedural care of research animals are addressed in the , *A* , PHS Policy, and USDA regulations. These documents specifically require the institutional animal care and use committee (IACUC) to review, and the institutional veterinarian to oversee, anesthesia, surgical procedures and post-procedural care programs. This policy clarifies requirements pertaining to performing anesthetization and/or survival surgery on vertebrate animals. It does not cover minor procedures such as tail clip, ear punch, or neonatal rodent toe clip.

The principal investigator is ultimately responsible for ensuring that care, both appropriate to the species and to the procedure being performed, is provided. In practice, however, appropriate animal care, which conforms to regulatory expectations, requires careful coordination between the principal investigator, surgeon, animal care staff and veterinary staff. Responsibilities of key individuals must be delineated and understood before surgical procedures are performed.

This policy delineates the following 5 major requirements: 1) animals must be appropriately monitored during and after anesthesia, 2) s

Animals must be monitored carefully during anesthesia and during recovery, and provided additional

1. *:* Eye lubricant is required if anesthesia extends beyond a few minutes. Sterile ophthalmic lubricant/ointment must be applied to each eye. Without this protection, ocular ulceration may occur.
2. *:* Thermal support is required if anesthesia extends beyond a few minutes. Hypothermia is the main concern, and small animals are especially susceptible, even after a short time. Methods to prevent hypothermia include: shave the minimum feasible area,

Aseptic Techniques

Aseptic operative techniques must be utilized to avoid contamination of sterile instruments and gloves and reduce the likelihood of infection. Tips on maintaining asepsis:

1. Gloved hands should be held elevated above the waist –do not drop them below the level of the waist. Gloved hands should touch only sterilized items.
2. Sterile instruments should be placed on a sterile work surface. Do not allow surgical instruments to drop below the level of the surgical area.
3. Keep the sterile areas dry, as moisture can lead to contamination of the area.

*Surgical procedures may be performed on multiple rodents during a single session using one sterile surgical pack, provided that instruments are cleaned and sterilized between animals. For sterilization between animals, instruments may be soaked in an approved chemical sterilant, observing recommended contact times, and rinsed in sterile saline or when using a "tips only" technique, heated in a hot bead sterilizer and cooled. Effective use of these strategies requires rigorous attention to technique.

Analgesia use is the expectation for most surgical procedures.

Expectation for Analgesia

In the absence of evidence to the contrary, it is assumed that something that is painful to a human is also painful to an animal. Therefore, the expectation is that in most cases analgesia will be provided to animals undergoing surgery, and analgesia must be provided as described in the IACUC approved AUP. Because each surgery is different (species, procedure, circumstances) a single method of post-operative analgesia cannot be prescribed for all cases. However, the following concepts can guide the appropriate use of analgesia:

Guidelines for Analgesia

Moderate to Significant Pain

The general recommendation for procedures likely to induce moderate to significant pain is to provide at least 48 hours of post-operative analgesia, and then additional analgesia as needed until the animal does not appear to be experiencing pain. Examples of such procedures would include orthopedic procedures, laparotomy with organ incision or removal, orchidectomy, surgical embryo transfer, thoracotomy, burn or trauma models.

Mild to Moderate Pain

The general recommendation for procedures likely to induce mild to moderate pain is to provide at least 24 hours of post-operative analgesia, and then additional analgesia as needed until the animal does not appear to be experiencing pain. Examples of such procedures would include catheter, cannula or vascular access port placement in a peripheral vessel, superficial lymphadenectomy, thyroidectomy, thymectomy, intracerebral implantation, vasectomy.

Preemptive Analgesia

As well as post-operative analgesia, preemptive analgesia, administered pre-operatively and intro-operatively, should be provided to minimize post-operative pain by inhibiting the initial pain cascade caused by tissue damage during surgery. Thus, the first dose of analgesia is administered prior to surgery.

Local Anesthesia

Local anesthetics (e.g. bupivicaine) may be indicated for some procedures involving disruption of the skin, as these drugs help block the onset of the pain cascade, and minimize post-operative pain. Local

documentation of anesthesia or post-anesthesia monitoring. However, as with any other procedure conducted on research animals, this should be documented as part of scientific data collection.

Group vs. Individual Records

For rodents and non-mammalian vertebrate species, group records are acceptable. For non-rodent mammals, individual records are required.

Required Contents of Record

All records must list the PI, AUP #, date of the procedure, identification of animal, anesthesia and analgesia provided, surgeon, an emergency contact phone number, a description of the procedure with any complications and post-anesthesia/post-operative monitoring. 'A Template Anesthesia/ Surgery Form' and a 'Template Post-Procedure Monitoring Form' are provided for this purpose. These forms, the Veterinary Teaching Hospital forms, or a lab generated document may be used, as long as they contain the information required by the template forms.

Stony Brook University, Division of Laboratory Animal Resources. Rodent Anesthesia and Analgesia
Stony Brook University, Division of Laboratory Animal Resources. Guidelines for Survival Rodent Surgery
ILAR. Recognition and Alleviation of Pain in Laboratory Animals. 2009.
Lab Animal.
Use of behavior analysis to recognize pain in small mammals. Jorg Mayer. June 36 (6) 2007.

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AALAS Learning Library UGA Rodent Surgery track courses (Anesthesia and Analgesia; Aseptic Technique for Rodent Survival Surgery; Facilities, Supplies, and Materials.

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Template Anesthesia/Surgery Form (page 2)

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Description of procedure if applicable: Thi i f a i be ided f ge c ica ed ced e (eg e ea ed d i g a d b d c ec i f a e he i ed a i a)
I i e i ed f i a i e ced e ha (eg i agi g, i feedi g)

De c i i : Ge e a ced e e h d. A e a c ica i , fi di g (f each a i a)