IACUC Standard Operating Procedure
Anesthetic Machine (Isoflurane) Operation

| Objective: | To describe use of the isoflurane vaporizer-style anesthetic machine |
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Introduction

This Standard Operating Procedure will detail procedures to be followed when using the anesthesia machine for rodent survival and non-survival surgeries. It is recommended that the procedure room be reserved, in advance, by contacting the Vivarium at 704-687-8318.

Procedure

1) Complete the Surgical Checklist and top portion of Animal Anesthesia Log. Confirm identity and protocol number of subject animal.

1) Turn the oxygen on by turning the valve in a counter-clockwise direction. Check the pressure gauge to make sure there is sufficient oxygen in the tank. Replace the tank immediately when pressure gauge registers less than 200 PSI. Vivarium staff may be contacted for replacement tanks.

2) Visually check the level of Isoflurane in the vaporizer. It should be at the half way mark to ensure that you do not run out of Isoflurane in the middle of a surgery.

   a) If the Isoflurane level is below the half way mark then additional Isoflurane is stored in the bottom of the cabinet in the treatment room. Unscrew the cap of the anesthesia reservoir. Remove stopper from Isoflurane and pour into vaporizer reservoir until the level reaches half way mark. Replace the reservoir cap. Place the stopper back on the Isoflurane and return it to the cabinet. Inform the Vivarium manager, or another member of the Vivarium staff, if Isoflurane is running low or is completely out.

3) For induction of anesthesia, place the animal in an induction chamber. Turn the vaporizer to a concentration of 3.5 – 4.0% by pushing down on the little black button and turning the knob in a counter-clockwise direction. Oxygen is introduced at this time by turning the green knob in a counter-clockwise direction to 1.0-2.0 liters.

4) Once the animal has lost is righting reflex (ability to stay sternal), remove the animal from the induction chamber and place a nose cone over the rodent’s nose. The rodent will begin to relax, and eventually become immobile. At this depth of anesthesia they can easily be aroused by painful stimuli; so anesthesia must be allowed to deepen until such responses to pain are absent.

5) After the correct depth of anesthesia is achieved, the Isoflurane should be turned down to a concentration of 1.5 - 2.0%. Oxygen should be turned down to 0.6 liters. (Note – Higher oxygen flow rates – up to 0.8 liters to 1.0 liters -- may be required if the system is simultaneously supplying a nose cone and an induction chamber). Check the animal’s level of anesthesia by pedal withdrawal reflex and observing pattern and rate of respiration periodically throughout the surgery. If the animal
exhibits signs of recovery or spontaneous movement, immediately stop the surgery and increase the amount of isoflurane.

6) Never leave an anesthetized animal unattended.

7) When surgery is complete turn the isoflurane off. Allow the animal to have pure oxygen for a few minutes. Turn oxygen off by turning the green knob in a clockwise direction. Remove mask and stimulate animal by picking it up and setting it back down. Once the animal is able to right itself it can be placed into a cage with clean bedding or a paper towel. No animal will be left in the treatment room unattended or overnight.

8) Turn the oxygen tank off and turning the valve in a clockwise direction. Bleed oxygen line by pressing button located under anesthesia machine on left hand side.

9) Ensure the procedure room is clean when you are finished by completing the following:

   a) Discard surgery pads, gauze, etc. in the trash
   b) Discard needles, scalpel blades, and other sharp materials into the sharps disposal container. Needles should be **uncapped**.
   c) Disinfect the surgery table using the spray disinfectant and paper towels.
   d) Sweep the procedure room floor.
   e) Refill isoflurane reservoir and replace oxygen, if needed
   f) Clean instruments, and return to Vivarium Office.
   g) Submit completed Surgical Checklist and Anesthesia Log to Vivarium Office

Questions regarding the use of the anesthesia machines should be directed to the Attending Veterinarian, or the DLAR.

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**Health and Safety**
- Not applicable

**Personnel/Training/Responsibilities**
- All Vivarium staff will be trained by the Attending Veterinarian and/or Director, LAR, in the recognition of successful administration of anesthesia in rodents.

**Required Materials**
- Anesthetic vaporizer

**Guidelines**
- “Guide for Care and Use of Laboratory Animals” (2011)

**Quality Control Checks and Acceptance Criteria**
- Effectiveness of the anesthesia in rodents will be evaluated by the Director/Attending Veterinarian.