



Animal Care Committee Guideline

Number: 20

Effective date: October 14, 2011

Date Revised: -

Invasive Procedures involving Teaching and Research Animals

Background

This guideline applies to peri-procedural (i.e., preoperative, intraoperative, and postoperative) aspects of survival surgery as well as other types of invasive procedures (i.e. exposure to infectious or toxic agents likely to cause adverse effects) performed on research and teaching animals at University of Guelph.

All procedures on laboratory animals must be carried out within the context of an approved protocol and in compliance with the Ontario Animals for Research Act and Canadian Council on Animal Care (CCAC) Guidelines.

Guideline

Pre-procedure Management and Assessment

1. Preparatory steps should be taken to ensure:
 - a. That the procedure will be carried out efficiently, professionally, and with adequate record keeping, which includes the date, procedure performed and number of animals utilized;
 - b. That the animal's health has been appropriately assessed prior to the procedure to minimize the risk of unexpected outcomes; and
 - c. That whenever possible, procedures are staged to occur to allow for optimal monitoring during regular business hours during critical phases of the post-procedure period.
2. The research team is responsible for:
 - a. Scheduling procedure room time, providing the necessary instruments and equipment needed, and anesthetic/analgesic drugs to be used;
 - b. Making appropriate logistical arrangements with animal care personnel if additional monitoring, care or materials/equipment may be necessary;
 - c. Assessing the overall status of the animal prior to the procedure. This should include visual inspection of the animal and assessment of the behavioral status of the animal. If there are physical or behavioral abnormalities that were previously undetected, these should be brought to the attention of the veterinarian; and
 - d. Preparation of all necessary records and record sheets.
 - e. Ensuring that members of the staff are fully trained prior to commencing animal use.

The Designated Veterinarian has authority to ensure provision of adequate veterinary care during all phases of the study period and good communication between the research team, animal care personnel and the veterinarian is crucial to successful procedural outcomes (see Guidelines for Designated Veterinarians - ACC Guideline #17).

Intraoperative Procedures

Acute and chronic procedures that may cause more than momentary or slight pain require the appropriate use of anesthetics and/or analgesics and/or tranquilizers as addressed in the Ontario Animals for Research Act and CCAC Guidelines.

Intraoperative Monitoring

1. Animals that are unconscious and/or intubated must not be left unattended.
2. Monitoring should be done by trained personnel whether from the investigator's laboratory or the animal facility.
3. Where possible, monitoring should encompass, at minimum, assessment of the following: cardiovascular and respiratory status, anesthetic depth and body temperature (it is recognized that body temperature measurement may not be possible in all species).

Post-Procedure Care and Monitoring

1. Adequate postoperative care includes monitoring and documentation of the animal's recovery during the anesthetic recovery period, the acute postoperative period, and the long-term postoperative period.
2. The research team must arrange for adequate postoperative care to be performed by research or animal care personnel.

Anesthetic Recovery

1. Animals that are unconscious and/or intubated must not be left unattended and need to be monitored by appropriately trained research or animal care personnel.
2. Endotracheal tubes should not be removed until an animal has regained a swallow reflex. Animals must be visually monitored until they are conscious and able to maintain a sternal posture.
3. Animals should be administered analgesics, as per protocol, such that, ideally, they are effective before the animal emerges from anesthesia.
4. Where possible, the animal's core body temperature should be monitored post-anesthesia and should be maintained in a normal range by use of appropriate ancillary heat devices, as appropriate. To avoid aspiration, airway obstruction, pulmonary edema, tissue necrosis or edema at pressure points, a recumbent animal's position should be adjusted every 10 minutes. For certain sensitive species i.e. rabbits and guinea pigs, this is not advised in the short term and is only done if the animal is recumbent for periods of 20 minutes or more.

Acute Post-Procedure Period

1. The acute post-procedure period is the period that encompasses the first 24-48 hours and, in the case of some surgeries or acute infections or intoxications, may represent the highest risk period for adverse events. Monitoring during that time is typically done more frequently, as detailed in the approved AUP (usually dependent on the type of procedure and the expected condition of the animal). In addition, ideally, a veterinarian, veterinary technician, or trained laboratory animal technician should check on these animals at least once daily, in addition to the monitoring provided by the research team.
2. Depending on the species and the nature of the research project, parameters that may be monitored during this time include: respiratory rate and character; mucous membrane color; capillary refill time; hydration status; appetite; condition of the surgical wound; state of arousal; indices of pain or discomfort,

consequences of infection or intoxication, etc. If the animal is immobile, where possible, respiratory and cardiopulmonary function and core body temperature should be monitored.

3. Post-procedure treatments (analgesics, antibiotics, fluid therapy, etc.) should be administered to the animal according to the approved protocol, or as determined by the veterinarian in consultation with the research team.

Long-Term Post-Procedure Period

1. The long-term post-procedure period spans the period of time from the acute period to recovery or euthanasia. This period may be quite variable dependent upon the protocol (i.e. 7-10 days for the animal to totally recover from most simple surgical procedures or several weeks for tumour growth studies).
Parameters that should be monitored/recorded during this time include: posture, behaviour, body weight state of arousal; indices of pain or discomfort; condition of the surgical wound, appetite; hydration status; feces and urine production.
2. For surgical protocols without further complications, at the end of the first 7-10-day period, all non-absorbable sutures and/or staples should be removed and the animal's monitoring record should switch from post-operative to health assessment as per the approved AUP.
3. Some procedures may require an extended period of post-procedural monitoring. The appropriate duration and extent of monitoring is determined by consultation between the principal investigator, the veterinarian, and the ACC and many times will be prescribed through provisos attached to AUP approval.

Record Keeping

Any and all of the following documents comprise part of a research or teaching animal's medical record and should be kept by researcher or animal facility manager for at least one year after the final disposition of the animal(s):

- Green Sheet or Animal Room Sheet
- Surgical/Post-operative Monitoring Sheet
- Health Assessment Sheet
- Relevant physiologic and/or behavioural data collected during research activities

Principal Investigators may keep copies of the first three record(s) listed above but the original record(s) must be maintained with the animals during the time that those records are active. Relevant research data may be stored outside the animal facility but must be made available upon request by the veterinarian, ACC or external inspectorate.

Guideline approved by the University of Guelph Animal Care Committee on: October 14, 2011