



Dartmouth College

Animal Care and Use Program

Institutional Animal Care and Use Committee

IACUC Policies and Procedures

Title: Post Procedural Care in Animal Research

Purpose: Post procedural care is NOT limited to post operative care. Although post operative care is essential, it is important to realize that enhanced animal care is necessary after any procedure in which an animal is anesthetized, an animal experiences pain or distress or an animal undergoes any procedure which causes more than minimal physiologic disturbance. Consideration of possible complications before the procedure and regular monitoring after the procedure help to minimize unnecessary complications.

Policy: The specific personnel who will be responsible for post procedural care should be identified in advance of a procedure and listed as performing this function in the ASRF. These individuals should be appropriately trained to identify what is "normal" and have an idea of the clinical signs and tests which will be used to identify the abnormal. Back up personnel should be identified to assure animal post procedural care in case the primary individual is away. If necessary, these individuals will need to be available evenings, weekends and/or holidays. Personnel responsible for this care must assure that the ARC has their current contact information. Timing of a procedure should take into account availability of post procedural care personnel.

Animal care personnel should be aware of animals that have had procedures requiring special observation and they should know what lab personnel to notify in case of emergency.

Procedures: Post procedural care can generally be broken down into three basic phases: anesthetic recovery; acute recovery; chronic recovery.

Anesthetic recovery

This period is often the time of greatest physiologic disturbance. Careful attention to cardiovascular function is important. This can be accomplished by monitoring; heart and respiratory rate; observation of mucous membrane color; and capillary refill time. Sophisticated monitoring devices may be appropriate in some cases but are often not necessary. In some cases, anesthetic recovery problems can be minimized by providing supportive care during a procedure. Assuring a patent airway; providing supplemental oxygen, subcutaneous, intraperitoneal or intravenous warm fluids; and paying attention that the animal's position does not compromise cardiopulmonary function are just some ways to provide intra-procedural and post procedural support. Animals should be closely monitored until they are able to hold themselves in a sternal position. If used, endotracheal tubes should not be removed until the animal can swallow. Supplemental heat is critical to avoid hypothermia, however heating pads and lamps must be watched closely to avoid thermal burns. Take care to assure that the animal is not in a position to be injured by cage mates.

Acute recovery

This period encompasses the time from anesthetic recovery to physiologic stability. During this time the animal may be unable or unwilling to eat or drink normally and thus require supplementation. Wound care should also be done. During this period, it is generally necessary to observe an animal at least daily.

Chronic recovery

During this period the animal's condition usually does not change rapidly and thus observation by research staff may only need to occur every two or three days. During this time, issues of analgesia, nutritional support and wound care may still be seen. In surgical cases, this period would last at least until suture/wound clip removal at 10-14 days. It is important to note, with some procedures such as tumor implantation or creation of another disease state, the animal's condition may actually worsen with time. In such cases, the frequency of observation may increase with time.

What clinical signs will be observed?

Clinical assessment of animals includes observation of behavioral changes, attitude changes and physiologic changes.

- Behavioral/Attitudinal changes may include: immobility; reluctance to move; lack of appetite; abnormal posturing; abnormal vocalization unresponsive; depressed; anxious; apprehensive; hypersensitive; or aggressive
- Physiologic changes may include: pupillary dilation; increased heart rate; increased respiratory rate or difficulty breathing; hyperthermia; dehydration; or weight loss.
- Observation of hair coat, skin turgidity, body weight, abnormal discharges, and urine and fecal output and quality all can help assess an animal's clinical condition. Abnormalities in any of these areas may signify post procedural complications such as infection or pain. Recommendations for analgesia, if necessary, are available from an ARC veterinarian.
- If surgery has been performed, the incision site should be closely observed for signs of infection including, redness, swelling and pain. Post surgical infections cause unnecessary discomfort, delays healing and may lead to the loss of the animal from the project.
- If tumors have been implanted or induced, size of tumor, tumor ulceration or tumor impact on normal physiologic function and mobility should be regularly assessed. When working with tumors, it is important to understand the growth rate of the tumor and incidence and type of metastasis. If this is unknown for the strain of animal or type of tumor used, error should be on the side of more frequent observation rather than less. The IACUC policy for allowable size of tumors can be obtained from the IACUC website.
- If ascites are produced, the guidelines for monoclonal antibodies should be followed. These can be obtained from the IACUC website.

What records should be kept?

The purpose of procedural and post procedural records is to assure appropriate and timely care of potentially impaired animals. These records should be readily available to the ARC veterinary staff that may be called upon to provide veterinary care in an emergency. These records also must be readily available to any regulatory inspector who wishes to verify appropriate treatment and post procedural care. Records should be maintained if any experimental procedure has been done to an animal which is reasonably expected to create significant physiologic disturbance or has the potential to cause pain and/or distress. All the animal rooms in the ARC have a notebook that contains Daily Monitoring Forms (DMF), instructions, and green dots to place on the cage card for efficient identification. For nonrodent species, a Daily Monitoring Form (DMF) is kept for each animal since regulations require individual records for these species. For rodent species, multiple animals that have undergone the same procedure or experiment, or those who have experienced the same complications on the same date can be documented on the Animal Health Check Card. The DMF or Health Check Card should note the animal cage card number(s), date and procedure as well as any post procedural observations and treatments. The post procedural observations noted on the DMF or Health Check Card should be at least as frequent as indicated on the ASRF. When an animal no longer needs special observation, the DMF or Health Check Card should be signed off at the bottom (Indication of "Problem resolved" or something similar, and the date) and taken or sent to the applicable ARC office.

Determining early euthanasia criteria

The decision to euthanize an animal is based upon the animal's clinical condition and prognosis along with the experimental endpoint. The criteria which will be used to determine if an animal should be euthanized must be described in the ASRF. In general, early euthanasia is only done at the direction of an ARC vet or a representative of the research lab. If an animal is in an acute emergency situation, the veterinarian or their designee will make every reasonable attempt to contact the lab representative prior to euthanasia. The ultimate welfare of the animal must always be the primary concern, unless the ASRF has described and justified the potential complications, including pain and distress or death as an endpoint.

Completing the Animal Subjects Review Form (ASRF)

Section F of the ASRF is most closely linked with describing the post procedural care. This section should describe all the details of post procedural care including: who will provide this care and observation, how often the care and observations will be done, how animals will be recovered from anesthesia, and what supportive care will be provided during this time should be outlined. Potential post procedural complications should be listed along with what will be done if such complications occur. In procedures which can reasonably be expected to have the potential to cause pain (generally procedures which would cause pain in humans), how the animal will be monitored (e.g: what signs will be observed to determine if the animal is in pain) should be described. Consideration should be given to routine post procedural analgesics for potentially painful procedures as it is reported that preemptive analgesia decreases the dosage and duration of analgesics. The rationale for withholding analgesics must be scientifically justified in the ASRF. This section should also include what post procedural records will be maintained and who will do this. See the Analgesia Guidelines and Policy on the IACUC website.

Where to go for help

The ARC and the IACUC has several guidelines on the website. The veterinary staff of the ARC is also available to consult on questions of procedural and post procedural care. The ARC has an extensive library available with references on surgical procedures and animal anesthesia and analgesia. Members of the IACUC are also good resources for assistance in completion of an ASRF.