

Center for Biomedical Research / IACUC Standard Operating Procedure - Guidelines

Anesthesia, Surgery, and Post-Procedural Recordkeeping

Purpose/Scope/Application: All animals that experience anesthesia or surgical procedures (survival or non-survival) must have a concurrently recorded and readily available record detailing anesthesia data, intra-operative monitoring, and post-procedural care. The scope of this policy applies to all animals on IACUC Animal Care and Use Protocols.

Surgery

The CBR has a surgical suite composed of a preparation, scrub, recovery, and a large surgery room. The CBR can assist, provide consultation, or provide training on surgical techniques and instrumentation. The CBR can also advise on what suture material to use, what suture pattern to use, anesthesia monitoring, equipment selection, & post-operative care etc.

- **Survival surgery** is defined as any surgery from which the animal recovers consciousness.
- **Major surgery** is defined as any surgical intervention that penetrates a body cavity or has the potential for producing a permanent handicap in an animal that is expected to recover.
- **Minor surgery** is any operative procedure in which only skin or mucous membrane is incised. However, if a minor surgical procedure has a great risk of infection, it will be treated as a major surgery.
- **Non-survival surgery** is defined as any surgery in which the animal will not regain consciousness after being anesthetized. Such procedures may be performed in a suitable located and equipped laboratory, subject to CBR and IACUC evaluation and approval.

Multiple major survival surgical procedures on a single animal are discouraged but may be permitted if scientifically justified by the user and approved by the IACUC.

Animals should generally be fasted overnight prior to anesthesia and surgery to prevent vomiting, aspiration, and problems associated with a distended intestinal tract. The animal should be allowed access to water until several hours (2-3) before the surgery. Since these generalizations do not apply to all species, PIs must contact the CBR prior to planning a procedure.

Records of anesthesia, surgery and/or post-procedural care must, at a minimum, include:

- Animal or group identification and the date of the procedure.
- The dose, route, and time of any drugs administered, and the identification of the person administering the drug.
- A description of the surgical or anesthetic procedure and the identification of the surgeon and/or anesthetist.
- Ongoing findings during anesthetic/surgical manipulations:
 - Monitoring must include a periodic assessment of anesthetic depth
 - Monitoring of non-rodents must also include at least heart and respiration rate, and should include other physiological parameters as appropriate, such as blood pressure, body temperature, etc.
 - When procedures are conducted on more than one mouse or rat, group records are acceptable and notations may be made immediately at the end of the surgery session.
- Notation of any variations from the normal and expected events during the anesthetic and recovery periods, including the actions taken and the time performed, the animal's response to these actions, and the identity of the person performing these actions.
- Assessment for pain and distress.
- Actions taken to alleviate pain and distress, including non-pharmacologic interventions, and the response to these actions.
- A notation defining the end of the monitoring period (euthanasia or functional recovery from the sedation or anesthesia), including the time, date, and the ability to identify the person performing this observation.
- This record must be readily available to the IACUC or their designated proxies, veterinary staff, and representatives of regulatory and accrediting organizations. Records must be maintained for at least 3 years after completion of the animal protocol.

Additional Guidance on Recordkeeping:

- Entries should be initialed or signed by the person who made the observation or administered the treatment and traceable to the person who recorded or performed it.
- The date and time of the entry should be recorded. Entries should be chronological and reference a specific time.
- Entries should be made proximately to the time of the observation or treatment. Write it down as it happens.
- Drug treatments must be recorded so that a total dose is recorded or can be calculated, e.g. either recorded in total mg, or a volume plus a concentration. For example: 0.2 mg acepromazine, or 0.1 ml acepromazine (2 mg/ml)
- During anesthesia and anesthetic recovery for non-rodents, physiologic parameters must be observed and recorded frequently. At a minimum a heart rate and respiratory rate should be recorded every 15 minutes for a stable animal in a short procedure. Other observations should be made as warranted: body temperature, color of mucous membranes, etc. depending on the type and length of the procedure. The animals must be monitored until full recovery, which includes purposeful movements around the cage.

- The end of the monitoring period must be noted and signed by the person who made this determination, whether due to recovery or euthanasia.
- Recorded observations should include descriptive language, rather than only state a conclusion. Descriptive phrases include “active, no lameness noted,” “all food consumed, normal feces present,” “incision is intact,” “swelling extends 1 cm from wound margins, no discharge noted,” “and attitude alert.” Inadequate phrases (without accompanying supporting descriptions) include “normal,” “comfortable,” “OK,” “recovered.”
- Post-procedure observations should be **recorded daily for a minimum of 3 days, counting the day of surgery as day zero**, and include at least the following:
 - o Observation of the comfort level of the animal. This can be evaluated by activity, mental attitude, elimination, food consumption, etc.
 - o A specific check of the surgical wounds. Is there any discharge, redness, or swelling? Is the incision intact?
 - o If any catheters or devices are in place, describe the condition of the device and record any procedures performed such as cleaning the skin exit site or flushing a catheter to keep it patent.
 - o Any procedure-specific observations related to potential or unexpected complications such as organ failure, infection, ischemia, etc.

References:

Guide for the Care and Use of Laboratory Animals, 8th ed.

Animal Welfare Regulations: Animal Welfare(9 CFR, Volume I, Subchapter A)

Medical Records for Animal Used in Research, Teaching, and Testing: ILAR Journal, Vol 48(1) 2007.

Center for Biomedical Research - UND

Small animal procedure record (non-USDA species: rodents/frogs/birds)

Date of procedure: _____ Protocol Number: _____
Surgeon: _____ Species/Group ID: _____
Cage Bar Code: _____

Description of Procedure: _____

Animal weight ranges: _____

| Animal ID | Anesthetic agent | Dose | Volume | Route | Time given | Initials |
|-----------|------------------|------|--------|-------|------------|----------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Anesthetic depth assessed prior to procedure (toe pinch/corneal reflex) Yes

Heating device used to maintain body temperature Yes

Ophthalmic ointment applied Yes

Group anesthesia start time: _____

Group surgery start time: _____

Intra-operative Monitoring Notes:

Length of Individual surgery: _____

Assessments taken: temperature heart rate respiration rate anesthetic depth BP

Frequency of assessments conducted within individual surgery: _____

Additional fluids, emergency agents (if applicable, including dose/route/time) and any complications and actions taken: _____

Group surgery completion time: _____

Group anesthesia finish time: _____

Group immediate post-operative monitoring (including analgesic/antibiotic administration)

| Time | Comments | Initials |
|------|----------|----------|
| | | |
| | | |
| | | |
| | | |

Time animals are sternal and fully recovered: _____