



## Aseptic Survival Surgery in Rodents

**303.1 Purpose:** The following guidelines represent the baseline minimum requirements for aseptic survival surgery and post-procedural monitoring in Rodents. Please contact either an Emory DAR veterinarian at 7-3248 or a Yerkes veterinarian at 7- 8101 for additional guidance related to specific procedures as needed.

**303.2 Facilities:** Surgical procedures must be performed within procedure rooms within the animal facility, unless otherwise approved by the IACUC. Note approval of laboratory spaces for animal use requires an on-site inspection as part of the approval process. Work areas must be clean and uncluttered during surgery, and unnecessary foot traffic should be minimized. Prior to initiation of procedures, the work surface must be sanitized in compliance with the IACUC policy on sanitization of equipment.

**303.3 Surgeon training:** All individuals performing surgery must have appropriate training in proper technique including didactic training prior to the first surgery, and proficiency assessment to be carried out within one month of initiating surgeries. Credentials will be reviewed concurrently with IACUC protocol review. Please contact DAR at 7-3248 or Yerkes at 7-9675, or 7-8101 for training.

**303.4 Instrument and Materials preparation:** All instruments must be cleaned and then sterilized prior to use in surgery. Any method of sterilization (steam, gas, cold chemical, hot bead) is acceptable if done properly. If cold chemical sterilization methods are employed, it is important to remember that extended contact time is often necessary (e.g. 10 hours for glutaraldehyde). Note that alcohol is generally unsuitable for chemical sterilization as it is neither a sterilant nor a high level disinfectant—exceptions must be approved by the IACUC. Instruments that are properly wrapped in sterile packaging and protected from dust accumulation (e.g. in a closed cabinet) may be stored for later use as long as the packaging remains intact. All materials used in surgery or introduced into the animal such as sutures, dental cement, mini-pumps etc. should be formulated for animal or human use and sterile whenever possible. Note that silk sutures should not be used for skin closure, as these are more likely to lead to infection at the closure site.

**303.5 Surgeon preparation:** Hands must be washed and free of gross contamination. Gloves must be worn when performing surgical procedures. These should generally be sterile surgical gloves; however clean examination gloves are acceptable if approved by the IACUC where the ‘sterile tip’ technique is used. This is where only the sterile instrument tips and not the gloved digits or hands of the surgeon enter the surgical field and further that the non-sterile gloved hands do not contact the surgical field or directly handle the items entering the surgical field (e.g. suture, implants, and catheters). In either case, gloves must be changed in-between animals or more often if they become damaged, or grossly contaminated. All surgeries require surgeons mask, and either gown or lab coat The surgeon must wear a surgeon cap if the procedure is considered “major” as defined by *The Guide for The Care and Use of Laboratory Animals*\* and denoted in the approved IACUC protocol.

**303.6 Animal Preparation:** Animals must be anesthetized using agents and doses listed in the protocol.

Following induction of anesthesia, hair must be removed from the surgical site using clippers or a depilatory agent. After hair removal, gross contamination and excess hair must be removed with a combination of two antiseptics. Alcohol is recommended as one of the antiseptics, with betadine or chlorhexidine as the other antiseptic. Skin disinfection should be accomplished with either three applications of a combination product (eg. chlorhexidine and alcohol) or three applications each of the two antiseptics, alternating between the antiseptics and ending with the antiseptic that is not alcohol. Deviations from this standard antiseptic protocol must be specifically outlined and approved in the IACUC protocol. Ocular ointment should be placed on the eyes to prevent exposure keratitis. Prone subjects should be restrained appropriately using tape or fine rope used in a non-occluding manner as a means of affixing limbs to the surgical table or platform. A sterile drape must be used as appropriate for the surgery unless exempted by the IACUC. For those procedures that require suturing, an appropriate drape must be used for the surgery area. The animal must be placed on an appropriate heating surface for procedures lasting longer than 15 minutes.

- 303.7 Surgery on multiple animals:** Instruments must be prepared as described above before use on the first animal. If the same set of instruments will be used in multiple animals, it is important to clean and sterilize the instruments prior to starting on each subsequent animal. This is best accomplished by first removing any gross contamination e.g. blood using clean 4x4 gauze pads moistened with sterile saline. Instruments must then be sterilized using acceptable means such as a glass bead sterilizer following manufacturer's guidelines. Drapes must be changed if it becomes damaged or significantly contaminated with blood, hair or other debris. If examination gloves are used, gloves must be changed between animals.
- 303.8 Post-operative recovery:** Animals must be placed in a clean recovery cage. Heat must be provided using an appropriate, approved heating source so that half of the cage is heated and half is at ambient room temperature to create a gradient. Animals must be monitored at least every 15 minutes until fully recovered from anesthesia, at which time the animals can be moved into their housing room. Any exceptions must be approved by IACUC. Please note that these monitoring records must be recorded in the log book as demonstrated in the template forms provided. Subsequently, the animals must be provided care and observed at the frequency required in the approved protocol. Care should be taken to keep sedated animals separate from ambulating animals so that injury doesn't occur during recovery. Any analgesia or fluids must be administered as described in the approved IACUC protocol. The postoperative management of the incision sites, including suture or staple removal (generally performed 10-14 days post-surgery), must be consistent with the approved protocol.
- 303.9 Surgical and post-operative monitoring and record keeping:** Please note that both the Rodent Surgery/Anesthesia Record Card (see appendix 1) and log book records are **required** for surgical and post-operative monitoring. Sample template forms are attached in the appendix. PI's may elect to use their own forms, however the information on the template forms reflect the minimal information required for these records. Regardless of the form used the following criteria must be met:
- a. A rodent surgery/anesthesia card record must be utilized with observations and treatments recorded. The animals must be monitored daily for 3 days following the surgical procedure, and the observations recorded on the cage card record. This card record should be maintained on the cage for a minimum of 5 days. Afterwards the card can be removed from the cage and must be added to the surgery log as part of the permanent record
  - b. Log book records are required and must be maintained in a central location, and fully available upon request.
  - c. Both the cage card and log book must minimally contain the detailed information in the templates provided
  - d. NOTE: It is considered "best practice" for the following information to be written on the existing, permanent cage card

Date of Surgery:

Type of Surgery:

Inclusion of this information on the permanent cage card allows for a record of the procedure and greatly facilitates communication and information flow between DAR and the PI lab if complications arise in the animals after the Surgery/Anesthesia Record Card has been removed.

\* NOTE: Major survival surgery penetrates and exposes a body cavity, produces substantial impairment of physical or physiological functions, or involves extensive tissue dissection or transection.

### **303.10 Appendices**

Appendix 1: Rodent Surgery/Anesthesia Cage Record Card

Appendix 2: Rodent Surgery/Anesthesia Record: Lab Log Book Format

### **303.11 Document Properties**

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**APPENDIX 1:**

**Rodent Surgery/Anesthesia Record Card Template**

**a) Front Side of Card**

**Rodent Surgery/Anesthesia cage Record card**

Emergency Lab Contact Name/Phone # \_\_\_\_\_

Date
Surgeon:
Surgical procedure:
Time all animals recovered:
<b>PRESURGICAL ANALGESICS</b>
Drug/Dose (mg/kg)
<b>ANESTHETIC DRUGS ADMINISTERED</b>
Drug/Dose (mg/kg):
Other Medications or Notes

**B ) (Back side of card)**

Date/Time	Animal Condition**	Analgesia drug	dose (mg/kg)	Initials

Note: This record should be maintained on the cage for a minimum of five (5) days post surgery. After that, the card should be transferred to the lab surgery notebook as an official monitoring record.

\*\* 1= Active    2= Inactive    3= Moribund    4= Found Dead

**Appendix 2: Rodent Surgery/Anesthesia Record: Lab Log Book Format**

**a) Front side of Log**

Principal Investigator:		Date:	
Surgeon		IACUC Protocol #:	
Species/Strain			
Animal ID Number(s)			
Body weight(s):			
Surgical Procedure Description:			
<b>ANESTHETIC DRUG(S) ADMINISTERED</b>			
Drug/Dose(mg/kg)		Time given	
<b>ANALGESICS DRUG(S) ADMINISTERED</b>			
Drug/Dose(mg/kg)		Time given	
<b>SURGERY NOTES AND OBSERVATIONS</b>			
Time Surgery Started:		Time Surgery Ended:	
Intra-operative monitoring Performed (Y/N):		Comments on monitoring:	
SURGICAL NOTES			

**Surgical Recovery Monitoring**

(minimum every 15 minutes until animal is awake and ambulatory):

Time	15'	30'	45'	60'	75'	90'	105'	120'
Initials								
notes								

**Notes on recovery** \_\_\_\_\_

**A) Back side of log**

**Post-operative Daily Monitoring Record:**

<b>Date</b>	<b>Time</b>	<b>Animal Condition**</b>	<b>Analgesic Given</b>	<b>Dose (mg/kg)</b>	<b>Initials</b>

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