

## **SURGERY - DEFINITIONS, POLICIES AND GUIDELINES**

IACUC accepts the following definitions from the 8<sup>th</sup> edition of the "Guide for the Care and Use of Laboratory Animals." National Academies Press, 2013.

“As a general guideline, major survival surgery (e.g., laparotomy, thoracotomy, joint replacement, and limb amputation) penetrates and exposes a body cavity, produces substantial impairment of physical or physiologic function, or involves substantial tissue dissection or transection . . . Minor survival surgery does not expose a body cavity and causes little or no physical impairment . . . When attempting to categorize a particular surgical procedure, the following should be considered: the potential for pain and other postoperative complications; the nature of the procedure as well as the size and location of the incision(s); the durations of the procedure; and the species, health status, and age of the animal. . . In non-survival surgery, an animal is euthanized before recovery from anesthesia.” (Guide, p. 117-118)

“Multiple surgical procedures on a single animal should be evaluated to determine their impact on the animal’s well-being. Multiple major surgical procedures on a single animal are acceptable only if they are 1) included in and essential components of a single research project or protocol, 2) scientifically justified by the investigator or 3) necessary for clinical reasons. Conservation of scarce animal resources may justify the conduct of multiple major surgeries on a single animal, but the application of such a practice on a single animal used in separate protocols is discouraged and should be reviewed critically by the IACUC. . . . If multiple major survival surgery is approved, the IACUC should pay particular attention to animal well-being through continuing evaluation of outcomes. Cost savings alone is not an adequate reason for performing multiple major survival surgical procedures.” (Guide, p.30) In addition, the protocol must have follow-up observation beyond what is required for standard single survival surgeries. This observation should include an awareness of the second surgery during the pre-surgical, the surgery and the post-surgical periods. Follow-up should also include any special procedures or extra care required during the period between surgeries.

It is IACUC policy that all surgical facilities need to be inspected by IACUC prior to their use.

### **SURVIVAL SURGERY**

Pre-Surgery for Single or Multiple Survival Surgeries:

Procedures must be outlined in the protocol for preparation of the animal for surgery. These procedures must include aseptic preparation of the surgical site including shaving of fur and appropriate disinfection of the skin, pre-surgical medication(s), and food or fluid restriction (if applicable). Procedures must minimally include the use of sterile instruments, surgical masks and gloves, surgical draping as appropriate, and aseptic preparation of the surgery site.

#### **Minor and Rodent Surgery**

Survival surgical procedures which do not qualify as “major” and surgeries performed on mice of the genus *Mus* and rats of the genus *Rattus* do not require a dedicated surgery facility. However, the area of the laboratory or room where surgery is performed should not be used for other functions at the time that surgery is in progress and the area should be clean and free of clutter.

#### **Major Surgical Procedures on Species other than Mice and Rats**

Major survival surgical procedures in mammals other than mice and rats must be conducted in a facility  
surgery

specifically intended and used only for that purpose and which is maintained and operated to ensure cleanliness. Additionally, aseptic procedures - which include the wearing of sterile surgical gloves, gowns, caps and face masks - and use of sterile surgical instruments and draping must be used.

#### Use of Paralytic Agents

Neuromuscular blocking agents, or “paralytics,” may be used as part of a regimen of balanced anesthesia to promote research objectives. However, it is the researcher’s responsibility to assure that animals are not subjected to pain during these procedures. Because paralytic agents prevent an animal from responding to painful stimuli, monitoring methods which do not rely on animal movement must be used to assure that an adequate plane of anesthesia is maintained. Examples of these methods include electrocardiography or pulse-oximetry

#### Post-Surgical Period

The post-surgical period is generally considered to be the period from the end of surgery to the point when the surgical wound is healed (e.g., time of suture removal). The period may be extended in cases where a physical impairment has been induced despite healed surgical wounds. During this time period daily recorded observations are required by qualified research team personnel.

#### **NON-SURVIVAL SURGERY**

Regardless of whether surgeries are on a survival or non-survival basis, animals must be maintained at an anesthetic plane which precludes pain and distress or recovery from anesthesia until the time of euthanasia. Although it may not be necessary to adhere to principles of aseptic technique for non-survival procedures, according to the Guide, “. . . At a minimum, the surgical site should be clipped, the surgeon should wear gloves, and the instruments and surrounding area should be clean.” (Guide, p. 118)