STANDARD OPERATING PROCEDURES

DIVISION OF COMPARATIVE MEDICINE
UNIVERSITY OF SOUTH FLORIDA

TITLE:	**Guidelines for Performing Survival Surgery in Non-Rodent and USDA Regulated Species**
SCOPE:	All Authorized Personnel
RESPONSIBILITY:	Veterinarians, Research, and Animal Care Personnel
PURPOSE:	To Outline Proper Procedures Used In Survival Surgery

I. PURPOSE

1. The purpose of this SOP is to delineate general principles regarding major survival surgeries in non-rodent and USDA covered species, including the preparation of the patient, and the preparation of the surgeon/surgical team prior to survival surgeries. Survival surgeries of non-rodent and USDA covered species are conducted in the surgical suites 1324, 1329, 1330, and 1348 of the College of Medicine animal facility and in surgical suites 114, 126, and 142 of the Center for Advanced Medical Learning and Simulation facility.

II. RESPONSIBILITY

1. It is the responsibility of all research personnel, veterinary staff, and animal care staff involved in surgical procedures to follow these guidelines.

2. Veterinarians and veterinary staff ensure compliance with state-of-the-art techniques in preparing the animals for aseptic surgical procedures, monitoring animals during surgeries, and assisting surgical teams.

III. PROCEDURES

1. General principles of survival surgeries
    a. A **dedicated surgical suite** must be used for large animals. Surfaces and equipment should be thoroughly **cleaned and disinfected prior to use.**
    b. The surgical patient should be **transferred to the OR/surgical area only after having been shaved and coarsely cleaned** with a disinfectant scrub (e.g., povidone iodine or chlorhexidine). The surgical site is shaved with enough border to keep the fur from contaminating the site and so that the remaining fur need not to be wetted during the final surgical scrub.
    c. Minimize traffic flow and conversation in the operating room.
    d. Patient normal **body temperature should be maintained** by the use of warm circulating water blankets, thermal pads, and/or warmed IV fluids. Electrical heating pads must not be used since they are a less than consistent, safe, or reliable source of heat.
    e. Surgery must begin with instruments that have been sterilized. Instrument sterilization should be done by autoclaving, gas sterilization with ethylene oxide, or immersion in an appropriate cold sterilant. Examples of cold sterilants suitable for sterilizing surgical instruments can be found in **SOP**

#011 entitled ***Reagents, Solutions and Decontaminants-Labeling and Use***. If a cold sterilant has been used, rinse the instruments thoroughly with sterile saline since the sterilant may be noxious to manipulated tissues. Sterile suture, drapes and sponges must be used.

f. Surgeons can reduce the incidence of post-procedural infection by careful and **efficient surgical planning** and practices. Prolonged surgical times may expose tissues to contaminants; cause them to dry, or compromise blood flow to tissues. Tissues damaged by crushing or drying, or suture or other surgical implants serve as a nidus for infection.
g. Instruments or hands that touch outside of the **sterile field** (i.e., the area delineated by sterile drapes, or the inside of an opened sterile pack) should be replaced or re-gloved immediately.
h. **Handle tissues gently.** Do not use toothed or crushing instruments unless necessary. Hold the cut edge rather than grasping the middle of a tissue layer. When tying off vessels include a minimum of surrounding tissue. Use electrocautery or electroscalpels sparingly, since they cause necrosis.
i. Use **appropriate suture technique**. Any suture that will be buried in tissues should be either absorbable or monofilament. Non-absorbable braided suture is irritating and can harbor bacteria. Sutures should be placed evenly and as close to the tissue edge as possible to prevent obstruction of blood flow, typically no more than 1 cm from the edge in large animals, and 0.2 cm in small animals. Sutures should only appose tissue edges. Overly tight sutures may obstruct blood supply, retard wound healing, and may result in dehiscence. Skin sutures may be unnecessary, and may cause the animal to chew or scratch at the incision site. Alternatives include use of subcutaneous/intradermal closure techniques or tissue adhesive.
j. Ablate all "dead space" during closure. Pockets of space between tissue layers may fill with fluid or blood, and may develop into a hematoma or an abscess. Tacking down tissue layers can be used. If this is not possible, use of a drain for 3 to 5 days following the procedure is recommended.
k. After the surgical incision site is closed, remove the remaining disinfectant solution by gently washing the area with warm sterile water or saline to avoid post-operative complications (e.g., dermatitis, diarrhea due to ingestion of solution while grooming).

2. Preparation of the Patient
   a. **Final preparation** of the surgical site should be performed after the animal has been positioned on the surgery table.
   b. **Aseptic technique** should be used when performing the final scrub. The technician performing the final scrub should glove aseptically; wear surgical hat, mask, and shoe covers. The prep tray should be opened keeping the inside of the tray sterile.
   c. The patient's skin should be scrubbed with a disinfectant such as povidone iodine or chlorhexidine. Scrubbing should start at the center of the surgical site and move to the outside in a linear or circular manner. Typically three scrubs with a disinfectant and three alternating rinses with alcohol, diluted disinfectant or sterile water should be used. When the last cleaning solution has dried a final layer of disinfectant should be sprayed or painted onto the surgical site.

d. Any excess liquid on the surgery table or patient should be removed by wiping/blotting with sterile paper towels and/or gauze sponges prior to draping the patient, being careful not to contaminate the prepped area.
e. **Sterile surgical drapes** should be used to isolate the disinfected area from surrounding areas. Cover a mayo stand or table with a sterile drape on which sterile instruments are placed. The gowned and gloved surgeon/surgical team should drape the surgical patient. To be effective, a drape must fit tightly to the skin and must be impermeable to moisture. Clamps or sutures may be used to fix the drape in place. Self-adhesive drapes are also useful and are recommended. In some cases a drape may not be practical or necessary, but the surgeon must make every effort to perform procedures using aseptic technique.

3. Preparation of the surgeon/surgical team
    a. **The surgeon/surgical team should wear a scrub suit, surgical mask, hair cover, and shoe covers.** Rings, watches, and bracelets should be removed prior to surgical hand antisepsis.
    b. Prior to scrubbing, the surgeon(s) or their assistant(s) should open their gowning packs being careful not to touch the sterile gown and towel. The contents are either dropped on an already sterile draped surface or remain on the wrap of the gown/towel, which is sterile inside. The same applies to the sterile gloves.
    c. **Surgical hand antisepsis** using either an antimicrobial soap or an alcohol-based hand rub with persistent activity (e.g., Avagard ™) is required before donning sterile gloves.
        1. Remove debris from underneath fingernails using a nail cleaner under running water.
        2. Surgical hand antisepsis should be performed using an antimicrobial soap. Scrub hands and forearms for the length of time recommended by the manufacturer, usually 2--6 minutes. Make sure that all surfaces of the fingers, hands and forearms are included.
        3. If an alcohol-based surgical hand-scrub product with persistent activity is used, follow the manufacturer's instructions. Before applying the alcohol solution, prewash hands and forearms with an antimicrobial soap and dry hands and forearms completely. After application of the alcohol-based product, allow hands and forearms to dry thoroughly before donning sterile gloves.
        4. Always hold the hands high with the elbows flexed away from the body to prevent recontamination.
    d. After entering the OR, the surgeon should dry his/her hands by picking up a sterile towel at one end with one hand and drying the opposite hand/arm working from hand to elbow. The opposite end of the towel is then grasped with the dry hand and the wet hand/arm is dried in the same fashion. The towel is then discarded.
    e. The surgeon should hold a sterile folded gown at the inside of the shoulder, being careful not to touch the outside of the gown. The gown is lifted away from the table. After the gown has been allowed to straighten out, the arms are inserted into the sleeves. A non-scrubbed person

standing behind the surgeon should tie the top and the waist strings, be careful to not touch the outside front of the gown.

f. **Gloving** can be performed using either a closed or open technique. With the closed gloving method the hands won't be pushed through the gown wristlets. The cuff of the glove should be grasped through the material of the gown sleeves and folded over the gown wristlet of the other hand. The fingers/hand can then be advanced into the glove with the help of the other hand, which is still covered by the sleeve. The gloved hand repeats this procedure for the ungloved hand, which is still covered by the gown sleeve. The gloves are then adjusted for comfort. When performing the open gloving technique, the hands should be pushed through the gown wristlets, but held away from the body. One of the gloves is lifted by its turned-down cuff edge and pulled on with a rotating motion being careful not to touch the outside of the glove nor the gown. The gloved hand then repeats this procedure holding the glove beneath the rolled cuff (outside of glove) being careful not to touch the fingers of the other hand. The cuff of the gloves should be advanced over the wristlets with gloved hands slipping beneath the cuff (outside of glove).

Approved: **Date:**