WVU IACUC Policy and Guidelines: Surgical Guidelines for Agricultural Animals Used in Agricultural Research and Teaching (*non-USDA covered*)

Purpose

The purpose of this document is to outline the requirements for conducting surgical procedures on agricultural animals used in an agricultural setting in order to minimize pain, distress, and post-surgical complications.

Policy

Deviations from the following standards ***must*** be justified and approved in the animal use protocol.

Definitions

Minor Survival Surgery: Procedures that do not penetrate a body cavity or produce substantial impairment. Examples: wound suturing, peripheral vessel cannulation, and percutaneous biopsy, standard routine agricultural procedures (castration, dehorning, tail docking).

Major Operative Procedure: Any surgical intervention that penetrates and exposes a body cavity or any procedure that produces permanent impairment of physical or physiological functions.

Aseptic Technique: The use of practices that restrict as much as possible microorganisms in the environment and prevent contamination of the surgical site.

Multiple Major Survival Surgeries (*see IACUC #14-002 Multiple Survival Surgeries in the Same Animal*): The performance of more than one major survival surgery on a single animal is discouraged but may be necessary to answer a specific research question or ensure/maintain the health of the animal. Long-lived animals may undergo multiple major surgeries, such as a cow that requires surgery for correction of a displaced abomasum and cesarean section for therapeutic purposes. Multiple major survival surgeries performed for non-therapeutic reasons should be performed only when justified, as reviewed and approved by the IACUC.

Surgical Drugs and Compounds

A. **Residue Avoidance** (*see IACUC #22-005 Residue Avoidance in Food-producing Agricultural Animals*)
    1. Administration of drugs to animals destined to enter the food chain requires special consideration.
    2. Before an animal may be slaughtered for human or animal food purposes, time ***must*** be allowed for medications, drugs approved by the Food and Drug Administration (FDA), or substances allowed by the FDA for experimental testing under the Investigational New Animal Drug (INAD) exemption to be depleted from the

tissues. Such use is only permitted when it adheres to regulations in the Animal Medicinal Drug Use Clarification Act (AMDUCA) of 1994, Public Law 103-396 (US Food and Drug Administration, 1994).

3. Residues of groups of chemicals listed below ***must*** be prevented from occurring in research animals if these animals or their products are to enter the human food chain. These are:
    - approved drugs used according to directions on the label
    - drugs used in an extra-label fashion
    - other chemicals such as herbicides, pesticides, and wood preservatives
4. A record of the product used, dose, route of administration, duration of treatment, and period of withdrawal ***must*** be maintained.
5. Adherence to proper withdrawal times ***must*** be ensured before animals are transported to the auction, market, or abattoir.

B. **Anesthesia and Analgesia**: Painful animal husbandry-related procedures (standard agricultural practices), such as castration, dehorning, and tail docking, should be conducted with the use of pain management protocols appropriate for the age and species of animal involved.
    1. The clinical veterinarian should advise investigators about the choice and use of analgesics, anesthetics, or any other pain- or distress-relieving measure. This may include recommended times for withholding of food and water to minimize the risk of adverse events such as vomiting or aspiration after anesthesia.
    2. All analgesic compounds ***must*** be acquired through the clinical veterinarian. All procedures and administered compounds ***must*** be appropriately documented in the animal's medical records.
    3. After being trained and subsequently supervised by a qualified scientist or veterinarian, technical personnel may administer anesthetics and analgesics as part of a research or teaching protocol. All drugs ***must*** be administered under veterinary oversight unless used exactly as described on compound label.

C. **Sedatives and Tranquilizers**
    1. Psychotropic substances can alter mental processes or behavior but do not produce anesthesia or, in most cases, long-lasting analgesia.
    2. These medications can reduce the dose of anesthetic required. When used alone, tranquilizers should only be used to allay fear and anxiety. Their use may render restraint less stressful and enable animals to adapt more easily to novel situations.
    3. It is important to note that these compounds do not provide a surgical plane of anesthesia and do not provide long-lasting pain relief, especially when pain is associated with tissue damage and inflammation.

Surgeries

A. **Major Operative Procedure for Research Purposes**
   1. Experimental surgery on agricultural animals should be performed or supervised by an experienced veterinarian or their designee, or by research scientists who are trained, highly skilled, and experienced in performing experimental surgery, in accordance with established protocols approved by the IACUC.
   2. Researchers should consult a clinical veterinarian experienced in surgical techniques for the subject species to establish surgical protocols for approval by the IACUC.
   3. Major survival surgeries should be performed in facilities designed and prepared to accommodate surgery whenever possible, and appropriate aseptic technique should be used. (Note: *Currently as of 2/18/2025 there are no dedicated large animal surgery facilities available for the agricultural program*)
   4. Good surgical practice includes the use of surgical caps, masks, gowns, and sterile gloves, as well as aseptic surgical site preparation and draping. Sterile instruments ***must*** be used.
   5. Manufacturers' recommendations ***must*** be followed for chemical sterilant.
   6. Research protocols that carry a high likelihood of the need for emergency surgery should contain provisions for handling anticipated cases.

B. **Non-Survival Surgeries**: Those surgical procedures where the animal is euthanized before recovery from anesthesia.
   1. It may not be necessary to follow all aseptic techniques, but the instruments and surrounding area should be clean.
   2. Minor surgical procedures that do not penetrate a body cavity or produce substantial impairment (e.g., wound suturing, peripheral vessel cannulation, certain standard agricultural practices) may be performed under less stringent conditions in accordance with standard agricultural practices.

C. **Therapeutic and Emergency Surgeries**
   1. Therapeutic and emergency surgeries (e.g., cesarean section, treatment of bloat, repair of displaced abomasum) often need to be performed in agricultural settings (field surgeries) that are not conducive to rigid asepsis. However, every effort should be made to conduct such surgeries in a sanitary or aseptic manner and to use anesthetics, analgesics and antibiotics commensurate with the risks to the animal's well-being.
   2. These procedures are ***only*** performed by a veterinarian.
   3. Surgical packs and equipment for such events should be prepared and readily available for emergency use.

Post-Surgical Care

Appropriate facilities should be available for animals that are recovering from general anesthesia and major surgery. The following are recommended:

   1. Segregation from other animals until recovery from anesthesia.

2. Provision of a clean and sanitary recovery area.
3. Adequate space, with consideration for physical comfort and well-being of the animal, in a place suitable for recovery from anesthesia without injury (e.g., a room or stall with protective covering on floors and walls).
4. Environmental controls sufficient to ensure maintenance of environmental temperature within the thermoneutral zone and animal temperature the normal range during post-surgical recovery.
5. Trained personnel for post-surgical observation to help ensure a safe recovery. Post-surgical observation should be provided until the animal is fully recovered from anesthesia, ambulatory, and able to return safely to its original housing location.

References

1. Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching, American Dairy Science Association, American Society of Animal Science and Poultry Science Association, 2020.
2. Brown, M.J., P. T. Pearson, and F. N. Tomson. 1993. Guidelines for animal surgery in research and teaching. *Am. J. Vet. Res*. 54:1544-1559.