



**Title:** Analgesic Use

**Policy Number:** 004

**Policy Intent:** The intent of this policy is to describe the use of analgesics at TTU.

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### **1. Purpose**

- A. Researchers, faculty, employees and students must be concerned with the well-being of study animals. Health problems, pain and distress may introduce unwanted variables that can confound study results. Concern for animals also reflects a fundamental ethical principle that animals, regardless of species, should not be subjected to unnecessary pain or distress.

### **2. IACUC Policy**

- A. It is the policy of the IACUC that appropriate sedative, analgesic or anesthetic agents be administered to animals utilized in approved research and teaching protocols according to the accompanying standard operating procedures. Different analgesics may be utilized if approved by the Clinical or Attending Veterinarian.

### **3. Definitions**

- A. Analgesia: Provides pain relief without loss of consciousness.
- B. Sedation: A mild degree of central depression in which the patient is awake but calm. Does not always provide analgesia.
- C. Anesthesia: Temporarily induces loss of sensation with or without loss of consciousness. Does not always provide appropriate analgesia.

### **4. Recognition of Pain**

- A. According to the Animal Welfare Act, a painful procedure is defined as "... any procedure that would reasonably be expected to cause more than slight and momentary pain or distress in a human being." Unless there is evidence to the contrary, the IACUC will assume that a procedure that causes pain in humans will cause pain in animals. Unless you have evidence to the contrary, it is assumed that a procedure or condition painful for humans will also be painful for animals.
- B. Procedures that may cause significant pain or distress to animals (Category D) will be performed with appropriate sedatives, analgesics or anesthetics
- C. The detection of pain in animals relies on monitoring an animal's physiological and behavioral responses.
  - 1) Refer to SOP 061 Pain and Distress for physiological and behavioral responses



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- 2) Chronic pain can be more difficult to recognize because the animal becomes more tolerant of the pain and adjusts its behavioral patterns accordingly to minimize the pain.
- 3) Recognizing post-surgical pain in animals. Post-surgical animal pain poses special problems for researchers, faculty, employees and students and a plan for pain alleviation must be coordinated with the attending or clinical veterinarian. Animal surgery is to be done under general anesthesia. Refer to SOP 020 Surgical Anesthesia

### D. Uncontrolled Pain vs. Controlled Pain

- 1) For research/teaching protocols in which animals will experience pain that is not to be controlled with analgesics, the investigator must justify to the satisfaction of the IACUC, why analgesics may not be used.
- 2) For research/teaching protocols in which animals will experience pain that is to be controlled with analgesics, the investigator will consult with the clinical and/or the attending veterinarian. The veterinarian will recommend analgesics which are appropriate for each species, will recommend appropriate dosages and routes of administration, and will advise the researcher of the expected duration of the analgesic agent so that the researcher will know how often to administer the analgesic.
- 3) Animals that would otherwise experience severe or chronic pain or distress that cannot be relieved will be humanely euthanized at the end of the procedure or, if appropriate, during the procedure.

## 5. Controlling Pain in Animals

### A. The following guidelines may be helpful in relieving unnecessary pain and distress in animals.

- 1) Keep the environment familiar. Animals seem to recover from surgery quicker when housed in familiar environments and handled by familiar persons.
- 2) Maintain a stable environment. Removing excessive noises or other environmental stresses helps reduce anxiety.
- 3) Accustom the animal to laboratory procedures. Fear can be a big component of pain perception. One way to relieve fear and its accompanying stress is to familiarize animals with the routine procedures, such as blood sampling, so they know what to expect.
- 4) Interact with the animal if appropriate based on species. Talking, stroking and petting can reduce restlessness, rapid breathing, increased heart rates and other signs of discomfort.
- 5) Handle the animals appropriately. Animal handling should be firm, consistent and gentle to minimize and control the animal's discomfort.
- 6) The use of drugs to control or relieve pain is an ever changing list; therefore please contact the ACS staff if you have questions or concerns.

### B. Using Analgesics for Pain Relief after Surgical Procedures

- 1) In keeping with generally accepted standards for veterinary care, and the ILAR Guide, the use of analgesics will be required for all major survival surgeries, unless approved based on scientific justification.
- 2) Minor surgical procedures are generally less painful and may not require analgesics. However, all animals recovering from surgery, whether major or minor, must be



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evaluated on an individual basis as many factors such as the amount of tissue manipulation, trauma, etc. contribute to the level of post-operative pain.

- 3) The consideration for the use of analgesics must be indicated on the IACUC protocol. Any request for exemption from this policy should be accompanied by detailed scientific justification indicating that the use of analgesics will compromise the study.

### 6. Categories of Pain (See Pain and Distress Policy 02 for details on Pain Categories)

#### A. United States Department of Agriculture (USDA)

- 1) Category A THERE IS NO USDA CATEGORY A.
- 2) Category B (USDA category B): ANIMALS BEING BRED, CONDITIONED, OR HELD FOR USE IN TEACHING, TESTING, EXPERIMENTS, RESEARCH, OR SURGERY BUT NOT YET USED FOR SUCH PURPOSES.
- 3) Category C (USDA category C): PROJECTS INVOLVING NO MORE THAN MOMENTARY OR SLIGHT PAIN OR DISTRESS WITH NO USE OF PAIN-RELIEVING DRUGS, OR NO PAIN OR DISTRESS.
- 4) Category D (USDA category D): PROJECTS INVOLVING PAIN OR DISTRESS APPROPRIATELY RELIEVED WITH ANESTHETICS, ANALGESICS AND/OR TRANQUILIZER DRUGS OR OTHER METHODS FOR RELIEVING PAIN OR DISTRESS.
- 5) Category E (USDA category E): PROJECTS INVOLVING PAIN OR DISTRESS THAT IS NOT RELIEVED WITH ANESTHETICS, ANALGESICS AND/OR TRANQUILIZER DRUGS OR OTHER METHODS FOR RELIEVING PAIN OR DISTRESS.

### 7. Analgesic Timing, Frequency and Choice

#### A. Timing of Analgesia

- 1) For surgical protocols under general anesthesia, the most effective method of pain management includes the preemptive administration of the analgesic prior to emergence from the general anesthetic.
  - a. As a general rule this involves injecting a systemic analgesic during the pre-anesthetic/induction phase or 15-30 minutes prior to the anticipated recovery time of the animal.
- 2) Since some analgesics depress respiration, it is essential that the patient be adequately monitored during the recovery period.
- 3) The ACS staff is available to discuss an appropriate analgesic protocol.

#### B. How Often to Give the Analgesic

- 1) It is generally recommended that a long-acting analgesic be selected for most procedures, since repeated dosing is often inconvenient, requiring after-hours administration. Sustained release analgesics also require a one time injection which is less stressful for the animal.
- 2) In some instances, when the analgesic is administered prior to general anesthesia recovery, only a single, or no subsequent dose is required, but all animals must be monitored for signs of pain, distress, discomfort, etc., and additional analgesics administered appropriately.
- 3) It is well recognized that there are individual, intra- and interspecies differences in the response to injury and painful stimuli. This policy reflects the current level of



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understanding of pain management and is recommended as an acceptable standard of veterinary care.

- 4) In most instances, the use of published dosages of analgesics, when used appropriately in a particular species will provide acceptable pain relief without undesirable side effects.
- 5) It is most important to monitor all patients receiving pharmacological agents of this category for side effects.
- 6) If any undesirable side effects are noted in any of the animals included in the experiments, it should be reported to the Clinical and/or Attending Veterinarian. This includes both pre-and post-mortem findings. By assisting in monitoring for undesirable side effects, it will help provide better programs for pain management.

### C. Choice of Analgesic Agents

- 1) The analgesic agents, dosages and routes of administration utilized at TTU are identified in a number of different sources including those listed in the reference section.
- 2) An up-to-date listing of all web sites relative to pain is available from Animal Care Services. ACS is always available for consultation on the appropriate choice and use of analgesics.
- 3) The veterinary staff should be consulted regarding your pain management protocol.

## 8. References

### A. Guidelines for the Use of Anesthetics and Analgesic Agents

- *Research Animal Anesthesia, Analgesia and Surgery* (1994), published by Scientists Center for Animal Welfare and edited by Alison C. Smith, DVM, and M. Michael Swindle, DVM.
- *Recognition and Alleviation of Pain and Distress in Laboratory Animals* (1992), compiled by the Committee on Pain and Distress in Laboratory Animals, Institute of Laboratory Animal Resources, Commission on Life Sciences, and the National Research Council; published by National Academy Press.
- *Veterinary Pharmacology and Therapeutics* (1988), published by Iowa State University Press and edited by Nicholas H. Booth and Leslie E. McDonald.
- "Evaluation of a survey of the diplomats of the American College of Laboratory Animal Medicine on use of analgesic agents in animals used in biomedical research," in the *Journal of the American Veterinary Medical Association*, Vol. 209, No.5 (September 1, 1996) by John A.E. Hubbell, DVM, and William W. Muir, DVM.
- Anesthesia and Analgesia in Laboratory Animals. Kohn, Wixson, White, Benson eds. 1997. Academic Press, Orlando FL.
- Laboratory Animal Anesthesia. Second Edition. P.A. Flecknell. 1996. Academic Press, Orlando, FL.
- Formulary for Laboratory Animals. C.T. Hawk and Leary, S.L. 1995. Iowa State Press, Ames, Iowa.
- Veterinary Drug Handbook. D.C. Plumb. 1995. Iowa State Press, Ames, Iowa.