



POLICY

TITLE:	Pain Management
Policy Number:	2014-024
Responsible Department:	Institutional Animal Care and Use Committee
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Approval Date:	8/13/14
Reviewed:	7/12/17; 3/11/2020
Revised:	7/12/17 (Deleted information on commonly used analgesics in favor of consulting w/ AV); 3/11/2020 (wordsmithing)
Legislation:	Animal Welfare Act (Title 9 CFR Subchapter A, Part 2, Subpart C, § 2.31(d)(1)(iv)(A) and (C) and § 2.31 (d)(1)(ix)

Purpose of Policy: To ensure that any animal that may experience more than momentary or slight pain or distress be provided appropriate sedation, analgesia or anesthesia unless there is scientific justification for withholding such agents.

Policy Information: The [Animal Welfare Act](#), the [Guide for the Care and Use of Laboratory Animals](#) and [Public Health Service Policy](#) Sec. 495(a)(2)(A) and (B) each require that animals be provided appropriate relief from procedures that cause more than momentary or slight pain or distress.

Pain is defined by The [International Association for the Study of Pain](#) (IASP) as “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” The IASP also notes that “Pain is always subjective.”

In keeping with the [U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research and Training](#), the Animal Welfare Act and other regulatory and advisory bodies, the following policies will be in effect:

- It should be assumed that, in the absence of evidence to the contrary, procedures that cause pain or distress in humans also cause pain or distress in other animals.
- The Attending Veterinarian has the authority to ensure the provision of adequate sedation, analgesia or anesthesia.
- Procedures that cause more than momentary or slight pain or distress should be performed with appropriate sedation, analgesia or anesthesia.

- A detailed description of how pain or distress will be assessed and how it will be mitigated must appear in the animal care and use protocol application and be approved by the Institutional Animal Care and Use Committee (IACUC).
- For survival surgery, provision of pre- and post-operative analgesia as required by standard veterinary practice must be provided unless there is evidence that the agent would compromise the scientific aspects of the project. Withholding of post-operative analgesia must be approved by the IACUC.
- Neuromuscular blockers may not be used without anesthesia in procedures that may cause more than momentary or slight pain or distress (See IACUC Policy No. 2014-018; Use of Neuromuscular Blocking Agents).
- Animals that would otherwise suffer severe or chronic pain or distress that cannot be relieved should be painlessly euthanized at the end of or during the procedure.
- Personnel shall be properly trained for conducting procedures on live animals.
- Exceptions to the above must be approved by the IACUC.

WesternU's IACUC has adopted the [United States Department of Agriculture's](#) (USDA) pain level classification system described below. Investigators must indicate the pain level for the procedures described in an animal use protocol and rigorous justification must be provided for any animals in Pain Category E. Withholding of analgesia or anesthesia during or following any procedure that may cause more than momentary or slight pain or distress must be approved by the IACUC.

USDA Pain Categories with examples (not all inclusive)

Category C: No more than momentary or slight pain or distress and no use of pain-relieving drugs, or no pain or distress

- Examples:**
1. Handling, weighing, behavioral observation
 2. injections and non-surgical fluid collection
 3. ear punching, tattooing, ear notching
 4. tail biopsy of mice less than 21 days old (maximum sample of 5 mm)
 5. food and water restriction that does not significantly alter animal well-being
 6. infections without objective signs of pain or distress
 7. localized inflammatory conditions without systemic effects
 8. subcutaneous tumors of small-moderate size that adhere to IACUC Policy No. 2014-017, Tumors in Rodents
 9. oral gavage
 10. tissue collection after euthanasia
 11. pain models in which pain can be compensated for by behavioral modification

Category D: Pain or distress appropriately relieved with anesthetics, analgesics and/or tranquilizer drugs or other methods for relieving pain or distress

- Examples:**
1. Surgical procedures with appropriate anesthesia and analgesia
 2. blood or tissue sampling with appropriate anesthesia
 3. physical trauma under anesthesia
 4. transcatheter perfusion under anesthesia

Category E: Pain or distress or potential pain or distress that is not relieved with anesthetics, analgesics and/or tranquilizer drugs or other methods for relieving pain or distress

- Examples:**
1. Studies with death or significant mortality as an endpoint
 2. procedures leading to a significant (> 10%) weight loss

3. inflammatory conditions and microbial infections with significant systemic effects, e.g. fever or shock
4. use of paralyzing agents or immobilizing drugs without anesthesia (See IACUC Policy No. 2014-018, Use of Neuromuscular Blocking Agents)
5. prolonged restraint in conscious animals (See IACUC Policy No. 2014-026, Prolonged Physical Restraint of Unanesthetized Animals)
6. cancer studies involving bones or internal organs
7. infliction of burns or trauma without anesthesia
8. noxious stimuli from which there is no escape

Survival surgery: If for scientific reasons post-operative analgesia cannot be provided, the animals must be listed in Pain Category E. To be effective, analgesics must be administered before the animal emerges from anesthesia. Thus, analgesia must be administered before surgery and as needed during surgery. Minor surgical procedures require at least 24 hours of post-operative analgesia and then as needed thereafter whereas major survival surgeries require at least 48 hours of post-operative analgesia and then as needed if the animal still appears to be in pain (See IACUC Policy No. 2014-025, Survival Surgery on Laboratory Animals). In some cases, multimodal analgesia may be required. Contact the Attending Veterinarian for guidance on the selection and use of analgesics.

Local anesthetics might be indicated in addition to systemic analgesia for procedures that significantly disrupt the skin, e.g. placement of Alzet pumps and catheter exteriorization. However, local anesthetics are not to be used in lieu of systemic analgesics unless scientifically justified and approved by the IACUC.

Pain and Distress in Breeding Colonies: Breeding of genetically altered animals can unexpectedly give rise to phenotypes that appear to be born healthy but later develop symptoms that would require the animals to be placed in Pain Category E. In such cases, the Principal Investigator must submit an amendment to their animal use protocol for evaluation by the IACUC.

Objective Signs of Pain and Distress include, but are not limited to:

- Changes in activity level such as reduced spontaneous motor activity, recumbent position, delayed response to handling, pacing, restlessness or lameness
- Changes in appearance such as hunched position, ruffled fur, decreased grooming, discharge around nose and eyes
- Changes in temperament such as increased aggression, guarding, reluctance to interact
- Vocalizations such as teeth-grinding, chattering, whining, whimpering
- Changes in feeding behavior such as decreased food and water consumption, reduction in body weight, urine, or stool output
- Physiologic changes in heart rate, respiratory rate, blood pressure, body temperature, skin color
- Erythema, swelling, discharge or excessive licking or chewing at or around surgical site

Choice of Pain Medication

There are multiple pain pathways with specialized fibers that relay information about specific types of pain. For example, acute, sharp, piercing pain, such as occurs with inflammation, is carried mainly by thinly myelinated A δ fibers whereas dull, burning, throbbing pain is carried mainly by unmyelinated C fibers. Thus, the type of pain will influence the choice of analgesic.

Opioids exert their analgesic effect through actions on the central nervous system and are most effective against dull, burning, throbbing pain although a high enough dose will mitigate pain from almost any cause. However, the risk of undesirable effects, including animal death, increases significantly with higher doses.

Corticosteroids and non-steroidal antiinflammatory drugs (NSAIDS) exert their effects peripherally on various cytokines and eicosanoids and are more effective against pain due to inflammation. Local anesthetics provide pain relief by blocking fast sodium channels and thus nerve conduction. Thus, the type of pain will influence the choice of analgesic.

Contact the Attending Veterinarian for options, dose and regimen recommendations.

Related Policies: IACUC Policy No. 2014-018, Use of Neuromuscular Blocking Agents; Policy No. 2014-017, Tumors in Rodents; Policy No. 2014-026, Prolonged Physical Restraint in Unanesthetized Animals; Policy No. 2014-025, Survival Surgery on Laboratory Animals