

MANAGING PAIN: ANESTHESIA AND ANALGESIA AGENT GUIDELINES

Pain and distress greater than that induced by a single injection or simple percutaneous blood sampling should be relieved by the use of anesthetics and /or analgesics. It can be difficult to know how much pain an animal is experiencing. Thus most federal regulations emphasize that a procedure that would cause pain in humans should also be expected to cause pain in animals. In these cases, the use of appropriate anesthetics and analgesics for the prevention or relief of pain and distress needs to be considered. If there is a question of whether or not a procedure is painful, the animal should receive the benefit of the doubt and be provided analgesia.

- [The U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research and Training](#) states, “Proper use of animals, including the avoidance and minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals”.
- [The Guide for the Care and Use of Laboratory Animals](#) states, “The proper use of anesthetics and analgesics in research animals is an ethical and scientific imperative. In general, unless the contrary is known or established, it should be assumed that procedures that cause pain in humans also cause pain in animals”.
- The [Animal Welfare Act as Amended \(7 USC, 2131-2156\)](#) requires that institutional veterinarians provide guidelines regarding the use of tranquilizers, anesthetics, analgesics and euthanasia agents”.

A number of studies have shown that preemptive analgesia, that is, managing pain before it begins, can hold significant benefits for the animal. Analgesia is more effective when given before pain is induced. Preemptive analgesia should be used whenever possible.

In an effort to provide guidance to Purdue University investigators and staff regarding proper use of anesthetics and analgesics, the Purdue University Laboratory Animal Program (LAP) has adopted the guidelines developed and provided by the National Institutes of Health (NIH) for preanesthesia, anesthesia, analgesia, sedation, tranquilization, and restraint of laboratory animal species.

By linking to the NIH site at <http://oacu.od.nih.gov/ARAC/tablesbyspecies.pdf>, species-specific information and dosage recommendations for select anesthetic and analgesic agents can be found. Should you find the link unavailable, specific information lacking or require other assistance in selecting suitable agents, dosages, routes of administration or training for techniques with which you are not familiar, the LAP veterinary staff is available for consultation at 494-9163.

The information presented at this site is based upon data in the literature and the professional judgement of veterinarians on the NIH Animal Care and Use Committee.

The LAP has reviewed this link and the doses listed are consistent with those found in the literature. It should be understood that doses published in the literature are often variable. Dosage charts for anesthetics and analgesics provide an amount or range of an agent and dosing interval that would be expected to produce a desired level of anesthesia or analgesia under standard conditions. Doses for agents may vary greatly depending on species, strain, sex, age, physiologic status of the animal, and the level of anesthesia/analgesia desired. As such, dosage charts must be used with this principle in mind, animals closely and carefully monitored for signs of pain and doses tailored to meet each situation. Specific guidance is also available from LAP veterinarians based on their experience.

ALTHOUGH THE NIH LISTING AND OTHER ON-LINE AND REFERENCE RESOURCES PROVIDE A READY SOURCE OF INFORMATION ON DRUG DOSES, INDIVIDUALS WITHOUT PRIOR EXPERIENCE AND / OR SPECIFIC TRAINING WITH PARTICULAR AGENTS SHOULD CONTACT THE LAP FOR ASSISTANCE.

Additional agents might be available for use in a particular species. Please contact LAP for additional information if a particular agent you are interested in using is not listed.

In addition to the many references that can be found in the Purdue University and School of Veterinary Medicine libraries, the LAP maintains a number of textbooks and references from the laboratory animal literature. References available at the LAP office include:

- Formulary for Laboratory Animals (Hawk & Leary, 1999)
- Anesthesia and Analgesia of Laboratory Animals (Kohn et al., 1997)
- Laboratory Animal Anesthesia (Flecknell, 1996)
- Handbook of Veterinary Pain Management (Gayner & Muir, 2002)
- Handbook of Veterinary Anesthesia (Muir et al., 2000)
- Anesthesia and Analgesia (Veterinary Clinics of North America, Exotic Animal Practice, 2001)
- Anesthesia and Sedative Techniques for Aquatic Animals (Ross & Ross, 1999)

Information on the use of drugs for research and teaching animals can also be viewed via the University of Minnesota's [Guidelines for the Use of Anesthetics, Analgesics and Tranquilizers in Laboratory Animals](#) and [Veterinary Formulary](#)