

# Fundamental Points in Perioperative Pain Management<sup>1</sup>



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1. **All surgery causes pain.**
  - This is because surgical trauma and the resulting inflammatory process activate nociceptors and lead to peripheral and central sensitization.
2. **A national survey in 2001<sup>2,3</sup> indicated that most Canadian veterinarians were not providing adequate perioperative analgesia to dogs and cats.**
  - Strong opioids (hydromorphone, oxymorphone and morphine), alpha-2 agonists, and local anaesthetics were underused.
  - Weak opioids (meperidine, butorphanol) were overused, and dosing intervals were too long to provide adequate analgesia postoperatively.
  - Only a minority of veterinarians were using multimodal analgesia.
3. **Multimodal analgesic therapy (using several classes of analgesic drugs) is necessary for most surgical procedures.**
  - Using a single class of analgesic drug may be effective for minor surgical procedures. However, multimodal therapy is required for more painful procedures (e.g., ovariohysterectomy, orthopedic surgery).
4. **Five classes of analgesic drugs are used perioperatively.**
  - **Opioids** produce analgesia and reduce anaesthetic requirements. They are the safest and most effective class of analgesic drugs for both cats and dogs. Butorphanol is a weak analgesic, has a very short duration of action (1-2 hours), and is used to manage mild pain. Morphine and hydromorphone are stronger analgesics, have a longer duration of action (3-4 hours), and are used to manage moderate to severe pain.
  - **Alpha-2 agonists** (e.g., xylazine, dexmedetomidine) produce sedation, analgesia, and muscle relaxation, and reduce anaesthetic requirements. Alpha-2 agonists also potentiate the effects of other analgesic drugs and reduce the neuroendocrine response to surgical trauma.
  - **Dissociative anaesthetics** (e.g., ketamine) produce anaesthesia and inhibit the development of central sensitization. Subanaesthetic doses of these drugs can be used in combination with opioids to manage moderate to severe postoperative pain.
  - **Local anaesthetics** produce complete sensory blockade and prevent the development of central sensitization. They reduce intraoperative requirements for anaesthetic drugs and postoperative requirements for analgesic drugs.
  - **Nonsteroidal anti-inflammatory drugs (NSAIDs)** reduce the inflammatory response associated with surgical trauma and attenuate development of peripheral sensitization. They have a relatively long duration of action (12–24 hours), and can be given alone or in combination with opioids. NSAIDs are usually given postoperatively and can dramatically improve analgesia when frequent dosing with opioids is difficult.
5. **Analgesic drugs are needed preoperatively, intraoperatively, and postoperatively.**
  - This is because most injectable and inhalational anaesthetic drugs simply produce unconsciousness and do not substantially alter nociceptive processing. If analgesic drugs are not given preoperatively, unnecessarily high doses of anaesthetic drugs are required and pain is more difficult to manage postoperatively.
6. **Proper analgesia promotes the quickest return to full health.**
  - This is because the patient is not distressed, does not lick the wound, and sleeps, eats, and drinks normally. These, in turn, facilitate healing and reduce the likelihood of infection at the surgical site. Most animals need pain control for several days postoperatively.
7. **Good surgical technique does not remove the need for perioperative analgesia.**
  - Analgesics should be given preoperatively, intraoperatively, and postoperatively. However, using a minimally traumatic surgical technique is a very effective way to limit activation and sensitization of the nociceptive pathways, and to reduce pain postoperatively.

1 Lemke KA. Understanding the pathophysiology of perioperative pain. *Can Vet J* 2004; 45:405-412.

2 Hewson CJ, Dohoo IR, Lemke KA. Perioperative use of analgesics in dogs and cats by Canadian veterinarians in 2001. *Can Vet J* 2006; 47:352-359.

3 Hewson CJ, Dohoo IR, Lemke KA. Factors affecting the use of postincisional analgesics in dogs and cats by Canadian veterinarians in 2001. *Can Vet J* 2006;47:453-459.

