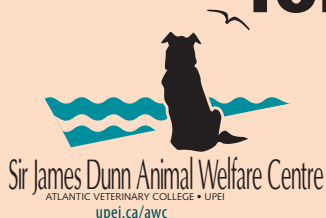


Examples of Anaesthetic and Pain Management Protocols for Healthy Cats and Dogs*



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Sites of Action of Anaesthetic and Analgesic Drugs

PERCEPTION

To alter perception:

- Alpha-2 agonists
- Phenothiazines
- Benzodiazepines
- Opioids
- Injectable anaesthetics
- Inhalational anaesthetics

SYNAPTIC TRANSMISSION AND MODULATION

To inhibit central sensitization:

- Alpha-2 agonists
- Opioids
- NMDA antagonists (ketamine)
- Nonsteroidal anti-inflammatory drugs (NSAIDs)

IMPULSE CONDUCTION

To inhibit impulse conduction directly and central sensitization indirectly:

- Local anaesthetics

SIGNAL TRANSDUCTION

To inhibit peripheral sensitization:

- Steroidal anti-inflammatories
- NSAIDs

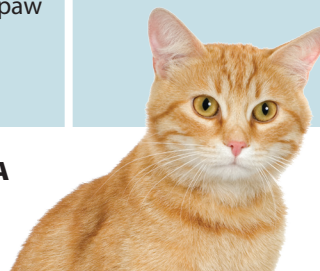
Diagram based on
*Pain Management for the
Small Animal Practitioner.*
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***The CVMA recognizes that there are acceptable alternative protocols.**

CATS



SURGICAL PROCEDURE	PREOPERATIVE MANAGEMENT	INTRAOPERATIVE MANAGEMENT	POSTOPERATIVE MANAGEMENT ¹	COMMENTS ²
CASTRATION (Protocol 1)	Premedication • Acepromazine: 0.1-0.2 mg/kg, IM • Butorphanol: 0.2-0.4 mg/kg, IM	Induction and maintenance • Ketamine: 10-15 mg/kg, IM	• Ketoprofen: 2.0 mg/kg, SC immediately after recovery from anaesthesia	Mild pain
CASTRATION (Protocol 2)	Premedication • Dexmedetomidine: 0.008-0.012 mg/kg, IM • Butorphanol: 0.2-0.4 mg/kg, IM	Induction and Maintenance • Ketamine: 5-10 mg/kg, IM • Testicular block 2.0% Lidocaine: 0.1-0.2 ml/testicle Do not exceed a total dose of 8 mg/kg.	• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia	Mild pain Neural blockade reduces anaesthetic requirements and improves analgesia.
OVARIO-HYSTERECTOMY (Protocol 1)	Premedication • Acepromazine: 0.1-0.2 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM	Induction • Thiopental: 8-12 mg/kg, IV to effect Maintenance • Isoflurane: 1.5-2.0%	• Ketoprofen: 2.0 mg/kg, SC immediately after recovery from anaesthesia • Ketoprofen: 1.0 mg/kg, PO once daily for 2-4 days	Moderate pain Some patients will require opioids postoperatively.
OVARIO-HYSTERECTOMY (Protocol 2)	Premedication • Dexmedetomidine: 0.008-0.012 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM • ± Glycopyrrolate: 0.01 mg/kg, IM	Induction • Thiopental: 4-6 mg/kg, IV to effect Maintenance • Isoflurane: 1.0-1.5%	• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia • Meloxicam: 0.05 mg/kg, PO once daily for 2-4 days	Moderate pain Some patients will require opioids postoperatively.
DENTISTRY WITH AN UPPER CANINE EXTRACTION	Premedication • Acepromazine: 0.1-0.2 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM	Induction • Propofol: 4-6 mg/kg, IV to effect Maintenance • Isoflurane: 1.5-2.0% • Infraorbital nerve block 0.5% Bupivacaine: 0.1-0.2 ml Do not exceed a total dose of 2 mg/kg.	• Ketoprofen: 2.0 mg/kg, SC immediately after recovery from anaesthesia • Ketoprofen: 1.0 mg/kg, PO once daily for 2-4 days	Moderate pain Neural blockade reduces anaesthetic requirements and improves analgesia. Some patients will require opioids postoperatively.
ONYCHECTOMY Consider surgery only if other approaches fail to prevent cat from using claws destructively, or when zoonotic risk exists. <i>Onychectomy</i> (Declawing) of the Domestic Feline www.canadianveterinarians.net	Premedication • Dexmedetomidine: 0.008-0.012 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM • ± Glycopyrrolate: 0.01 mg/kg, IM	Induction • Propofol: 2-3 mg/kg, IV to effect Maintenance • Isoflurane: 1.0-1.5% • Digital nerve block 0.5% Bupivacaine: 0.3-0.6 ml/paw Do not exceed a total dose of 2 mg/kg.	• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia • Meloxicam: 0.05 mg/kg, PO once daily for 2-4 days	Moderate pain Neural blockade reduces anaesthetic requirements and improves analgesia. Most patients will require opioids postoperatively.



SOME OF THESE DRUGS ARE NOT APPROVED FOR USE IN CATS IN CANADA

¹ Another NSAID approved for use in cats can be substituted for ketoprofen or meloxicam.

² Severity of pain varies with the individual animal and with the degree of surgical trauma and inflammation.

DOGS



SURGICAL PROCEDURE	PREOPERATIVE MANAGEMENT	INTRAOPERATIVE MANAGEMENT	POSTOPERATIVE MANAGEMENT ¹	COMMENTS ²
CASTRATION (Protocol 1)	Premedication • Acepromazine: 0.05-0.1 mg/kg, IM • Butorphanol: 0.2-0.4 mg/kg, IM	Induction • Propofol: 4-6 mg/kg, IV to effect Maintenance • Isoflurane: 1.5-2.0%	• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia • Meloxicam: 0.1 mg/kg, PO once daily for 2-4 days	Mild pain
CASTRATION (Protocol 2)	Premedication • Dexmedetomidine: 0.004-0.006 mg/kg, IM • Butorphanol: 0.2-0.4 mg/kg, IM • ± Glycopyrrolate: 0.005-0.01 mg/kg, IM	Induction • Propofol: 2-3 mg/kg, IV to effect Maintenance • Isoflurane: 1.0-1.5% • Testicular block 2.0% Lidocaine: 0.5-1.0 ml/testicle - Do not exceed a total dose of 8 mg/kg.	• Carprofen: 4.0 mg/kg, SC immediately after recovery from anaesthesia • Carprofen: 4.0 mg/kg, PO once daily for 2-4 days	Mild pain Neural blockade reduces anaesthetic requirements and improves analgesia.
OVARIO-HYSTERECTOMY (Protocol 1)	Premedication • Acepromazine: 0.05-0.1 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM	Induction • Thiopental: 8-12 mg/kg, IV to effect Maintenance • Isoflurane: 1.5-2.0%	• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia • Meloxicam: 0.1 mg/kg, PO once daily for 2-4 days	Moderate pain Some patients will require opioids postoperatively.
OVARIO-HYSTERECTOMY (Protocol 2)	Premedication • Dexmedetomidine: 0.004-0.006 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM • ± Glycopyrrolate: 0.005-0.01 mg/kg, IM	Induction • Thiopental: 4-6 mg/kg, IV to effect Maintenance • Isoflurane: 1.0-1.5%	• Carprofen: 4.0 mg/kg, SC immediately after recovery from anaesthesia • Carprofen: 4.0 mg/kg, PO once daily for 2-4 days	Moderate pain Some patients will require opioids postoperatively.
DENTISTRY WITH AN UPPER CANINE EXTRACTION	Premedication • Hydromorphone: 0.05-0.1 mg/kg, IM	Induction • Diazepam: 0.2-0.3 mg/kg, IV • Ketamine: 4-6 mg/kg, IV Maintenance • Isoflurane: 1.0-2.0% • Infraorbital nerve block 0.5% Bupivacaine: 0.5-1.0 ml - Do not exceed a total dose of 2 mg/kg.	• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia • Meloxicam: 0.1 mg/kg, PO once daily for 2-4 days	Moderate pain Neural blockade reduces anaesthetic requirements and improves analgesia. Some patients will require opioids postoperatively.
CRUCIATE REPAIR	Premedication • Hydromorphone: 0.05-0.1 mg/kg, IM	Induction • Diazepam: 0.2-0.3 mg/kg, IV • Ketamine: 4-6 mg/kg, IV Maintenance • Isoflurane: 1.0-2.0% • Epidural anaesthesia (lumbosacral) 0.5% Bupivacaine: 1.0 ml/5 kg 2.5% Morphine: 0.2 mg/kg	• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia • Meloxicam: 0.1 mg/kg, PO once daily for 4-6 days	Moderate pain Neural blockade reduces anaesthetic requirements and improves analgesia. Most patients will require opioids postoperatively.

SOME OF THESE DRUGS ARE NOT APPROVED FOR USE IN DOGS IN CANADA

¹ Another NSAID approved for use in dogs can be substituted for meloxicam or carprofen.

² Severity of pain varies with the individual animal and with the degree of surgical trauma and inflammation.

