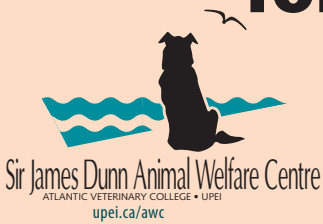


# Examples of Anaesthetic and Pain Management Protocols for Healthy Cats and Dogs\*



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DES MÉDECINS VÉTÉRINAIRES  
canadianveterinarians.net

## 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

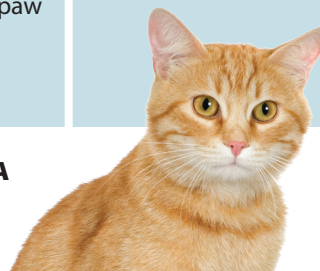


SURGICAL PROCEDURE	PREOPERATIVE MANAGEMENT	INTRAOPERATIVE MANAGEMENT	POSTOPERATIVE MANAGEMENT <sup>1</sup>	COMMENTS <sup>2</sup>
<b>CASTRATION</b> (Protocol 1)	<b>Premedication</b> <ul style="list-style-type: none"> <li>• Acepromazine: 0.1-0.2 mg/kg, IM</li> <li>• Butorphanol: 0.2-0.4 mg/kg, IM</li> </ul>	<b>Induction and maintenance</b> <ul style="list-style-type: none"> <li>• Ketamine: 10-15 mg/kg, IM</li> </ul>	<ul style="list-style-type: none"> <li>• Ketoprofen: 2.0 mg/kg, SC immediately after recovery from anaesthesia</li> </ul>	Mild pain
<b>CASTRATION</b> (Protocol 2)	<b>Premedication</b> <ul style="list-style-type: none"> <li>• Dexmedetomidine: 0.008-0.012 mg/kg, IM</li> <li>• Butorphanol: 0.2-0.4 mg/kg, IM</li> </ul>	<b>Induction and Maintenance</b> <ul style="list-style-type: none"> <li>• Ketamine: 5-10 mg/kg, IM</li> <li>• Testicular block</li> <li>• 2.0% Lidocaine: 0.1-0.2 ml/testicle</li> <li>Do not exceed a total dose of 8 mg/kg.</li> </ul>	<ul style="list-style-type: none"> <li>• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia</li> </ul>	Mild pain Neural blockade reduces anaesthetic requirements and improves analgesia.
<b>OVARIO-HYSTERECTOMY</b> (Protocol 1)	<b>Premedication</b> <ul style="list-style-type: none"> <li>• Acepromazine: 0.1-0.2 mg/kg, IM</li> <li>• Hydromorphone: 0.05-0.1 mg/kg, IM</li> </ul>	<b>Induction</b> <ul style="list-style-type: none"> <li>• Thiopental: 8-12 mg/kg, IV to effect</li> </ul> <b>Maintenance</b> <ul style="list-style-type: none"> <li>• Isoflurane: 1.5-2.0%</li> </ul>	<ul style="list-style-type: none"> <li>• Ketoprofen: 2.0 mg/kg, SC immediately after recovery from anaesthesia</li> <li>• Ketoprofen: 1.0 mg/kg, PO once daily for 2-4 days</li> </ul>	Moderate pain Some patients will require opioids postoperatively.
<b>OVARIO-HYSTERECTOMY</b> (Protocol 2)	<b>Premedication</b> <ul style="list-style-type: none"> <li>• Dexmedetomidine: 0.008-0.012 mg/kg, IM</li> <li>• Hydromorphone: 0.05-0.1 mg/kg, IM</li> <li>• ± Glycopyrrolate: 0.01 mg/kg, IM</li> </ul>	<b>Induction</b> <ul style="list-style-type: none"> <li>• Thiopental: 4-6 mg/kg, IV to effect</li> </ul> <b>Maintenance</b> <ul style="list-style-type: none"> <li>• Isoflurane: 1.0-1.5%</li> </ul>	<ul style="list-style-type: none"> <li>• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia</li> <li>• Meloxicam: 0.05 mg/kg, PO once daily for 2-4 days</li> </ul>	Moderate pain Some patients will require opioids postoperatively.
<b>DENTISTRY WITH AN UPPER CANINE EXTRACTION</b>	<b>Premedication</b> <ul style="list-style-type: none"> <li>• Acepromazine: 0.1-0.2 mg/kg, IM</li> <li>• Hydromorphone: 0.05-0.1 mg/kg, IM</li> </ul>	<b>Induction</b> <ul style="list-style-type: none"> <li>• Propofol: 4-6 mg/kg, IV to effect</li> </ul> <b>Maintenance</b> <ul style="list-style-type: none"> <li>• Isoflurane: 1.5-2.0%</li> <li>• Infraorbital nerve block</li> <li>• 0.5% Bupivacaine: 0.1-0.2 ml</li> <li>Do not exceed a total dose of 2 mg/kg.</li> </ul>	<ul style="list-style-type: none"> <li>• Ketoprofen: 2.0 mg/kg, SC immediately after recovery from anaesthesia</li> <li>• Ketoprofen: 1.0 mg/kg, PO once daily for 2-4 days</li> </ul>	Moderate pain Neural blockade reduces anaesthetic requirements and improves analgesia. Some patients will require opioids postoperatively.
<b>ONYCHECTOMY</b> Consider surgery only if other approaches fail to prevent cat from using claws destructively, or when zoonotic risk exists. <i>Onychectomy (Declawing) of the Domestic Feline</i> <a href="http://www.canadianveterinarians.net">www.canadianveterinarians.net</a>	<b>Premedication</b> <ul style="list-style-type: none"> <li>• Dexmedetomidine: 0.008-0.012 mg/kg, IM</li> <li>• Hydromorphone: 0.05-0.1 mg/kg, IM</li> <li>• ± Glycopyrrolate: 0.01 mg/kg, IM</li> </ul>	<b>Induction</b> <ul style="list-style-type: none"> <li>• Propofol: 2-3 mg/kg, IV to effect</li> </ul> <b>Maintenance</b> <ul style="list-style-type: none"> <li>• Isoflurane: 1.0-1.5%</li> <li>• Digital nerve block</li> <li>• 0.5% Bupivacaine: 0.3-0.6 ml/paw</li> <li>Do not exceed a total dose of 2 mg/kg.</li> </ul>	<ul style="list-style-type: none"> <li>• Meloxicam: 0.2 mg/kg, SC immediately after recovery from anaesthesia</li> <li>• Meloxicam: 0.05 mg/kg, PO once daily for 2-4 days</li> </ul>	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**

<sup>1</sup> Another NSAID approved for use in cats can be substituted for ketoprofen or meloxicam.

<sup>2</sup> 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 <sup>1</sup>	COMMENTS <sup>2</sup>
<b>CASTRATION</b> (Protocol 1)	<b>Premedication</b> • Acepromazine: 0.05-0.1 mg/kg, IM • Butorphanol: 0.2-0.4 mg/kg, IM	<b>Induction</b> • Propofol: 4-6 mg/kg, IV to effect <b>Maintenance</b> • 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
<b>CASTRATION</b> (Protocol 2)	<b>Premedication</b> • Dexmedetomidine: 0.004-0.006 mg/kg, IM • Butorphanol: 0.2-0.4 mg/kg, IM • ± Glycopyrrolate: 0.005-0.01 mg/kg, IM	<b>Induction</b> • Propofol: 2-3 mg/kg, IV to effect <b>Maintenance</b> • 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.
<b>OVARIO-HYSTERECTOMY</b> (Protocol 1)	<b>Premedication</b> • Acepromazine: 0.05-0.1 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM	<b>Induction</b> • Thiopental: 8-12 mg/kg, IV to effect <b>Maintenance</b> • 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.
<b>OVARIO-HYSTERECTOMY</b> (Protocol 2)	<b>Premedication</b> • Dexmedetomidine: 0.004-0.006 mg/kg, IM • Hydromorphone: 0.05-0.1 mg/kg, IM • ± Glycopyrrolate: 0.005-0.01 mg/kg, IM	<b>Induction</b> • Thiopental: 4-6 mg/kg, IV to effect <b>Maintenance</b> • 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.
<b>DENTISTRY WITH AN UPPER CANINE EXTRACTION</b>	<b>Premedication</b> • Hydromorphone: 0.05-0.1 mg/kg, IM	<b>Induction</b> • Diazepam: 0.2-0.3 mg/kg, IV • Ketamine: 4-6 mg/kg, IV <b>Maintenance</b> • 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.
<b>CRUCIATE REPAIR</b>	<b>Premedication</b> • Hydromorphone: 0.05-0.1 mg/kg, IM	<b>Induction</b> • Diazepam: 0.2-0.3 mg/kg, IV • Ketamine: 4-6 mg/kg, IV <b>Maintenance</b> • 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**

<sup>1</sup> Another NSAID approved for use in dogs can be substituted for meloxicam or carprofen.  
<sup>2</sup> Severity of pain varies with the individual animal and with the degree of surgical trauma and inflammation.