Can I use methadone in cats?

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Why choose to use methadone in cats?

- Efficacious analgesia to manage moderate to severe pain
- Flexibility to titrate dose to achieve optimal analgesia in every patient
- 4 hour duration of action
Should I be concerned about opioid related side effects in cats?

dysphoria or mania
Methadone side effects are unlikely in cats & dogs when:

- Opioid dose
- Requirement for analgesia or pain level

There is robust clinical evidence to support this statement.
Comparison of perioperative analgesic efficacy between methadone and butorphanol in cats

Leon N. Warne, BVMS; Thierry Beths, DMV, PhD; Merete Holm, DVM; Sébastien H. Bauquier, DMV, DACVA

Cats undergoing OVH
0.6 mg/kg methadone or 0.4 mg/kg butorphanol SC* (*methadone is not licensed SC in cats)

mg/lb), SC) or methadone (0.6 mg/kg [0.27 mg/lb], SC), respectively, in combination with acepromazine (0.02 mg/kg [0.01 mg/lb], SC). Anesthesia was induced with propofol (IV) and maintained with isoflurane in oxygen. A multidimensional composite scale was used to conduct pain assessments prior to premedication and 5, 20, 60, 120, 180, 240, 300, and 360 minutes after extubation or until rescue analgesia was given. Groups were compared to evaluate isoflurane requirement, propofol requirement, pain scores, and requirement for rescue analgesia.

Results—Propofol and isoflurane requirements and preoperative pain scores were not different between groups. During recovery, dysphoria prevented pain evaluation at 5 minutes. Pain scores at 20 minutes were significantly lower in the methadone group, and 6 of 10 cats in the butorphanol group received rescue analgesia, making subsequent pain score comparisons inapplicable. After 6 hours, only 3 of 12 cats in the methadone group had received rescue analgesia.

Conclusions and Clinical Relevance—In the present study, methadone appeared to be a better postoperative analgesic than butorphanol and provided effective analgesia for 6 hours following ovariohysterectomy in most cats. (J Am Vet Med Assoc 2013;243:844–850)
Cats undergoing OVH or castration methadone 0.5 mg/kg, butorphanol 0.4 mg/kg or buprenorphine 20 µg/kg IM

No difference in pain scores between groups
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**Objective**—To compare the perioperative analgesic effect between methadone and butorphanol in cats.

**Design**—Randomized controlled clinical trial.

**Animals**—22 healthy cats

**Procedures**—Cats anesthetized with isoflurane in oxygen. A multidimensional composite scale was used to conduct pain assessments prior to premedication and 5, 20, 60, 120, 180, 240, 300, and 360 minutes after extubation or until rescue analgesia was given. Groups were compared to evaluate isoflurane requirement, propofol requirement, pain scores, and requirement for rescue analgesia.

**Results**—Propofol and isoflurane requirements and preoperative pain scores were not different between groups. During recovery, dysphoria prevented pain evaluation at 5 minutes. Pain scores at 20 minutes were significantly lower in the methadone group, and 6 of 10 cats in the butorphanol group required rescue analgesia, with lower postoperative pain scores.

**Conclusions and Clinical Implications**—Better postoperative analgesia was observed for methadone prior to neutering.

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**Why is there a disparity in results?**

**Take home message: methadone was well tolerated in all cats with no adverse behavioural or physiological effects**
Using methadone for premedication

- Efficacious analgesia during surgery
- Less sedation than occurs in dogs
- Excitation is very unlikely when clinically appropriate doses are administered
- SPC states IM administration
Intra-operative effects of methadone in cats

• Intra-operative analgesia
• Expect to see a reduction in required [isoflurane] or [sevoflurane]
• This effect is less profound than occurs in dogs
0.3 mg/kg methadone IV
25% reduction in [sevoflurane] for the first 30 minutes
7% reduction in [sevoflurane] 2 hours later
Post-operative effects of methadone in cats

- Efficacious analgesia
- Less sedation than in dogs
- Pupil dilation is evident for 4-5 hours
- Occasionally salivation can occur
  – ? associated with nausea
Cat following ureteral stent placement after 0.3 mg/kg methadone IV
Decision making
Decision making

• Methadone is a full μ agonist
• Greater analgesic efficacy than buprenorphine
• Buprenorphine is very effective in cats for mild-moderate pain
• Buprenorphine is also very well tolerated in cats and has a 6 hour duration of action
Moderate to severe pain
1st 12-24 hours after surgery
- e.g. orthopaedic surgery
- trauma
- invasive soft tissue surgery

Mild to moderate pain
- e.g. ovariohysterectomy
- castration
- soft tissue tumour removal
- transition cats from methadone to buprenorphine 24 hours after invasive surgery
Can I give methadone by the OTM route?

- OTM drug administration is non invasive
- OTM methadone has been investigated in cats
Plasma concentrations and behavioral, antinociceptive, and physiologic effects of methadone after intravenous and oral transmucosal administration in cats

Tatiana H. Ferreira, MV, MSc; Marlis L. Rezende, DVM, PhD; Khursheed R. Mama, DVM; Susan F. Hudachek, PhD; Antonio J. A. Aguiar, MV, PhD

Objective—To evaluate the plasma concentrations, behavioral, and physiologic effects of methadone administered via oral transmucosal (OTM) and intravenous (IV) routes in cats.

Animals—8 healthy, sedated, and anesthetized domestic short-haired cats weighing 2.67 ± 0.49 kg

Procedures—Methadone was administered intraocularly, jugular vein, or orally to each cat. Blood samples were collected at predetermined time points, and plasma concentrations were determined via radioimmunoassay and evaluated statistically.

Results—Plasma concentrations of methadone were detected rapidly after administration via either route. Peak concentration was detected 2 hours after OTM administration and 10 minutes after IV administration. Mean ± SD peak concentration was lower after OTM administration (81.2 ± 14.5 ng/mL) than after IV administration (112.9 ± 28.5 ng/mL). Sedation was greater and lasted longer after OTM administration. Antinociceptive effects were detected 10 minutes after administration in both groups; these persisted ≥ 2 hours after IV administration and ≥ 4 hours after OTM administration.

Conclusions and Clinical Relevance—Despite lower mean peak plasma concentrations, duration of antinociceptive effects of methadone was longer after OTM administration than after IV administration. Methadone administered via either route may be useful for perioperative pain management in cats. (Am J Vet Res 2013;74:764–771)
Clinical data on the use of OTM methadone are lacking

• Studies are in progress
• Comfortan preparation contains a preservative and is unpalatable to cats
• Use IM or IV administration in preference to OTM
Analgesia from IV & IM buprenorphine was greater than OTM or SC buprenorphine intramuscular, subcutaneous or oral transmucosal buprenorphine administered to cats undergoing ovariohysterectomy

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Conclusions

• Use methadone in cats to treat moderate to severe pain
  – efficacious analgesia
  – flexibility to titrate to effect

• Dose 0.2-0.4 mg/kg every 4 hours

• Well tolerated with few side effects