

Secrets to Improve Quality-of-Life For Pets with Cancer

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Balance Quality vs. Quantity







Address What Your Clients Fear!



Unspoken Fears







Know the Commandments





The First Commandment

■ *Don't Let them Hurt!*





Analgesia



Analgesia



The Second Commandment

- Don't Let them Vomit (or have diarrhea)!



Prevention



The Second Commandment

Mirtazapine ODT

Metoclopramide Motility!

Ondansetron ODT

Cerenia™
(maropitant citrate)
Injectable Solution



Antiemetic

Cerenia™
(maropitant citrate)
Tablets

Cerenia™
(maropitant citrate)
Injectable Solution



Cerenia or Ondansetron ODT

Indications



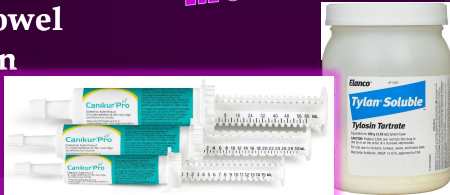
Diarrhea

■ Small Bowel

- Tylosin (11 mg/kg tid, PO)
- Fiber
- Pre- Probiotic

■ Large Bowel


- Tylosin
- Fiber



Metronidazole

Diarrhea



Canikur pro paste: Blend of Prebiotic, Probiotic & Absorbent Which Supports the Natural Intestinal Flora. 

The Third Commandment

■ *Don't Let them Starve!*



Prevention 

If They Just Won't Eat....

■ Enhance Appetite


- Cyproheptadine
-2 mg q12-24 hr
- Entyce (Capromorelin)
-2 mg/kg q24hrs
- Mirtazapine ODT
-0.25-0.5 mg/kg/day



J Feline Med Surg 2015 Jul 30.



■ Selective ghrelin receptor agonist.

- Mimics ghrelin "hunger hormone"
- Ghrelin binds to hypothalamic receptors, triggers appetite. 

Appetite, Pain & Nausea



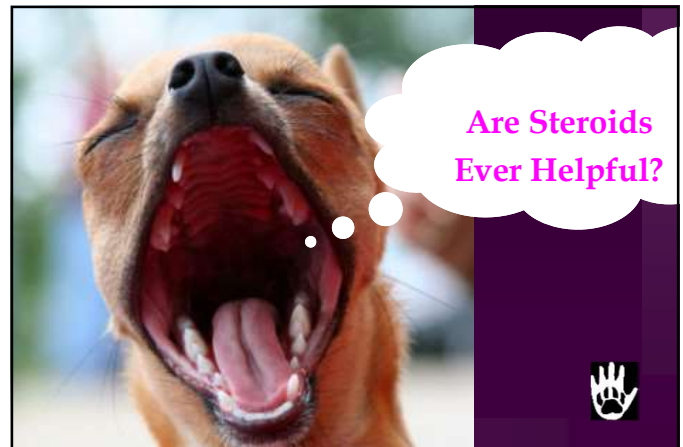
Curr Med Chem.
2014 21(17):1923-30





J Am Vet Med Assoc. 2005 5;226(8):1354

- **Clients Believe ~50% of Pets with Cancer are in Pain**
 - **Prevention is Vital**
 - ❖ **Comfort Always**
 - ❖ **Acupuncture Helpful**
 - ❖ **NSAID's, Opiates Not Evil**



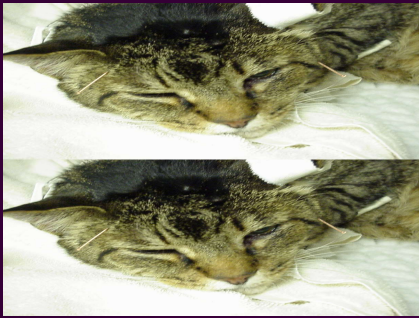
Perioperative Single Dose Systemic Dexamethasone for Postoperative Pain

- **Dexamethasone superior to placebo for pain at rest**
- **Opioid consumption decreased**
- **Preoperative more consistent analgesic vs intraoperative**
- **0.2 mg/kg IV**

Anesthesiology 2011



NCI Documented, Endorsed



Local
Anesthesia



Topical Analgesia!



Postop EMLA vs lidocaine infiltr. after inguinal herniotomy in children.

- A controlled, randomised trial
 - Topical EMLA postoperative analgesia comparable to infiltration with 1% lidocaine

– Reg Anesth Pain Med. 2009;34(2):106-9.

J Feline Med Surg. 2006 Apr;8(2):141-4.

Adverse effects of EMLA. “EMLA does appear to be safe in clinically ill cats”

Commandments

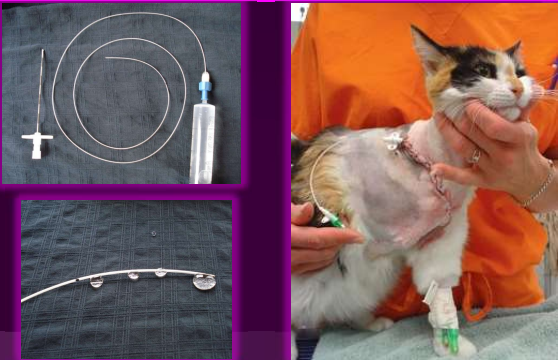
- Local Nerve Blocks (Cats 0.25-0.5 mg/kg)
 - Bupivocaine (4-6 hr)
 - Lidocaine (1-2 hr)
 - Bicarbonate
 - ✓ Eliminates Acidity
 - ✓ Reduces Pain After Injection



Mandibular Block



Soaker Catheter



Soaker Catheter

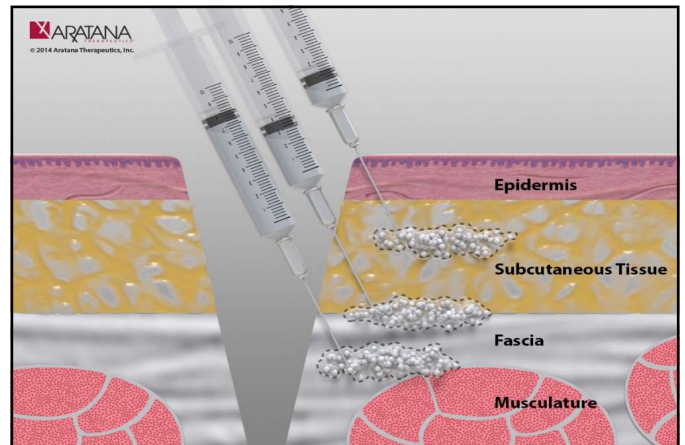
■ 8 Fr Red Feeding Tube

- **Seal:** Hot Hemostat
- **Make:** Tiny Holes
- **Place:** Wound
- **Infuse:** Lidocaine
 - ❖ Fe: 0.005 mg/kg/min
 - 0.15-0.25 mg/kg/30min
 - ❖ K9: 0.05 mg/kg/min or
 - 3 mg/kg/15 min



Local Anesthesia

nocita
(bupivacaine liposome injectable suspension)



NSAIDS



Kitty Pain Meds: NSAIDS

■ Nonselective COX inhibitors

- Equally inhibit COX-1, COX-2:
 - GI ulceration, anorexia, vomiting, diarrhea, renal and liver

■ Selective COX-2 inhibitors

- Greater safety margin?



Robenacoxib (Onsior)

- FDA-approved for control of postop pain and inflammation
 - 3 hr half life in the blood, >24 hrs in inflamed tissue in cats
 - Selective COX-2 inhibitor



Meloxicam (Metacam)

- FDA-approved for control of postop pain and inflammation
 - Long half life in the blood, central compartment
 - COX-1 & COX-2 inhibitor



Dosages of NSAIDs in Cats

Recommended Doses: NSAIDs for Acute Pain Management in Cats

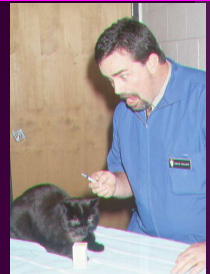
NSAID	RECOMMENDATION SOURCE	RECOMMENDED DOSE
Robenacoxib	Recommended dose from manufacturer (FDA-approved)	1 mg/kg PO Q 24 H for 3 doses Dose range, 1–2.4 mg/kg Q 24 H
Meloxicam (injection)	Recommended dose from manufacturer (FDA-approved)	0.3 mg/kg SC (single injection)
Meloxicam (oral suspension)*	Recommended dose from ISFM/ AAFP for daily use ¹⁴	0.1 mg/kg PO for 1 day; then 0.05 mg/kg PO Q 24 H
Meloxicam (oral suspension)*	Other recommendations ¹⁸	0.05 mg/kg PO every other day or 0.025 mg/kg PO Q 24 H

* Not FDA approved for use in cats



Commandments

- Choosing NSAIDs
 - Equipotent
 - Individual Variability
 - Screening



Acute/Chronic Pain

■ NSAIDs: Non-Specific

- Piroxicam (0.1 mg/kg q24-48 hrs)
 - 80% bio-available
 - T_{1/2}= 12 hours
- Meloxicam (0.05 mg/kg/day)
 - Palatable, effective
- Ketoprofen (0.5 mg/kg PO, SQ)

onsior®
Essence of relief

■ NSAIDs: Specific

- Carprofen (1 mg/kg PO q 24-48 hrs)
- Robenacoxib (1 mg/kg PO q24X3)



Polyunsaturated Fatty Acids



Algae Source
1 gm/m²/day
30 mg/kg/day



Piroxicam

➤ Analgesia, Anti-inflammatory, Anticancer -COX 2 Expression

- ❖ Transitional cell carcinoma
- ❖ Mammary tumors
- ❖ Intestinal tumors
- ❖ Prostatic Carcinoma
- ❖ Renal cell Carcinoma
- ❖ Squamous cell carcinoma
- ❖ Osteosarcoma
 - negative (423 days), and strong expression (86 days)



Piroxicam 0.1 mg/kg q48hrs

■ Don't Let Them Hurt

- Hospice Care
 - Analgesia
 - Appetite



TCC of Bladder

5.5 mg/m² q21 days

Cats: 0.1 mg/kg q24-48 hrs

Dogs: 0.3 mg/kg q24-48 hrs



Clinical features, survival times and COX-1 and COX-2 expression in cats with transitional cell carcinoma of the urinary bladder treated with meloxicam.

- Mean survival time (MST) of 311 days (range 10-1064)
 - 1-year survival of 50%.

J Feline Med Surg. 2012 Aug;14(8):527-33.



ISFM/AAFP Guidelines on NSAIDs

- NSAIDs are licensed for long-term use in cats in some countries for management of chronic pain in cats.
- Safety for medium- to long-term use of meloxicam in older cats and cats with CKD.



A retrospective analysis of the effects of meloxicam on the longevity of aged cats with and without overt chronic kidney disease

- Long-term oral meloxicam did not reduce lifespan of cats with CKD (esp. IRIS stages II/III).
- Meloxicam should be considered for painful cats, including with CKD.



J Feline Med Surg 2012 Dec;14(12):876-81

Clinical safety of robenacoxib in feline osteoarthritis: results of a randomized, blinded, placebo-controlled clinical trial.

- Robenacoxib well tolerated: daily for 1 month in cats with OA +/- CKD.
 - 193 cats, including a subgroup of 40 cats with concurrent CKD
 - No damage to the GI tract, kidney or liver



J Feline Med Surg 2015 Jun 9

Piroxicam 0.1- 0.3 mg/kg q24-48 hrs

- 73 Cats with Cancer
 - Treatment duration 1-38 months
 - Not significantly associated with hematologic, renal or hepatic toxicities.
 - AE's not related to dose



J Feline Med Surg 2010 Apr;12(4):262-8.



Gabapentin

- Anticonvulsant
- Chronic Pain
 - 3-10 mg/kg q8-12h
 - Small volume of distribution, low clearance



J Feline Med Surg 2013 Jun;15(6):507-12.



Buprenorphine, Butorphanol, Morphine

- Vet Rec. 2003 153(15):462-5

➤ Butorphanol

-Duration: 2 hours

➤ Morphine

-Duration: 6 hours

➤ Buprenorphine

-Duration: 12 hours



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Buprenorphine

- Don't expect pain relief immediately after drug admin.
- Don't give SQ!
- Buccal may be variable in efficacy.
- IV, IM Rx (0.01-0.04 mg/kg)



J Vet Intern Med. 2014 May-Jun;28(3):762-70.

Evaluation of the perioperative analgesic efficacy of buprenorphine, compared with butorphanol in cats

- Buprenorphine or butorphanol + medetomidine, propofol, isoflurane
- All from the butorphanol group required rescue analgesia.
- None from the buprenorphine group required rescue analgesia



J Am Vet Med Assoc. 2014 Jul 15;245(2):195-202.

Morphine/Hydro vs Fentanyl

- Morphine/Hydromorphone
 - Sedation, analgesia
 - Cheapest, Common Use
- Fentanyl (Preferred?)
 - Analgesia
 - 40X Lipid Soluble: CNS!
 - Most Rapid Acting



Beyond-use date determination of buprenorphine buccal solution using a stability-indicating HPLC assay

- Determine stability of a 3 mg/ml buprenorphine prep for buccal Rx: Room temp vs refrigerated storage conditions.
- Buccal solution stable through 90 days @ both temperatures



J Feline Med Surg. 2015 Feb 13

Sedative and antinociceptive effects of dexmedetomidine and buprenorphine after oral transmucosal or IM administration in cats

- Oral admin. resulted in comparable levels of sedation and antinociception to IM dosing.
- PO may offer an alternative route to administer this sedative-analgesic combination in cats.



Vet Anesth Analg. 2014 Jan;41(1):90-6

Comparison of the efficacy and adverse effects of sr-buprenorphine following SQ admin. and buprenorphine hydrochloride following oral transmucosal admin. in cats undergoing OHE

- SC dose of SR buprenorphine had comparable efficacy and adverse effect profile as that of BID OTM buprenorphine before and after surgery.



FOR CATS
Solensia®
(frunivetmab injection)
Frunivetmab
For subcutaneous injection to cats only.
Fruinivetmab is a monoclonal antibody.
CAUTION: Fruinivetmab is a monoclonal antibody.
For the control of pain associated with osteoarthritis in cats.
Net Contents: 6 x 1 mL Single-Use Vials
Approved by FDA under NADA # 140-546
zoetis

77 % of cat owners reported improvement in signs of pain when their cats were treated monthly

Controls the pain of OA in cats, helping to improve their mobility, comfort and well-being

Solensia was found to be well tolerated in field studies included cats identified as IRIS stage 1 or 2



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Monoclonal Antibody

