

PAIN HURTS: UNDERSTANDING AND RECOGNIZING PAIN IN CATS

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Over the last two decades, the realization that we need to provide analgesia to cats has gradually gained ground. Most people accept that cats experience pain in the same way that we do. We know that the effects of pain are detrimental to well being in the short term, and that over longer periods, pain interferes with healing and causes disease. Our therapeutic options have expanded in pharmacological agents available and adjunctive approaches and we have a better idea how to use the drugs available to us to optimize efficacy and minimize adverse effects. While it is this last point that this presentation aims to address, an introduction on pain, *per se*, is still warranted.

UNDERSTANDING PAIN^{1,2}

Pain evolved as a protective mechanism. Certain types of pain, such as physiologic pain, are beneficial for survival. For example, if you touch a hot stove, you withdraw your hand. Conditions resulting in damage to tissues or nerves, however, are pathological and include visceral and neuropathic forms of maladaptive pain.

The nociceptive response begins with the free nerve endings signaling potential or actual tissue injury. This results from a combination of mechanical (crush), chemical (mediators) or thermal input being translated (transduced) into electric impulses. These impulses are transmitted via the primary afferent (1st order) neuron to the spinal cord where they are modulated in the dorsal horn. The impulse is further transmitted via 2nd order neurons in the spinal tract to the thalamus where the message is received by a 3rd order neuron to be projected to the somatosensory cortex. It is at this point that the impulse is experienced as pain and an appropriate response, such as moving away from the source of the damage, may be generated.

The clinical implications of this pathway are important. Rather than addressing the alleviation of pain at only one level, we have multiple points to target. Using a combination of agents in a multimodal/balanced approach is often more effective as well as safer than using a single modality to treat and prevent pain. (Figure 1) A second concept, namely pre-emptive analgesia, is important especially in care of the patient who will undergo an elective surgical procedure. By preventing the initial transduction and transmission of input before the insult occurs, it is much easier to keep patients comfortable than by trying to eliminate a process in progress. The term “pre-emptive analgesia” has now been expanded to include treatment for the appropriate duration of time, as premature treatment withdrawal will reactive a pain process that negates the previous use of pre-emptive analgesia.

Attention must be paid to potential or known adverse effects of analgesic agents. These depend on the type of drug and the underlying status of the patient. Factors to be taken into consideration include the integrity of renal and hepatic function, state of hydration and intestinal health. The other side of this is that pain is dangerous: the cascade of catabolic and detrimental effects that occur as a result of uncontrolled pain may be a greater risk for the patient than the drugs are. Each case needs to be evaluated individually to determine the best protocol to alleviate pain as well as how long analgesia is required.

Persistent pain results in negative physiologic and hormonal responses that are detrimental, prevent healing and may cause progression of underlying disease. Initially, the stress response increases survival (short-term) by increasing sympathetic tone. Through vasoconstriction, the benefits of an increased heart rate and cardiac output are realized. Resultant redistribution of

blood flow favours muscles and respiratory drive simultaneously decreasing gastrointestinal tone. By enabling fight or flight, this may save the individual's life. If this process doesn't stop however, it results in muscle fatigue and low end-tissue oxygen levels.

Occurring simultaneously, but with a less immediate effect, are the endocrine responses to pain. These include changes in many hormone levels. These changes, if persistent, are detrimental to the individual. Some of the hormones that are released include corticotropin, cortisol, more catecholamines, growth hormone, and glucagon to provide energy in the form of cAMP. This results in protein catabolism with concurrent decreased ability to heal and lipolysis. All three components of the renin, angiotensin and aldosterone system are increased which, along with anti-diuretic hormone, result in retention of water and sodium, increased potassium excretion and decreased glomerular filtration rate (GFR). Decreased insulin and testosterone are released, the former resulting in hyperglycemia and an impaired nutrient delivery to cells. Along with sleep deprivation from discomfort and fear, the patient may succumb to chronic physiologic and emotional exhaustion.

An example is the patient who is unable to lie comfortably, does not sleep properly, becomes inappetent, resulting in a patient who resents being handled, may appear to give up thereby inducing the client and veterinary team to deduce that humane euthanasia is warranted.

RECOGNIZING PAIN

The signs of pain are generally more subtle in cats than in dogs. Some objective clinical signs indicative of pain include: ¹⁻³

- Inability to rest/sleep
- Inappropriate activity level
- Sitting in the back of the kennel
- Mental attitude/demeanour (stupor or anxiety)
- Changes in attitude/personality
- Poor hair coat
- Lack of comfort when palpated
- Body temperature and blood pressure may be increased or decreased.
- Facial expression, staring, fixed gaze, dilated pupils, "squinty" eyes
- Lack of appetite and thirst
- (Self-mutilation)
- Vocalizations
- Posture
- Tachycardia
- Tachypnea

In general, much can be gained by taking the time to assess a cat's body posture, facial expression, and response to handling, including gentle palpation of the surgical site (see Appendix: Feline faces and postures of pain). The experience of pain is individual, so the patient's response should be evaluated repeatedly!

If a procedure is to be performed or a patient is ill, given the similarities in pain perception between humans and cats, we may assume that the cat's experience is similar to that of a human and risk erring on the side of humaneness. Pain affects psychological and emotional well-being negatively. Adults and older individuals are generally more stoic making it even harder to detect pain than in the kitten. Seriously ill or obtunded patients are especially difficult to assess for pain as they are less likely to display behavioural signs of distress when compared to an otherwise healthy cat who has been injured.⁴

The truest assessment of the presence of pain is response to analgesics resulting in return to normal behaviours.³ However, the current adage is to treat predictable pain and one can safely predict that surgery is painful. Frequent assessment for pain is critical, not so much to determine

if peri/post-operative analgesia should be used, but rather whether additional products and/or treatment duration should be implemented.

“We can’t always know that it does hurt but we can know that it doesn’t”

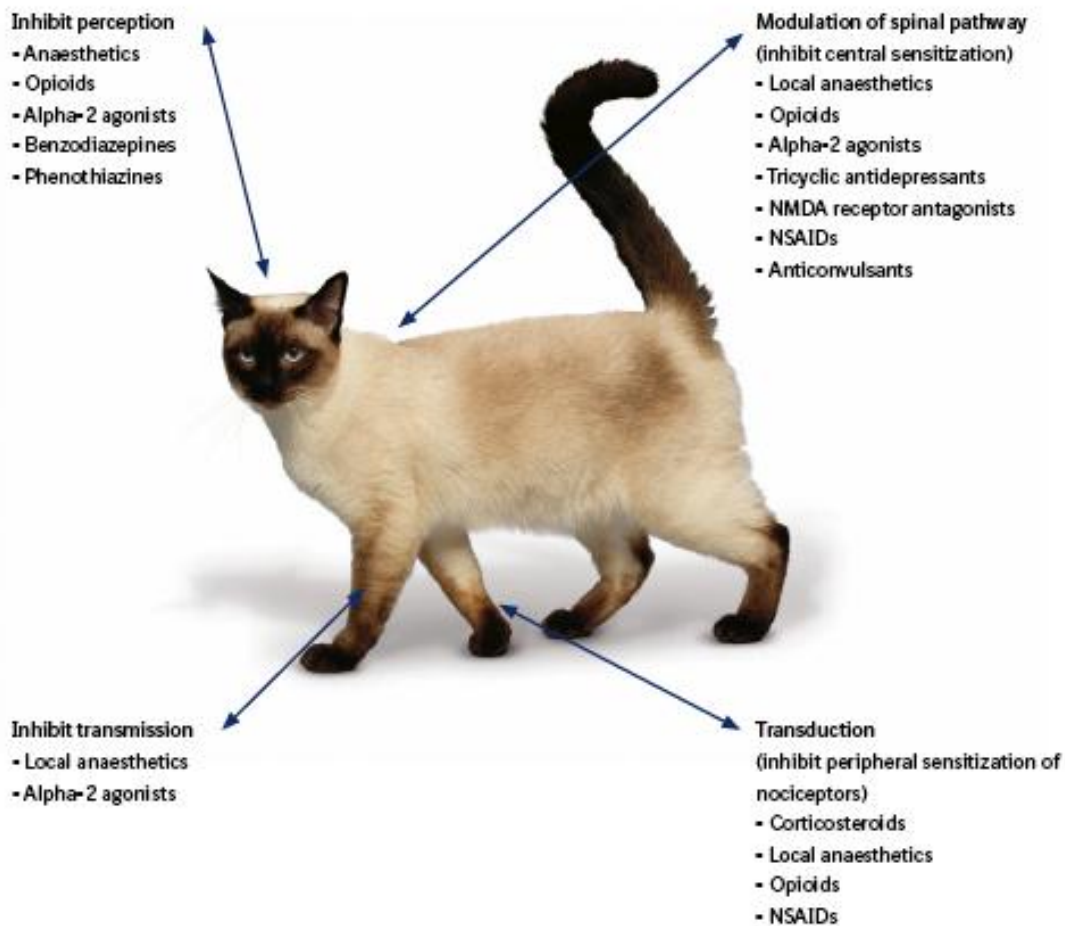
PROVIDING SAFE, EFFECTIVE ANALGESIA

Chronic conditions are especially debilitating and interfere with quality of life. Through the process of central sensitization, “wind-up” may occur resulting in an experience of pain that is excessive to the stimulus. Thus, three goals need to be considered to prevent pain wind up:

1. Prevention of pain using pre-emptive analgesia;
2. Alleviation of pain that is established or that is a result of medical/surgical procedures;
3. Complete alleviation of pain for a long enough period to prevent development of neuropathology and a chronic “wind-up” state.

Providing multimodal/balanced analgesia allows us to impact numerous sites of the pain pathway whilst reducing the risk of negative effects from any one class of drug. **Figure 1** shows where each type of analgesic agent has its effect. Consider combining an opioid with an NSAID and possibly, while hospitalized, a ketamine constant rate infusion (CRI) or topical anesthesia or an epidural for regional anaesthesia. Sedation for relaxation might be beneficial being careful to not merely mask pain through reduction of consciousness. Analgesic choices for cats may be found in **Table 1** (Appendix).

Figure 1: Sites of analgesic action



Tailoring analgesia *always* requires repeated evaluation of the patient. Be prepared and willing to change or add agents or analgesic modalities as needed. Each individual experiences pain differently, in part because of emotional and behavioural responses such as previous experience and anticipation. Additionally, a given procedure or condition may vary in the extent of tissue damage instigating the pain response. For example, in general, minor pain may be expected associated with castration, dental procedures that do not include extractions, lacerations, bruising, sprains and strains associated with a fight. For some individuals, however, castrations may result in moderate pain and, of course, the tissue trauma from a fight may be significant. Ovariohysterectomy and castration must be recognized as inherently painful procedures. Nevertheless, we need a starting point, so we can use a guide bearing in mind the limitations. For most young cats with a skilled surgeon and an uncomplicated procedure, the level of pain we should anticipate is mild to moderate. Examples of the degree of pain one might expect with selected conditions or procedures are listed in **Table 2**.

As the body of scientific study of feline analgesia has grown, specific agents have been evaluated for safety and efficacy. Much less attention has been paid to the optimal duration of provision of analgesia. This aspect must be considered for, as we know in other species, inadequate alleviation of pain can result in allodynia, permanent changes in the central nervous system causing inappropriate and excessive pain for even minimal nociceptive events. In other words, it is important, not only to provide pain relief, but to provide it for long enough.

Table 2: Examples of conditions and expected associated levels of pain

Mild to moderate pain	Moderate pain	Moderate to severe pain
<p>Ovariohysterectomy Castration Removal of external, mobile masses Some gingivitis Some dental procedures Cystitis Otitis Bite wounds and some lacerations</p> <p>Suggested meloxicam* protocol: 0.1 (-0.2) mg/kg SC followed in 24h by 0.05 mg/kg PO q24h days 2-5 days or longer if it appears that the patient is in discomfort. Give oral meloxicam with food.</p>	<p>Ovariohysterectomy (older, complicated) Castration (some cats) Minimally invasive surgical procedures, e.g., hernia repair Exploratory laparotomy of a minimally inflamed abdomen and of an elective nature Pancreatitis Soft tissue injury Enucleation Some dental procedures Orthopedic procedures⁵</p> <p>Suggested meloxicam* protocol: Opioid plus 0.2 mg/kg meloxicam SC followed in 24h by 0.05 mg/kg PO q24h days 2-5 days or longer if it appears that the patient is in discomfort which will likely be the case for pancreatitis. Give oral meloxicam with food.</p> <p>Suggested meloxicam protocol for degenerative joint disease: 0.1 mg/kg SC or PO followed in 24h by 0.05 mg/kg PO q24h; no sooner than at least 2 weeks of improvement, you may attempt to titrate the dose to the lowest possible dose that maintains a stable level of comfort. Give oral meloxicam with food. Treatment will likely be needed life long.</p>	<p>Pancreatitis Urethral obstruction Exploratory laparotomy of an inflamed abdomen or for urgent cause Orthopedic procedures</p> <p>Suggested meloxicam* protocol: Opioid plus 0.2 mg/kg meloxicam SC followed in 24h by 0.05 mg/kg PO q24h for as long as it appears that the patient is in discomfort. Give oral meloxicam with food. Alternately, but only if further NSAID therapy will not be feasible, a single dose of 0.3 mg/kg SC or PO may be given with no further NSAID administration. These patients will also need opioid therapy +/- local block, ketamine CRI, etc.</p>

* While the pharmacologic name meloxicam is being used throughout this article, it is important to note that the author is referring to Metacam®. Compounded formulations lack third party, mandated and assessed quality control (QC); there is known potency variability between compounders and even between batches from the same compounder. All of the efficacy and safety studies cited are from brand name Metacam®.

THE IMPORTANCE OF PERI-OPERATIVE SUPPORTIVE CARE

The safe peri-operative use of both pharmaceutical (e.g., anesthetics, analgesics, other medications) and interventional procedures is facilitated by careful and conscientious supportive care. Provision of intravenous fluids for pre-operative rehydration, intra-operative support (oxygen perfusion of tissues and optimization of blood pressure) and post-procedural

maintenance is a standard of care that is readily achievable. Similarly, monitoring blood pressure and maintaining normothermia enable normal cell and organ function. Regardless of pharmaceutical or interventional procedures used, preventing hypoperfusion, hypovolemia, hypotension and hypothermia improve outcome.

Additionally, the power and benefit of non-pharmaceutical interventions, including post-anesthetic warmth, comfortable bedding, ease of litter box access, good nutrition, and all-around “TLC” (tender loving care) provided by the veterinary health care team, should not be underestimated.

THERAPEUTIC OPTIONS

Older patients may have concurrent problems that may affect drug metabolism.⁶ Patients of *any* age may be in a physiologic state that affects drug disposition, the most common ones being dehydration, inadequate tissue oxygenation, electrolyte or acid-base imbalances and malnutrition. The most common concern regarding NSAID side effects is the possible consequence of using this class of drug in a dehydrated patient resulting in effects on gastric mucosal health or on renal function.⁷ Dehydration may be subclinical and difficult to assess in the very young and in the older cat due to the unreliability of skin elasticity in these age groups. Stool character (i.e., pellets rather than formed logs) will be of help in evaluating hydration.

Opioids are safe for pain relief in any age group and are excellent when used at the same time as other agents, especially NSAIDs. For example, a suitable protocol for a cat with pain from severe gingivostomatitis could be baseline NSAID (such as meloxicam) with intermittent use of an opioid (such as buprenorphine) when break-through pain is evidenced by a decrease in appetite or social withdrawal.

A study presented at ECVIM in 2009, evaluated the effect of meloxicam in cats with idiopathic lower urinary tract disease; this study did not find any difference clinically between cats receiving meloxicam when compared to placebo with the exception of a shorter course of hematuria in the cats receiving meloxicam.⁸

Pharmacokinetic data is lacking for long-term use of many NSAIDs in cats however Metacam® 0.5 mg/ml oral suspension has been granted a licence in the EU for the alleviation of inflammation and pain in chronic musculoskeletal disorders in cats. Pharmacokinetic studies as well as safety and efficacy studies have been performed to the satisfaction of the regulatory bodies. The registered dose is 0.1 mg/kg on the first day followed by 0.05 mg/kg orally once daily. This is the first NSAID licensed for long-term use in cats.

Two studies have evaluated long-term safety of this agent in older cats; one concluded that this agent is safe, efficacious and palatable for OA pain at 0.01-0.03 mg/kg PO q24h for a mean treatment duration of 5.8 months; no deleterious effect on renal function was detected in cats studied. Gastrointestinal upset in 4% of cats was the only adverse effect noted.⁹ The second, reviewed the medical records of cats over seven years of age treated for a minimum of 6 months with a daily maintenance dose of 0.02 mg/kg meloxicam and concluded that this dose does not hasten progression of renal disease in aged cats or aged cats with pre-existent stable IRIS stage 1-3 renal disease.¹⁰

After reviewing 108 papers on NSAIDs including all of the studies to date on their use in cats the International Society for Feline Medicine (ISFM) and the American Association of Feline Practitioners (AAFP) made the following summary point statement in their recently released document providing guidelines on the long-term use of NSAIDs in cats¹¹: “*to date, published*

studies of the medium-to long-term use of the COX-1 sparing drug meloxicam in older cats and cats with chronic kidney disease provides encouraging data that these drugs can be used safely and should be used to relieve pain when needed” These guidelines may be accessed through either www.isfm.net or www.catvets.com.

The key to safe chronic NSAID administration in cats is the use of the lowest effective dose and avoiding use, or using lower initial doses (based on lean body weight), in cats with renal disease. Ensure the patient is hydrated and give the NSAID with food. In most cases, NSAIDs are most effective when used in conjunction with other treatment modalities.¹²

Adjunctive agents to consider in the acutely painful patient include the NMDA receptor antagonist, ketamine. Sedatives (midazolam, diazepam, acepromazine and medetomidine) may help relax muscles and lower level of consciousness helping achieve a comfortable rest. These agents must NOT be used in lieu of analgesia. Short acting corticosteroids reduce release of inflammatory mediators thereby reducing pain. Topical and local analgesia techniques should not be forgotten as possible methods to provide relief.

For chronic pain or for follow-up analgesia, opioids and NSAIDs again form the foundation of the analgesic platform. To this, the same classes of adjunctive agents (NMDA receptor antagonists, sedatives) may be added. Additionally amitriptyline, a tricyclic antidepressant has been used long term for idiopathic/sterile cystitis. Gabapentin (an anticonvulsant) and amantadine (an NMDA receptor antagonist) have been used for neuropathic pain. For the management of chronic osteoarthritic pain, disease-modifying agents such as polysulfated glycosaminoglycan, glucosamine and chondroitin sulfate may be beneficial.¹³

In some cases, pain is pre-existing and may be an ongoing part of the condition for which the patient is presented to us. Nursing care can go a long way to improving the patient’s experience. Thoughtful and gentle handling goes a long way to reduce the stress, distress and discomfort of the hospital visit. Be cognisant of positioning and pay attention to padding surfaces. If a patient is uncomfortable when an elbow is extended for blood collection or catheter placement, consider using the medial saphenous vein instead. Soft, warm places to lie and hide are desirable. Quiet, calm surroundings decrease the stress for all involved. Clean litter trays should be as spacious as possible and have low edges for ease of access.

Acupuncture may be considered and can safely be combined with pharmacologic approaches. While efficacy has been shown for acupuncture in a few conditions in humans, there is no solid scientific evidence at the time of writing that clearly supports its efficacy in cats.¹⁴

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APPENDIX:

Table 1: Analgesic choices for cats

Drug Class	Drug	Acute Pain	Acute Pain	Follow-Up Analgesia or Chronic Pain	Follow-Up Analgesia or Chronic Pain
		<i>Mild-Moderate</i>	<i>Moderate-Severe</i>	<i>Mild-Moderate</i>	<i>Moderate-Severe</i>
OPIOIDS	Butorphanol	0.1-0.4 mg/kg IV q 0.25-1.0h or 0.4-0.8 mg/kg IM, SC q2-4h		0.1-0.4 mg/kg IV, IM, SC q2h	
	Buprenorphine	0.01-0.03 mg/kg IM, IV, SC q6-8h		0.01-0.03 mg/kg IM, IV, SC q6-8h; 0.01-0.03 mg/kg buccally q6-12h	
	Morphine*		≥ 0.1-0.2 mg/kg IM, SC q2-6h		0.1-0.2 mg/kg IV q1-4h or 0.1-0.5 mg/kg IM q2-6h
	Hydromorphone**		0.08-0.3 mg/kg IV, IM q2-6h		0.08-0.3 mg/kg IV, IM q2-6h
	Fentanyl		0.001-0.01 mg/kg IV q 20 min		0.004-0.01 mg/kg IV q 20 min or 0.001-0.004 mg/kg/h CRI or fentanyl patch 12.5-25 mcg/h q 4-5 days

OPIOID REVERSAL OR TITRATION	Naloxone: for reversal/titration of opioid dose: Dilute 0.1 ml of 0.4 mg/ml naloxone in 5 ml 0.9% NaCl; administer at 1.0 ml/minute to effect				
NSAIDs***	Meloxicam	0.1 mg/kg SC once then 0.05 mg/kg PO q24h d2-5 prn	0.1-0.2 mg/kg SC once then 0.05 mg/kg PO q24h d2-5 prn	0.1 mg/kg PO on d1, then 0.05 mg/kg PO q24h long term; titrate to lowest effective dose	0.1 mg/kg PO on d1, then 0.05 mg/kg PO q24h long term; titrate to lowest effective dose
	Ketoprofen	≤ 2.0 mg/kg SC once	≤ 2.0 mg/kg SC once	≤ 2.0 mg/kg SC once, then < 1.0 mg/kg q24h for maximum 4 days	≤ 2.0 mg/kg SC once, then < 1.0 mg/kg q24h for maximum 4 days
	Tolfenamic acid	≤ 4.0 mg/kg SC, PO	≤ 4.0 mg/kg SC, PO	≤ 4.0 mg/kg SC, PO q 24h, for 3-5d	≤ 4.0 mg/kg SC, PO q 24h, for 3-5d
	Carprofen	≤ 4.0 mg/kg SC once	≤ 4.0 mg/kg SC once		
	Flunixin meglumine	1.0 mg/kg SC once	1.0 mg/kg SC once		
	Ketorolac tromethamine	0.25 mg/kg IM	0.25 mg/kg IM	0.25 mg/kg IM repeat once in 8-12h	0.25 mg/kg IM repeat once in 8-12h
NMDA RECEPTOR ANTAGONISTS	Ketamine			0.5 mg/kg IV prn (q 30 min)	0.1-0.5 mg/kg/h IV CRI combined with morphine
	Amantadine				3-5 mg/kg PO q24h for neuropathic pain
SEDATIVES for chronic pain of various levels in combination with opioids	Midazolam	0.1-0.5 mg/kg IV, IM q8-12h	0.1-0.5 mg/kg IV, IM q8-12h	0.1-0.5 mg/kg IV, IM q8-12h	0.1-0.5 mg/kg IV, IM q8-12h
	Diazepam	0.1-0.5 mg/kg IV	0.1-0.5 mg/kg IV	0.1-0.5 mg/kg IV	0.1-0.5 mg/kg IV

		q12h	q12h	q12h	q12h
	Acepromazine	0.01-0.05 mg/kg IV q1-2h or 0.02-0.1 mg/kg IM, SC q2-6h	0.01-0.05 mg/kg IV q1-2h or 0.02-0.1 mg/kg IM, SC q2-6h	0.01-0.05 mg/kg IV q1-2h or 0.02-0.1 mg/kg IM, SC q2-6h	0.01-0.05 mg/kg IV q1-2h or 0.02-0.1 mg/kg IM, SC q2-6h
	Medetomidine	0.02-0.05 mg/kg IM q 4-6h or 0.01-0.02 mg/kg IV prn	0.02-0.05 mg/kg IM q 4-6h or 0.01-0.02 mg/kg IV prn	0.02-0.05 mg/kg IM q 4-6h or 0.01-0.02 mg/kg IV prn	0.02-0.05 mg/kg IM q 4-6h or 0.01-0.02 mg/kg IV prn
TRICYCLIC ANTIDEPRESSANT	Amitriptyline for idiopathic cystitis			2.5-12.5 mg/cat PO q24h	
	Gabapentin *****			5-10 mg/kg PO q12-24h for <i>mild-moderate</i> post-operative, follow-up, chronic or neuropathic pain	

NOTE! Pain is an experience that differs for each individual. Observe and adjust doses to make each patient comfortable.³

* **Morphine:** Pretreat with Benadryl if administering IV.

** **Hydromorphone:** Caution: doses of 0.1 mg/kg and higher can cause hyperthermia in some patients; severe hyperthermia is an indication to change analgesic class.

*** **NSAIDs:** Give with food if oral formulation. Do not use concurrently with corticosteroids.

**** **Meloxicam:** While the pharmacologic name meloxicam is being used throughout this article, it is important to note that the author is referring to Metacam®. Compounded formulations lack third party, mandated and assessed quality control (QC); there is known potency variability between compounds and even between batches from the same compounder. All of the efficacy and safety studies cited are from brand name Metacam®.

***** **Gabapentin:** Taper dose when withdrawing drug.



Feline Faces and Postures of Pain

The Humpy




A cat with a hunched back, legs straightened often sitting quietly at the back of the cage may be in pain. This cat also has droopy ears and slanted half closed eyes. This posture is often seen after abdominal surgery.

The Squinty

Cats with their heads down, ears "droopy" and eyes half closed and in a slanted position may be in pain. Note how a line drawn through the centre of the eyes makes a V shape.

The Flat-out




Cats which are recumbent, tense or rigid may be in severe pain. This cat also has the facial expressions of pain: droopy ears and slanted half closed eyes.

The Untouchable



Previously friendly and easy to handle cats which hiss, snarl or flinch or try to claw or bite in reaction to gentle pressure to a wound, or those that generally resent handling are probably in pain. A cat's reaction can be expected to be proportional to the amount of pain being experienced.

The Croissant




This cat shows well controlled pain. The ears are pricked (upright) and forward, the eyes are not slanted. A horizontal line could be drawn through the centre of each eye. The back is minimally hunched and the cat appears bright and alert. This cat also displays the relaxed legs tucked in, resembling a "croissant".

Client information handout advising on safe use of NSAIDs. This two page brochure may be downloaded from www.isfm.net and www.catvets.com, where details on how to order

pads of information sheets for distribution may also to clients be found.

Pain medication (NSAIDs) and your cat

A 'painkiller' known as a 'non-steroidal anti-inflammatory drug' (or NSAID) has been prescribed for your cat. These drugs are commonly used in humans and animals to help relieve pain, fever and inflammation.

Controlling your cat's pain is crucial for their welfare. Many cats greatly benefit from these drugs, having better mobility, less pain, increased appetite and an improved quality of life.

Degenerative joint disease (DJD) in cats

Degenerative joint disease (including osteoarthritis) is common, especially in older cats, and NSAIDs are often used to help manage this. As with other conditions, cats may mask the signs of disease. Signs to look out for include:

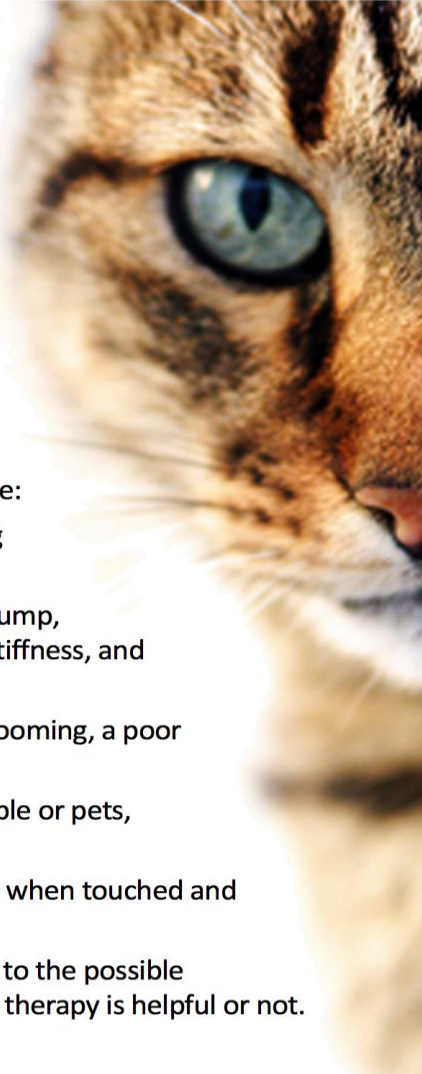
- ➔ **Decreased activity** – e.g. sleeping more, not moving around as much, playing or hunting less
- ➔ **Decreased mobility** – e.g. a reduced willingness to jump, not jumping as high, difficulty using the litter tray, stiffness, and sometimes obvious lameness
- ➔ **Decreased grooming** – reduced time or difficulty grooming, a poor coat, overgrown claws
- ➔ **Altered personality** – less keen to interact with people or pets, seeking solitude, 'grumpier'
- ➔ **Other signs** – may include aggression or vocalisation when touched and loss of appetite

Understanding these changes helps alert you and your vet to the possible existence of pain and DJD, and helps you monitor whether therapy is helpful or not.

Are NSAIDs safe in cats?

NSAIDs play a vital role in therapy for many cats, but differences between cats and other animals mean you should **only ever** use a drug that has been specifically prescribed for **your cat** by **your veterinarian**. Many human drugs such as aspirin, ibuprofen and paracetamol/acetaminophen can be highly toxic to cats – administering these is life-threatening.

Adverse effects can be seen with NSAIDs, just as with all drugs. Some patients may be at increased risk of adverse effects (e.g. older cats and cats with certain other diseases). Your veterinarian may then recommend **increased monitoring** and careful **adjustment of therapy** to find the **lowest effective dose** of the drug for your cat.



What adverse effects should I look out for?

Licensed NSAIDs have been shown to be safe for use in cats. However, adverse events can still occur. Most are mild, but some can be serious – as in other species they may involve the gastrointestinal tract, kidneys, cardiovascular system or liver.

Adverse events may lead to a number of signs including:

- ▶ Loss of appetite
- ▶ Nausea or vomiting
- ▶ Lethargy and dullness/depression
- ▶ Altered thirst and/or urination
- ▶ Diarrhoea and/or black-coloured faeces
- ▶ Yellowing of the skin, gums, or whites of the eyes

What do I need to know?

- ✓ ***Never*** give your cat ***any*** other medication at the same time ***without first speaking to your veterinarian***
- ✓ Make sure you understand ***how much*** of the drug to give, ***how frequently***, and for ***how long***. If you are unsure, ***ask*** your veterinarian.
- ✓ ***Talk to your veterinarian*** about what monitoring should be done to safe-guard your cat – ***how frequently*** your cat should be re-examined, ***what*** blood and urine tests should be done, and ***how frequently*** these should be done.
- ✓ ***Always*** give the medication ***with or after food***. Your vet may suggest feeding canned rather than dry food to help encourage good fluid intake as maintaining a good fluid intake is important.
- ✓ If your cat does not eat ***DO NOT*** give the medication. Contact your veterinarian.
- ✓ If at ***any stage*** you have concerns, or see any potential adverse effects, ***STOP*** giving the medication and ***contact your veterinarian immediately***.



Safety first: If you are in any doubt, STOP the medication and TALK to your veterinarian