

Pain Relief Without Opioids? It's Possible!



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Short on opioids? We feel your pain – but we don't want our patients to feel the pain!

Fortunately, there are still some opioid options. For potent opioids, morphine and methadone have some availability, depending on where you are purchasing from and, for morphine, what concentration you are looking for. Methadone is expensive, but might be an option for the short term and seems to be the least impacted by the shortage. Sufentanil or alfentanil are alternatives for fentanyl. Both appear to have limited availability but not as limited as fentanyl. If you are looking for some of the alternative opioids or opioid concentrations that are not carried by the veterinary distributors, go to the FDA website listed lower in the article and see which companies carry what you are looking for.

The lesser potent opioids, butorphanol and buprenorphine, including Simbadol®, appear to be available with no current limitations. The duration of butorphanol for analgesia is short (probably about 60 minutes for dogs and 90 minutes for cats) so repeat dosing is required to adequately treat most surgical pain. To increase the duration of analgesia, butorphanol can also be administered as a constant rate infusion (0.1 mg/kg IV loading dose; 0.1-0.2 mg/kg/hr infusion in both dogs and cats). The duration of buprenorphine is 4-6 hours necessitating less repeat dosing but the time to onset is slow (10-20 minutes) so be sure to premedicate early or combine the drug with a faster acting drug (like dexmedetomidine) for more immediate pain relief. Simbadol for cats has a one-hour onset and a 24-hour duration. We commonly use 75% of the label dose to decrease the likelihood of sedation.

The fact that we may need to use opioids with low to moderate potency – or may even have to develop protocols with no opioids - can be overcome by using **multimodal analgesia**. Major drugs categories to use in multimodal protocols include the alpha-2 agonists (dexmedetomidine and medetomidine), non-steroidal anti-inflammatory drugs (NSAIDs) and grapiprant, and local anesthetics. More minor drugs include maropitant, gabapentin and tramadol. Ketamine may be a major or minor drug depending on the source of pain and lidocaine administered as an infusion is in the same category.

Dexmedetomidine and medetomidine provide both sedation AND analgesia. The drugs should be administered as a premedication and in recovery for postoperative pain relief in patients that don't have cardiovascular disease. The analgesic effects of the alpha-2 agonists are synergistic with those of the opioids, thus enhancing the effects of the lesser potent opioids. Local anesthetic drugs should be a major part of all analgesic protocols. The name 'anesthesia' implies total loss of sensation, which makes this a very powerful drug class. Not only do the local anesthetics provide analgesia intraoperatively, but they also make the patients more comfortable in recovery since they alleviate or eliminate the likelihood that pain from central sensitization, or 'wind-up' will occur. The liposome-encapsulated bupivacaine (Nocita®) can provide analgesia for up to 72-hours. And blocks are easy, just look in your favorite anatomy or anesthesia book for the landmarks for the blocks and get blocking! NSAIDs or galliprant should also be included in every anesthetic protocol unless there is some contraindication. Pain from surgery and trauma is primarily pain of inflammation and NSAIDs/galliprant are sometimes better pain relievers than opioids because of their anti-inflammatory mechanism of action.



Don't stop there! Maropitant likely contributes to analgesia, primarily for visceral pain. Ketamine and lidocaine constant rate infusions (CRI) can be administered to prevent/treat central sensitization or generalized pain (especially visceral pain), respectively. Central sensitization can be a major component of the overall pain sensations in patients with moderate to severe pain and/or acute on chronic pain (for example, surgery [acute pain] to repair a torn cruciate ligament [chronic pain]). Tramadol can also play a role. The bioavailability is highly variable in the dog, making it inappropriate in most instances as a solo therapy drug but it is still useful as a multimodal drug. Gabapentin, although generally more effective for chronic pain, can be part of premedication and postoperative multimodal therapy in patients with neuropathic pain. Examples include traumatic nerve injury and surgeries that require major nerve resection (like amputations).

An example of a protocol for an OHE with no opioids: Premedication with an NSAID and dexmedetomidine; incisional block with bupivacaine and intraoperative infusion of bupivacaine into the abdominal cavity; repeat dexmedetomidine in recovery; discharge with NSAIDs and tramadol. For an abdominal exploratory, use the same protocol but add in maropitant as a premedication and a CRI of ketamine. Consider a bupivacaine epidural and/or a Nocita block of the incision.

Hopefully the opioid shortage will be over soon. Check the FDA drug shortage website at <https://www.accessdata.fda.gov/scripts/drugshortages/default.cfm#tabs-1> for more information on the availability of opioids – and other drugs. But continue multimodal analgesia even after the opioids are readily available!