



## Multi-modal Pain Management- Medications

A growing number of medications used in human medicine for treatment of chronic and severe pain are finding uses in veterinary medicine, too. Non-steroidal anti-inflammatory drugs have been around for some time for both humans and animals, but medications that alter the way the spinal cord and brain processes pain signals are a bit newer to the veterinary world. Some of the more commonly used medications are listed below.

The nervous system involves millions of branching nerve fibres connecting and communicating with one another via chemicals called neurotransmitters. By altering neurotransmitter release with medication and manual therapies, we can alter the message the neurons send and receive. With chronic pain, neurons can become more sensitive to stimuli that is painful (paraesthesia), and even non-painful stimuli can be perceived as painful (allodynia).

**Because these medications are *not* specifically developed and licensed for use in veterinary species, their use for cats or dogs is 'off label'. This also means the veterinarian does not have an appropriate product with a veterinary label to use in chronic pain management. Off label use is legal under the guidance of a supervising veterinarian, and we only prescribe medications in this fashion when dosing guides have been established by veterinary specialists. For your peace of mind, please review the information below on how the medications work, their potential side effects, and situations where they may not be our first choice.**

Picture at right:

*Connection (more technically called a synapse) between two nerve fibers. Granules containing neurotransmitters are shown as round blue-ish dots. (Original graphic by marvistavet.com)*



### **Gabapentin**

Originally used for treatment of seizure disorders in people, it quickly became useful for treatment of neuropathic pain (the burning and tingling sensations felt in nerve damage). A newer drug in this class is pregabalin (Lyrica), which you may have heard of.

Gabapentin is used with other medications in treating chronic pain in cats and dogs, typically at twice-daily dosing. The frequency of administration and dose may increase slowly over months to years as the body becomes more efficient at metabolising it (like a good bottle of red wine). **Animals will commonly be somewhat sedate for the first five days or so** but usually quickly adjust. Diarrhoea has also been reported. Because it works on the central nervous system, some old-age changes in senses such as hearing loss can be magnified. Let your vet know if this is noted and of concern.

DO NOT adjust doses of gabapentin up nor down without consulting your veterinarian. If you do not like how gabapentin makes your pet feel, we will advise you how to slowly taper the dose safely so that an up-swing in pain can be managed.

Make sure your vet knows all medications and supplements your pet is on. Oral antacids and narcotic medications can alter the absorption and effectiveness of gabapentin.

Gabapentin may be given with or without food. It is metabolised by the kidneys and eliminated in urine. It can give a false-positive protein reading on urine dipstick tests. Avoid using human gabapentin liquid preparations as they contain xylitol. Xylitol can be toxic to dogs.

## **Amitriptyline and other TCAs**

Amitriptyline was developed originally for treatment of anxiety in humans and is classed as a tri-cyclic antidepressant. It has been found helpful in chronic pain syndromes including interstitial cystitis. It works by increasing serotonin (the 'chill out' neurotransmitter), and norepinephrine (the 'anti- fight or flight' neurotransmitter). It is also a strong antihistamine. Because of this, it can sometimes result in sedation and it's often recommended to give it in the evening.

Amitriptyline is commonly used in veterinary medicine for treatment of separation anxiety, excessive grooming behaviour, and for cats with urinary issues which are often stress-related.

It can take several weeks to know if your pet will have a positive response to amitriptyline, so be patient. If you are concerned with any potential side effects or drug actions listed below, please contact your veterinarian immediately.

Amitriptyline is removed from the body through the liver and excreted in faeces. Patients with abnormal liver function may have trouble with this medication, so your veterinarian may suggest periodic blood testing. Side effects may include dry mouth which may be noted as frequent licking of lips, retention of urine, and constipation. Drugs in this class can also alter blood sugar levels.

As usual, make sure your vet knows about all drugs and supplements your pet may take, as well as any other chronic medical issues they may have. Amitriptyline should not be used with tramadol (sometimes also used in pain management) without strict veterinary supervision. Amitriptyline should also not be used with MAOi-s including amitraz, and cimetidine, cisapride, antifungal medications, cyproheptadine, and with other drugs that are designed to treat mental health.

Amitriptyline should not be used in patients with seizure disorders, patients with dry eye or heart rhythm abnormalities, or those with diabetes.

## **Amantadine**

Amantadine was first used as an antiviral medication against influenza but it is mainly used

now for its ability to inhibit a nerve receptor for the neurotransmitter NMDA, which is an important player in chronic pain states.

Amantadine is used in animals for treatment of arthritis, disk disease, cancer pain, and phantom limb pain, along with many other sources of moderate to severe chronic pain.

Expect your pet to be drowsy for the first week of use of amantadine. Other side effects may include diarrhea, gas, dry mouth/lip licking, and agitation.

Avoid amantadine if your pet is on TMS (an antibiotic), quinidine, diuretics, antihistamines, and use with caution with selegiline (often used to treat cognitive dysfunction or dementia in dogs). Patients with kidney or liver disease, seizure disorders, or heart failure should be monitored very closely.

Amantadine is best used in conjunction with other pain relievers and requires at least a week of use before its effectiveness can be judged.