**NSAID TOXICITY**

**What is it?** Non-steroidal anti-inflammatory medications (NSAIDs) include drugs such as aspirin, Naproxen (Aleve), Ibuprofen, Phenylbutazone (Banamine or "Bute"), and many more. There are many prescription brands commonly administered to pets as well – Etodolac (Etogesic), Carprofen (Rimadyl), Firocoxib (Previcox), and Deracoxib (Deramaxx) are the most common.

While it is commonly thought that buffered aspirin is less irritating or toxic than normal aspirin, THIS IS NOT TRUE.

**Who gets it?** Most pets that have NSAID toxicity are dogs that ingest large quantities of the medications by accident. Some of the veterinary prescription NSAIDs are flavored to make it easier to give to dogs on a daily basis – this increases the risk of eating an entire bottle if your dog was able to gain access to the bottle. Other times, small dogs can ingest a dropped pill, which, in some cases, can cause severe toxicity in small pets.

A second class of pets that get NSAID toxicity are those that are on aspirin long term. When given chronically, all dogs will develop some degree of ulceration of their stomach lining. A subset of patients on long term NSAIDs can develop toxicity when changing between different drugs – e.g. you switch from aspirin to Etogesic for your dog’s arthritis.

Cats are special when it comes to NSAIDs. Most cats develop toxicity when owners administer a drug thinking it will help a condition (often pain). The problem is that cats do not metabolize this class of drugs well and are very prone to developing toxic signs, even from single overdoses. Luckily, most cats do not eat large numbers of pills, even when they have accidental access. However, because the margin of safety for NSAIDs in cats is so small, do not administer any of these medications unless specifically directed to do so by a veterinarian.

**What are the clinical signs?** All NSAIDs are toxic at high enough doses. While some of the newer drugs have less frequency of side effects than, say, aspirin, they all can cause problems. Generally, there are two main body systems affected – the stomach and the kidneys. Ulceration of the stomach occurs at lower toxic doses. This process occurs through the drug’s inhibition of the body’s production of the protective layer of the stomach. This layer, when present, prevents stomach acid from injuring the wall of the stomach. Signs of ulceration in the stomach include vomiting (especially if you notice blood or “Coffee Ground” appearing flecks in the vomitus), abdominal pain, decreased appetite, anemia, and black colored stool.

At higher doses, NSAIDs decrease the flow of blood to the kidneys and can result in the development of renal failure. This effect is exacerbated in patients with acute toxicities because normally vomiting is the first symptom to show up in dogs that have ingested large quantities of NASIDs. This progression leads to dehydration, which worsens the toxic effect on the kidneys. Signs of kidney problems include vomiting, lethargy, decreased appetite, abdominal pain, increased drinking, increased urination or no urine production.
How is it diagnosed? In some cases, when NSAIDs are being administered chronically, having appropriate clinical signs without any other cause for the signs is all that is necessary to diagnose NSAID toxicity. In order to be definitively diagnosed, stomach ulcers require either surgery or endoscopy to visualize the ulcer. In rare cases, ulcers may be seen during a radiographic procedure called a Barium Series.

Kidney failure is diagnosed with blood work and urinalysis. Evidence of kidney failure with exposure to a known or suspected overdose may be enough to make the diagnosis of NSAID toxicity. However, there are many causes of renal (kidney) failure.

How is it treated? For acute overdoses, inducing vomiting and activated charcoal both limit how much of the drug ingested can get into the system. Medications used to treat stomach ulcers include antacids, medications to prevent vomiting, drugs that temporarily protect the stomach lining by creating a chemical barrier, and drugs that act as temporary replacements for the enzymes that the NSAIDs inhibit.

If there is kidney failure, IV fluids and other medications to promote urine production are essential. Hospitalization is ideal for patients who have ingested enough NSAIDs to injure their kidneys. In general, 48-72 hours of IV fluid therapy is recommended.

What is the aftercare? Aftercare for NSAID induced ulcers may include longer term (1-2 weeks) medication. A bland diet may help. Most importantly, discontinuing long term NSAID use is indicated for patients who have stomach ulcers. If long-term pain relief is required (e.g. for dogs with arthritis), alternatives can be recommended by your veterinarian.

Pets that have kidney damage may require more involved care, even for the rest of their life. Diet changes, fluid therapy (under the skin) on a daily or every other day basis, and other oral medications may be necessary depending on the severity of the injury.

What is the prognosis? Prognosis is entirely dependent on the dose ingested, the time lapse between exposure and emergency care, other problems with the patient, and whether it is a chronic or acute toxicity. Unfortunately, dogs can and do bleed to death from stomach ulcers, and kidney damage can be permanent and fatal as well.

For this reason, we recommend you make sure that you keep ALL medications, including your over-the-counter NSAIDs, in a safe place, away from pets, and that you never administer any medication to your pet without the recommendation of your veterinarian.