New Warning About Serious Drug Side Effects - Is Your Dog's Breed At Risk?

Ivermectin is an anti-parasite medication given to dogs to prevent heartworm disease and to treat various other parasite-related conditions like demodectic and sarcoptic mange, and ear mites.

The most common side effects of this drug are relatively mild and include:

- Vomiting
- Diarrhea
- Lack of appetite
- Lethargy

Every dog should be tested for heartworms prior to administration of ivermectin, because dogs already invaded by microfilaria (heartworms at the larval stage of development) can have a serious reaction to the medication.

In those dogs, ivermectin can cause a fatal side effect characterized by symptoms of shock including vomiting, hypothermia and depression.

Ivermectin has also been associated with a central nervous system event in some dogs which leads to loss of coordination, seizures, and in some cases, death.

Researchers at Washington State University's College of Veterinary Medicine have discovered that certain dog breeds are more sensitive to some drugs, including ivermectin, than other breeds. This drug sensitivity results from a mutation in the multi-drug resistance gene (MDR1).

Dr. Becker's Comments:

For veterinary use to prevent heartworms in dogs, ivermectin is the active ingredient in products such as:

- Ivomec® and Heartgard® by Merial
- Zimectrin® by Farnam
- Iverhart® by Virbac
- Tri-Heart® by Intervet
- Various generics

Ivermectin works by causing neurological damage to specific parasites -- including common intestinal worms (excluding tapeworms), most mites and some lice – which results in paralysis and death.

The dosages of ivermectin in heartworm preventive medications are significantly lower than doses used for other purposes.

Currently, the FDA approves use of ivermectin for heartworm prevention and the treatment of ear mites (Acarexx®) only. All other uses of the drug – for example to treat certain varieties of mange, or to clear heartworm larvae in dogs with active heartworm infection -- are considered off-label.

If your vet prescribes ivermectin for your dog for off-label use, be aware the dosage can be as much as 50 times greater than the dose in a heartworm preventive.

Multidrug Sensitive Dog Breeds

As noted in the linked article, Washington State University has identified a mutation of the multi-drug resistant gene (MDR1) in certain dog breeds which can cause serious adverse reactions to some drugs, ivermectin among them.

The gene in question encodes a particular protein responsible for flushing toxins, including many drugs, from the brain. Dogs with the MDR1 mutation aren't able to efficiently pump toxins out of the brain, which can result in a serious and even fatal neurologic condition.

According to WSU's College of Veterinary Medicine:

Approximately three of every four Collies in the United States have the mutant MDR1 gene. The frequency is about the same in France and Australia, so it is likely that most Collies worldwide have the mutation.

The full list of affected breeds known at this time:

Breed	Approximate Frequency
Collie	70%
Long-haired Whippet	65%
Australian Shepherd	50%
Australian Shepherd, Mini	50%
Silken Windhound	30%
McNab	30%
English Shepherd	15%
Shetland Sheepdog	15%
German Shepherd	10%
Herding Breed Cross	10%
Old English Sheepdog	5%
Mixed Breed	5%
Border Collie	< 5%

The only way to know if your dog has the mutant MDR1 gene is to test for it. At my animal hospital, I recommend proactive owners find out if their breed susceptible dog has this gene before administering any ivermectin based product.

WSU anticipates more breeds will be added to the list as more dogs are tested.

You can find a list of other drugs known to cause problems for dogs with the mutant MDR1 gene at WSU's Problem Drugs page.

Is There a Safer Heartworm Preventive?

There are only a few areas in the U.S. where giving a nine month to year-round heartworm preventive might be advisable – those areas are in south Texas, south Florida, and a few other locations along the Gulf coast. The rest of the U.S. ranges from three to seven months of high exposure risk. The majority of states are at six months or less.

I recommend you talk to a holistic vet in your area to understand your dog's actual risk of exposure to infected mosquitoes. A local holistic practitioner will be able to guide you in determining:

- The risk of heartworm disease in your area
- Potential side effects of chemical preventive drugs
- Alternatives to these products that can be used alone or in conjunction with them
- Detox agents to help your dog's body recover, if necessary

Keeping your pet's immune system in excellent shape provides a foundation of good health, including the ability to avoid or successfully fight off parasitic invaders.

Feed a balanced, species-appropriate diet. The healthier your dog is, the less attractive she'll be to all types of pests and parasites, and the better able her immune system will be to fight off invaders. Parasites are more attracted to weak animals.

And speaking of keeping her immune system healthy, take care not to allow your pet to be overloaded with toxins through unnecessary vaccinations and repeated courses of antibiotic or steroid therapy – two of the most overprescribed drugs in veterinary medicine.

Additional information on heartworm infection rates, prevention guidelines by state, and additional tips for how to keep your dog healthy and safe from heartworm infection can be found here.