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*News about Animal Health, Food Safety, and One Health
Army Public Health Center*

2019

FALL EDITION
Approved for public release,
distribution unlimited.

Antifreeze and Ethylene Glycol Poisoning in Dogs and Cats

> Content contributed by MAJ Danielle Tulloss, DVM, DIMA – Arizona Branch Veterinary Services, Public Health Activity - Fort Hood

Ethylene glycol is a dangerous ingredient in antifreeze that can lead to deadly poisoning in dogs and cats. Animals are drawn to the sweet taste, and it can quickly lead to serious toxic effects. Ethylene glycol toxicity must be treated right away because the longer treatment is delayed, the less likely it is that the pet will survive. Ethylene glycol can affect many body systems, including the brain, gastrointestinal tract, and kidneys, ultimately causing death due to kidney failure. As cold weather quickly approaches and cars are prepared for freezing temperatures, take time to know the risks of antifreeze poisoning and actions you should take.

While ethylene glycol toxicity is most commonly related to drinking or licking antifreeze, it is also found in other items such as ice-rink freezing equipment, de-icing solutions, paints, film-processing solutions, and some brake and transmission fluids. Only a small amount needs to be ingested to make your pet sick and cause serious harm; even one lick of a suspected source should be taken seriously. Cats can also get sick from absorbing the chemical through their skin. Poisoning is seen more often in the cooler months, winter, fall, and early spring and in colder climates. This is because people are more likely to use chemicals that contain ethylene glycol during this time. Pets are at increased risk of ingesting ethylene glycol if they are allowed to roam freely, such as with outdoor cats, if they have access to a garage with improperly stored chemicals or if they do not have a water source to drink from.

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Signs of ethylene glycol poisoning occur almost immediately, and pets will go through three phases of signs that range from periods of being abnormal within 30 minutes to appearing normal for the next 12-24 hours and then severely abnormal after 36-72 hours. Common signs in dogs and cats include:

- Vomiting and diarrhea, decreased appetite
- Neurologic signs such as depression, uncoordinated walking or falling over (acting "drunk")
- Increased thirst and urination
- Dehydration
- Mouth ulcers, excessive salivation
- Rapid breathing
- Seizures or coma are possible

Get immediate treatment if you believe your pet may have ethylene glycol poisoning. Without treatment, pets are at high risk for death within a few short days. Your veterinarian may run tests to check ethylene glycol levels in the blood, the status of the kidneys and urine, and other tests to assess overall organ function. Your veterinarian may administer therapies aimed at protecting the kidneys from the chemical effects of ethylene glycol such as intravenous fluids, giving an antidote, removing the chemical from the stomach in some cases, and potentially kidney dialysis in advanced cases.

Keep your pets safe by supervising them in a safe, controlled environment. Cats should be kept indoors only, and dogs should be kept inside or in a fenced area without access to harmful chemicals. Always keep fresh water available. Neuter your animals to reduce the chance of roaming behavior, which could expose them to chemicals in their neighborhood should they escape from your home or yard.

If you notice your pet showing signs suggestive of ethylene glycol poisoning, you may call the Pet Poison Helpline as a first step, available at 1-855-764-7661, or immediately take your pet to your veterinarian. Your veterinarian may recommend calling the Helpline to assist them with starting the best treatment plan.

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A Threat to the Boxer Breed: Arrhythmogenic Right Ventricular Cardiomyopathy

> Content contributed by CPT Guisele Ballarini, DVM, First Year Graduate Veterinary Education (FYGVE) Public Health Activity Fort Belvoir, VA

Due to genetics, some breeds of animals are more likely to get certain diseases than others. Even within a breed, certain bloodlines can carry genetic information making an individual animal at greater risk for a particular disease.

One of the best examples of this is Boxer dogs and the higher risk they have for a specific heart disease called Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC).

What is Arrhythmogenic Right Ventricular Cardiomyopathy?

Arrhythmogenic Right Ventricular Cardiomyopathy is an inherited heart condition in dogs that often does not cause signs we can see until adulthood. It occurs predominantly in middle to older-age Boxers, between 3 and 6 years old. ARVC causes the normal heart muscle tissue to be replaced by fibrous or fatty tissue affecting the normal electrical activity in the heart, resulting in an abnormal heart rhythm or beat. This abnormal heart rhythm lowers the heart's ability to pump blood throughout the body and can result in congestive heart failure. The severity of ARVC may vary among boxers and can impact their quality and length of life in different ways.

How do I know if my Boxer has ARVC?

Many Boxers with ARVC do not show signs that are easily apparent on the outside without more involved testing. Taking your dog in for an annual wellness screening will be the best way to know what your pet's normal status is, and then potentially identify ARVC when subtle changes occur as they age.

How can my Veterinarian diagnose ARVC?

Your pet's medical history is important to share with your veterinarian and to help diagnose ARVC. Information like a recent fainting episode, inability to exercise, lack of appetite, and depression are all important details that may lead your veterinarian to suspect ARVC. The most common tests used in determining ARVC are electrocardiogram (ECG) and echocardiogram (ultrasound of the heart). A useful test is the Holter monitor. This device is placed on your dog for a 24-hour period while at home and records electrical activity of the heart throughout their normal day. Genetic testing is also available and may be able to identify your dog's risk for developing ARVC.

How is ARVC treated?

Treatment for this disease is mainly medical, primarily in the form of medications to correct the abnormal heart rhythm. Other drugs may be added to correct blood pressure and other signs of congestive heart failure if present. Additional therapy includes Omega-3 fatty acid supplementation, which may help reduce abnormal heart rhythms.



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A Threat to the Boxer Breed: Arrhythmogenic Right Ventricular Cardiomyopathy

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Fatty acids are nutritional supplements that usually have no side-effect concerns when used as directed, making it a safe and potentially helpful addition to the treatment of ARVC. Consult your veterinarian for supplement guidance before using since general instructions for human over-the-counter products are usually not appropriate for pets.

How long can my dog live if diagnosed with ARVC?

Boxer dogs with clinical signs of ARVC are at risk of sudden death and their life expectancy is difficult to predict. All Boxer dogs, even those not

experiencing symptoms, are a risk. Most symptoms do not develop until the dog is 3 to 5 years old.

What else can I do to help my pet?

Unfortunately, there is not much that can be done to prevent ARVC in genetically affected dogs. Taking your dog in for annual wellness screenings and having a good relationship with your veterinarian may improve the likelihood of early diagnosis and management of ARVC.

Knowing the Risks and Signs of Leishmaniasis While Overseas With Your Pet

> Content contributed by CPT Kamilah Mustapha, DVM, First Year Graduate Veterinary Education (FYGVE), Public Health Activity Fort Belvoir, VA

Traveling internationally or living outside of the United States is a wonderful thing. It brings families (including four-legged family members!) and friends closer together, allows us to learn about other people and cultures, and experience things we couldn't experience at home. It's important to remember though that international travel can also increase the transmission and spread of some infectious diseases. Learning to recognize signs of diseases that are uncommon in the United States, such as Leishmaniasis, is key in seeking early medical treatment that helps to keep families and pets healthier.

What is Leishmaniasis?

Leishmaniasis is a disease caused by a parasite called *Leishmania* carried by the female sandfly. Both people and pets can get Leishmaniasis through the bite of an infected female sandfly. This disease can affect the skin, internal organs, or both.

How does my pet get Leishmaniasis?

Sandflies are small, tan, flying insects that are similar in appearance to mosquitoes. When an infected female sandfly bites an animal or human, *Leishmania* parasites are injected into the skin. The organisms are taken up by a type of white blood cell (called monocytes), and the parasites multiply. From there, they spread through various tissues in the body such as the bone marrow, lymph nodes, and spleen. Leishmaniasis can also be spread by contaminated blood transfusions, and rarely from infected mother to offspring.

Where is it found?

Leishmaniasis is found in many countries in South and Central America, Asia, Africa, the Middle East, and some countries in Europe. Although the disease is uncommon in the United States, human and animal cases have been reported in 21 states and Canada. Cases of Leishmaniasis in the United States are usually found in pets and people returning from travel to the areas listed above.

How do I know if my pet has Leishmaniasis?

Leishmaniasis can affect the skin, internal organs, or both. Skin abnormalities are typically hairless, flaky areas, often located on the face, paws, and head. Eyes can also be affected – signs you may see in your pet are redness, swelling of the eyelids, squinting, and/or discharge from the eyes. Bleeding disorders can occur and include nosebleeds and blood in the stool. Other possible signs are lethargy (decreased interest in play or exercise), weight loss, decreased appetite, vomiting, and limping. While some animals develop serious disease, others develop very mild or no signs of disease.

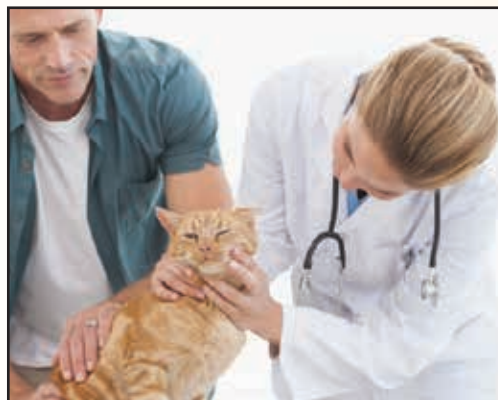


How can I prevent my pet from getting Leishmaniasis?

The most important way to prevent Leishmaniasis is to keep pets from being bitten by sandflies. Pets living in areas where sandflies exist should be kept indoors at dawn and dusk, when sandflies are most active. Preventive collars and spot-on preventives containing deltamethrin, permethrin, and imidacloprid are helpful in preventing sandfly bites. Fine netting can be used to cover kennels, and fans can be used to deter sandflies, who despite their name are weak fliers.

Can I get Leishmaniasis from my pet?

Humans cannot get Leishmaniasis directly from animals. When a sandfly bites an infected mammal, the sandfly becomes infected and can then infect other animals, including people. If your pet seems to be feeling unwell, or if you notice any signs as listed above, please contact your veterinarian or health provider.



Scombroid Poisoning

> Content contributed by CW2 Zachary Nyland, Senior Food Safety Officer, 64th Medical Detachment Veterinary Service Support, Baumholder, Germany

Do you know about Scombroid poisoning and what you can do to keep you and your family safe this season?

Improper refrigeration of fish can cause bacteria within the fish to grow and produce toxins, such as scombroid toxin. When you eat the fish containing scombroid toxin, you can become ill and this is called scombroid poisoning. Scombroid poisoning is primarily associated with tuna, mahi-mahi, marlin, mackerel, sardines, anchovies, herring, amberjack, and bluefish. The signs and symptoms will look a lot like an allergic reaction and include: hives, itching, burning sensation in the mouth, vomiting, diarrhea, and a pounding heart. Symptoms typically occur within a few hours of consumption and last anywhere from 12 hours to a few days. Scombroid poisoning is not usually a severe or long-term illness, and prevention is not difficult; yet, the condition continues throughout the world. It most commonly occurs in fresh fish, but frozen, cooked, cured, or canned fish products can also cause scombroid poisoning.

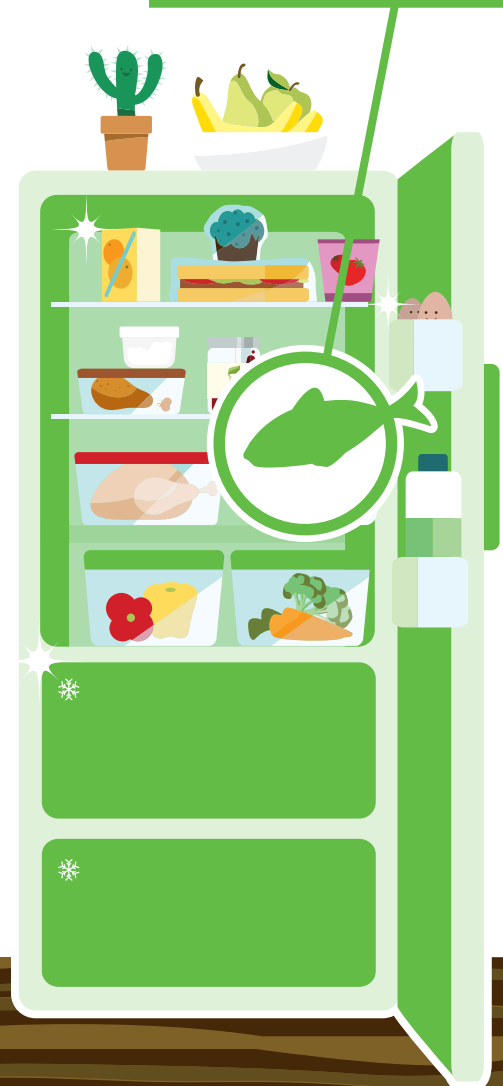
How Does It Happen?

Scombroid poisoning happens when certain fish are not kept at a safe and acceptable temperature range. When storage temperatures are too warm, the naturally occurring bacteria in the fish meat can multiply and produce scombroid toxin. Scombroid toxin formation speeds up as temperatures increase. Keeping fish at 40°F or below prevents toxin formation. From harvest through distribution, producers are required by law to address temperature controls to prevent toxin formation in scombroid toxin-forming fish or in any other species where there is a known food safety hazard. Even so, consumers should be mindful once they catch or purchase fish that they bring home for a meal.

What Can You Do?

Once the toxin has formed, cooking cannot reduce or eliminate it to an acceptable level. The only way to control scombroid toxin formation in the fish is to keep it cold until you cook it. Surveys of home refrigerators indicate that temperatures are often higher than 50°F. Monitor your refrigerators to ensure it is functioning properly (e.g., able to maintain temperature at 40°F or below). Purchase fish from approved sources and reputable suppliers only, and keep it as closely to freezing temperatures as possible for maximum protection from scombroid poisoning. If you have concerns that you or a Family member is experiencing symptoms of scombroid poisoning, contact your physician immediately. The Poison Control Center can also help; simply dial 1-800-222-1222 to speak to a poison control expert.

Keeping fish at 40°F or below prevents toxin formation.



Veterinary Connections



Goal of publication:

- Veterinary Connections is a quarterly publication written by Army Veterinary Service personnel and published by the Army Public Health Center to inform and educate Service members, beneficiaries, and retirees about Animal Health, Food Safety, and One Health.
- One Health refers to the intersection and overlap between animals, humans, and the environment.
- Army Veterinary Service personnel serve around the world supporting the Department of Defense as proponents for Animal Health and Food Protection.

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