

Best Friends BULLETIN



Dear Clients & Friends...

I started writing this newsletter in March to send out in April, but it was tabled when our income dropped due to coronavirus. It's now become a summer newsletter instead of a spring one. Such a strange year we are having! I missed you all during the pandemic. It was very weird to see your pets but not you, as



we struggled through our COVID-19 isolation. Communication is awkward when we can't talk face-to-face, especially with new clients. We've been trying to write everything down for you, but it's not the same!

I typed this from the back office of the clinic, where I set up my work station for the duration of COVID-19. It was kind of nice being able to watch the birds at the feeder outside the window, a change of pace from



the corner of the pharmacy. We divided into teams separated from each other by the door between the front and back halves of the hospital. The plan was if any employee got sick we'd only have to quarantine one team and not all of us. I've been the back team leader, and the dentist, surgeon and radiologist for the entire hospital, because all the equipment for those things is in the back. Dr. Wilder and Dr. Ripperger have been doing most of the out-patient appointments.

We've had some interesting days amongst the disruption. I've been volunteering help to Pineview Wildlife Rehabilitation for the past year or so. Last year I worked on turtles and frogs. This year so far it's been all about raptors. We pinned broken wings on both an adult great horned owl and on this baby one above.

Tidbits...

- Dogs' noses are equipped to detect not only faint smells but also weak thermal radiation, joining vampire bats, black fire beetles and certain species of snake known to have the ability. However, dogs' noses probably cannot distinguish hot or cold objects at a distance, says Gary Settles, an emeritus professor at Pennsylvania State University who has studied dogs' sense of smell.
- A dog died after her owner fed her "calming" hemp-based treats from a local store, and the woman's other dog became extremely ill after eating the treats. Two veterinarians say cannabidiol toxicity was the cause. The FDA says that "CBD is not generally recognized as safe for pet food."



We also treated the snowy owl (below left) for bruising and tissue damage, as well as a wounded red tailed hawk, and removed bone pins from another red tail, placed by a veterinarian in Lake Geneva. We are lucky to have Ryanne working at Best Friends, since she worked for many years at the Schlitz Audubon Raptor Center. She has been expert help for our owl adventures!

There are more and more backyard chickens in our area, so along with the raptors we've been seeing more poultry. I've also been seeing more reptiles lately, especially bearded dragons and geckos. These interesting creatures have provided some variety to our work days.

Thank you
BFVC for such
awesome care!!



Now we are trying to figure out what our "new normal" will be over the summer. Just because things have opened back up somewhat doesn't mean we feel entirely comfortable interacting with dozens of clients every day. Our exam rooms are small, and it's very difficult to clean door handles, benches and counters often enough to keep everyone safe. Curbside service, wearing masks and limiting contact will probably be the norm for a while. At least over the summer we can meet you outside sometimes.

We hope all of you are finding your new normals as well, and that the pandemic has touched you lightly. Wishing you all good health and steady employment,

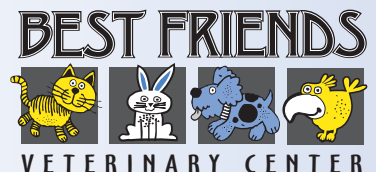
*Dr. Nan Boss &
the team at Best Friends
Veterinary Center*

2082 Cheyenne Court, Grafton, WI 53024

Ph: 262-375-0130 • Fax 262-375-4196

Email: info@bestfriendsvet.com

Website: www.bestfriendsvet.com





Chronic Dehydration in Cats

Cats evolved in a dry environment, so they adapted to obtain water from their prey, rather than drinking it. They don't have a strong thirst reflex. Small rodents and canned cat food both contain 60-70% water. A cat with healthy kidneys does not need to drink much water when eating canned food.

The problem comes when a cat eats dry food, which is only about 10% water. A cat cannot obtain enough water from dry kibble and must drink to stay hydrated. This is fine until the cat gets sick, and food and water consumption both decrease. A cat who is not eating is also likely not drinking.

Dehydration develops quickly and usually worsens whatever disease process is going on. When cats become dehydrated, they are slow to initiate drinking compared to dogs. They take almost a day longer to replenish severe fluid deficits and are much more likely to need fluid support here at the veterinary hospital.

Cats are not designed to be efficient drinkers. They cannot create suction with their tongues. When they lap at a bowl of water, only 3/100 of a teaspoon is consumed with each flick of the tongue. A lot of lapping is required for a cat to stay hydrated!

Additionally, cats have poor close-up vision, which makes it difficult for them to see the surface of the water. Moving water is easier for them to see, which is probably the reason they prefer to drink from fountains. Despite being desert creatures, they also prefer their water to be fresh and cool. (They like their canned food to be the same temperature as a freshly killed mouse, but they prefer their water to be cool. Go figure.)

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Cats can feel vulnerable when drinking, so the longer they spend with their head down in a bowl the more nervous they may become. Put food and water bowls in quiet, safe areas of your home.

Some cats don't like their whiskers touching the sides of the bowl but others prefer drinking from a narrower glass or cup. If your cat likes drinking out of a particular container then provide water that way. Many cats like drinking out of a faucet and some will even learn how to turn one on (though they are not so good about turning it back off again). Anything you can do to encourage a cat to drink more is good.

Cats with kidney disease are especially prone to dehydration. Kidneys that are failing cannot conserve water efficiently. Urine becomes more dilute, meaning more water needs to be consumed to make up for what is being lost. Chronic kidney disease cats rarely drink enough to make up for these losses and tend to be dehydrated all the time – which makes their kidney function worse and increases the risk for high blood pressure and blood clots. Cats with crystalluria – sandy crystals or stones in their bladders – are also more likely to have problems if they don't stay hydrated.

Feeding cats with kidney or bladder problems canned food, or even watered down canned food, is a great strategy for improving hydration. Feeding both canned and dry food won't do. Even feeding 2/3 canned food and 1/3 dry doesn't affect the concentration of a cat's urine. It has to be 100% canned food.



Many cats will not eat canned food and it's also more expensive and less convenient to feed only a canned diet. Water fountains are great for increasing water consumption, especially in cats with kidney disease or those eating dry food.

Purina has just introduced a powder product called Hydra Care™ to mix with water. It contains amino acids and glycerol, to support water absorption. Cats drinking the nutrient-enriched water consume an average of 28% more water per day. They also produce a more watery, less concentrated urine, which is what we aim for when a cat has bladder or kidney disease.

In summary, if you have a cat with chronic kidney disease or a history of bladder disease here are the ways to increase water consumption by your cat:

- 1) Feed all canned food if possible
- 2) Use a water fountain instead of a bowl
- 3) Provide water containing Hydra Care when your cat is ill



Recent Statistics for Wisconsin from the Companion Animal Parasite Council (CAPC).

• The Companion Animal Parasite Council (CAPC) is an independent not-for-profit foundation comprised of parasitologists, veterinarians, medical, public health and other professionals that provides information for the optimal control of internal and external parasites that threaten the health of pets and people.

Hemp, Hemp, Hooray?

AN OVERVIEW OF CBD FROM DR. RIPPERGER



It is roughly estimated that several million Americans use medical marijuana to treat various conditions, such as epilepsy, pain, muscle tremors, nausea, and anxiety disorders. No wonder then, that eventually someone looked at their dog or cat with a similar condition and asked, "Could this also help my pet?" You may even know someone who has purchased "CBD" for their furry family member. But what even is CBD- is it the same thing as marijuana? Is it okay to use for your dog or cat? Or are all those internet articles about the miracles of CBD just blowing smoke?

Cannabis refers to plant varieties from the Cannabaceae family and the products derived from it. Two types of cannabis include hemp and marijuana. These plants contain hundreds of chemical substances, the two most widely-known being THC and CBD. THC is the compound in marijuana that produces the sensation of being "high." Hemp plants contain no more than 0.3% of TCH on a dry matter basis, while marijuana plants contain more than

0.3% TCH on a dry matter basis. THC is toxic to pets. Conversely, CBD stands for "cannabidiol." It is a compound found in both hemp and marijuana plants and has quickly become a major player in the pet industry.

The Agriculture Improvement Act of 2018 removed hemp and the substances derived from it from the Controlled Substances Act, but did not give power to the FDA to regulate it. This created an opening for hemp-related products, such as

Three Cannabis Products Recommended to Dr. Boss by a Veterinarian Specializing in Alternative Medicine: Pet Releaf Soft Chews, petreleaf.com

Canna4Pets CBD Blend, which is designed to treat cancer and contains 10 mg/ml CBD plus 0.4 mg/ml of THC. Canna4Pets.org

Chronoquin Hemp Oil Extract, Chronoquin.com

those with CBD, to be made. In recent news, the FDA has approved four cannabis-related drugs for use in people with difficult-to-control epilepsy. However, the FDA has not approved any cannabis-related drugs or food for use in animals. (The term "supplement" is actually not even recognized for animal products; products must either be classified as a drug or as food).

While CBD and THC are the more studied cannabis compounds, there are hundreds of other cannabis molecules that could have therapeutic benefit. New research is focusing on questions such

as: What mix of molecules best treats which problems? What is the appropriate dose of each molecule for providing therapeutic benefit? And how do we determine correct dosing for various types of CBD products, such as "drops of oil"? How do these products interact with other medications used in pets? In 2018 and 2019, studies on CBD products focused on its use in dogs with arthritis and seizures. Both studies suggested "potential" for CBD product use in these diseases. Because only two small trials have been completed, they noted "confident claims of safety...are not justified."

The Wisconsin Veterinary Medical Association is now allowing cheesehead veterinarians to discuss cannabis with pet owners and provide information regarding related products. However, cannabis products are currently being marketed to pet owners as drugs, supplements, or food additives, and this does not comply with current FDA regulations. So although Wisconsin vets can talk about CBD products, we cannot administer, prescribe, or recommend them at this time.

Because so many pet owners are asking about or already using CBD products, we want to reduce risks to animal health and provide suggestions for how to best assess them:

1. Was the product made in the USA?
2. Does the product have a Certificate of Analysis showing percentages of cannabis molecules, testing for heavy metal contamination, etc.?
3. Is the label easy to understand?
4. Does it provide information about strength of the product and dosing?
5. What is the base for the product? (It should NOT be an alcohol.)
6. What carrier oils are included?
7. What other ingredients are in the product?

CBD for pets is a new frontier in our profession. Veterinarians are expecting to learn more about CBD treatment potential in the coming years and have fewer restrictions placed on our ability to provide advice and guidance regarding the use of these products.

• The CAPC report for the first four months of the year shows that 591 dogs had tested positive for Heartworm disease in Wisconsin for 2020 so far. Tick-borne diseases are much more common, with about 13% of dogs in Wisconsin testing positive for one of these infections. This includes 6119 cases of Lyme Disease; 1027 cases of Ehrlichiosis; and 3714 cases of Anaplasmosis. In Ozaukee County, almost 5% of dogs test positive for Lyme Disease.

• This data was provided by IDEXX Laboratories and ANTECH Diagnostics. It is estimated to represent less than 30% of actual cases, since many dogs are not tested or are not tested by these particular laboratories.

ANXIETY BEH



IN DOGS BY DR. NAN BOSS

It is conservatively estimated that 29% of dogs suffer from anxiety of some sort. The causes of anxiety are complex. Genetics plays a

large role. Behaviors are at least 60% inheritable. Caution is a survival trait in the wild – being wary of new things and situations is smart strategy. This is why some dogs are anxious from a very early age, more prone to being worriers. Anxiety can also be triggered by a single event or a string of bad experiences, each building on the last.

Whether the origin of a particular dog's anxiety is nature or nurture is less important than the severity of the problem.

62% of dog owners surveyed have regularly seen behaviors that could be signs of anxiety in their dogs

40% of owners surveyed whose dogs have experienced anxiety behaviors say it has impacted their lifestyle or changed their routine

Some anxious dogs live in a constant vigilant state of anticipating negative outcomes and emotions, even when there is nothing bad or frightening occurring. Like social anxiety or obsessive-compulsive disorder in humans, this level of fear can be debilitating and harmful.

While we think of anxiety as being a problem with the brain, it affects the entire body. Chronic stress leads to elevated cortisol and adrenaline levels. Stress hormones influence the entire body as well as making the original psychological issue worse. Elevated heart rate, blood pressure, blood sugar and other parameters demonstrate the effects of stress hormones.

Anxiety in dogs is similar to a lot of other disorders, in that the longer it goes untreated the harder it is to manage. Many pet owners minimize the problem until it is severe and by this time, it may be impossible to "fix" the pet. Most anxiety disorders grow steadily worse with time, so a mild noise phobia such as fear of thunderstorms can eventually morph into complete panic. The earlier we address it, the better our chances of heading a major problem off at the pass.

Separation anxiety often starts with the trauma of rehoming. If a pet ends up in a shelter at a young age, it may be traumatized for life. 8-12 months is the worst stage of brain development for this to occur. A high percentage of dogs with severe separation anxiety lost their families at this critical age. PTSD can occur in pets as well. A single horrific event can scar a dog forever.

Some dog owners feel guilty about their dogs' behavior issues, believing they resulted from training mistakes or a lack of training. Both genetics and experiences play a role in many behavior issues. Often the pet parent has done nothing wrong at all – that's just the

way their dog's brain was hardwired. We don't have any control over what happened to a dog prior to adoption, either, and sometimes rescued dogs have a lot of baggage to overcome. Neglect and abuse leave lasting scars.

The best way to prevent adult fear and anxiety is to socialize puppies when they are young. Positive exposure to novel experiences between 4 and 14 weeks of age is critical to healthy brain development. In other words, puppies need to feel happy and safe while being exposed to a variety of people, places, noises and other pets. It is natural to want to safeguard your puppy from anything that could be harmful but it's better to expose them to the big, wide world in as many ways as possible, so they don't get nervous about them as adult dogs. They should meet dozens of humans, dogs and other creatures when they are young. They should go to puppy classes, ride in the car daily, and visit other homes, the pet store, the vet clinic and the park (but not the dog park until they are fully vaccinated).

Positive exposure means the puppy has good experiences at all these places. Feeding favorite treats or playing makes scary experiences happy ones. If your puppy is becoming frightened, step back from the situation and use treats, toys or petting until the pup has settled back down. Don't approach the situation again until the fear goes away. Forcing your puppy into scary situations is negative exposure, which is the opposite of what we want. You can actually teach your puppy how to be relaxed in strange situations by rewarding relaxed, calm behavior.

Once anxiety is occurring, we have lots of ways to help. Some are nutritional supplements, such as Solliquin™ and Purina's Calming Care™ probiotic. Additionally Thundershirts™ and Through a Dog's Ear™ music therapy are effective for many dogs.

Prescription medications can be life-changing and sometimes life-saving. The same medications used for anxiety, depression and OCD in humans affect dogs' brains the same way. Studies show that anxious puppies treated with fluoxetine (Prozac) can have normal brain development and be normal, non-anxious adult dogs, whereas anxious puppies who are not treated will be timid,

fearful dogs all their lives. Happy, confident dogs have much better quality of life than frightened ones!

We have short-term medications used only for frightening situations, such as an impending storm or a visit to the veterinarian. Long term daily medication is appropriate for daily stress, sometimes with short-term medication used in addition to it for scary situations.

Behavioral modification and training are also important. We have materials in our library about many

- Is there anything that makes your dog afraid or anxious?
- What triggers your dog's anxiety?
- What symptoms of anxiety result?
- What helps to calm your dog when it is frightened?



A V I O R . . .

common behavior problems, including anxiety disorders, and what to do at home to help your dog. Medication will work much better if training is used as well. The Wisconsin Humane Society offers classes for shy and reactive dogs. Local trainer Holly Lewis offers a "Don't Fret the Vet" class specifically for dogs who are afraid to come visit us at the clinic. Trainers like Holly will also come to your home to work with you and your dog. In severe cases, we refer to a veterinary behaviorist for expert care.

Lastly, we need to think about and address pain management along with anxiety. Pain makes anxiety worse and vice versa. We bend over backwards to make sure dogs coming into the clinic for procedures and both comfortable and calm. Terror magnifies any pain they feel and of course having someone you don't know do something uncomfortable makes anyone anxious. We never want to be the source of a pet's trauma-induced anxiety!

If your pet suffers from an anxiety-related disorder, please let us know. We have many ways to help!



IN PUPPIES

FROM DR. RIPPERGER

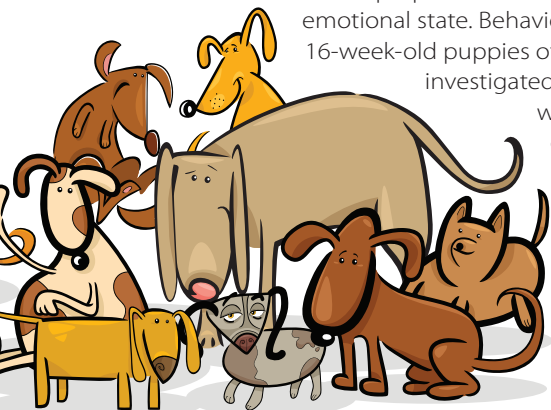
My own wheaten terrier puppy, Koosa, suffered from shyness. Because I was a worried helicopter dog mom, I spoke with a veterinary behaviorist while in Chicago for a conference. Dr. Jokela wrote back a wonderful email with many resources, which we used to update some of our handouts. She noted that it is important to identify abnormally fearful pups early on. These puppies should start medications such as Fluoxetine sooner rather than later. It takes a couple of months for them to reach effect, so the sooner you start the sooner you will see results. Side effects can include decreased appetite and lethargy, which are usually temporary and resolve within two weeks.

She also notes that too much exposure can be overwhelming to puppies. The resources she recommended below may help with handling the socialization process and show you what to do for your puppy if fear is already being noted. **To directly connect to the links below, pull up the digital version of this newsletter on our website, www.bestfriendsvet.com.**

The first reference is a study by Martin Godbout and Diane Frank, both ACVB Boarded Behaviorists, which looked at fearful puppies. As a new approach to evaluate a puppy's future behavior, the

authors proposed observation of the puppy's emotional state. Behavior of 102 8 to 16-week-old puppies of various breeds was investigated in 3 different contexts

within the veterinary clinical environment: observation of the puppy free on the floor; physical examination on a table; and various manipulations on the floor.



The distribution of the behavioral response was wide, but most puppies behaved in a similar fashion. Approximately 10% of puppies behaved very differently (outliers) compared to the others by showing a high level of signs compatible with anxiety. A prospective study comparing these puppy behaviors with those observed one year later in the same contexts showed that most puppy behaviors tend to persist into adulthood. As fear and anxiety seem to play an important role in development of behavioral problems in dogs, early detection may help prevent some unwanted behaviors. Here is a link to the final paper on the study by Godbout: <https://www.dropbox.com/s/I91ptn299kosyk2/Godbout%20Puppy%20Study.pdf?dl=0>

Veterinarians in practice also find in their puppy patients those 10% that are outliers behaviorally. For these puppies, there may be lifelong fear that will not improve with time and may worsen with overexposure. This may be from genetics, epigenetics, neuro-developmental issues, and early life experience or a combination. Here is a webinar about **Reading Between the Lines: Early Signs of Canine Anxiety** <https://vimeo.com/129054070>

If a puppy is already fearful of people, it is important to use great care with exposures to additional people. If fear is present, socialization will not work. You would need to instead work on counter conditioning and desensitization. For more see this article: **What-is-desensitization-and-Counter-Conditioning?** <https://www.companionanimalpsychology.com/2018/07/what-is-desensitization-and-counter.html>. This is a much slower process but allows you to change the pup's emotional state so that unfamiliar people predict good things will happen.

Instead of having the puppy come toward the unfamiliar person if she is fearful, use the Treat and Retreat Method. This gives her distance and is one of the most important things when trying to help a fearful dog. **Treat and Retreat--Befriending the Shy Dog.pdf**, <https://www.dropbox.com/s/Ong3qpw5jqka9g7/Treat%20and%20Retreat--Befriending%20the%20Shy%20Dog.pdf?dl=0>

You may also want to explore the **Ultimate Puppy Website**, <https://ultimatepuppy.com/>, for great information to raise a behaviorally healthy puppy.

Puppy Start Right, By Ken Martin, DACVB and Debbie Martin, LVT, VTS-Behavior is Dr. Jokela's most favorite puppy book. Ken and Debbie Martin also have a webinar about puppy socialization called Strategies for Effective Socialization. You can find it on their free webinar at this page: www.teamanimalbehavior.com/webinars. There are several excellent webinars on that page; the socialization one can be found if you scroll down.

Here is another Handout, from the Chicagoland Veterinary Behavioral Consultants: **CVBC Puppy Socialization Handout**, <https://www.dropbox.com/s/62yk9wfx9uedd7u/CVBC%20Puppy%20Socialization%20Handout.pdf?dl=0>

Lastly, here is a set of webinars by Chris Pachel, DVM:

- **Canine Socialization Period Part 1** <https://vimeo.com/81307617>
- **Canine Socialization Period Part 2** <https://vimeo.com/81975828>
- **Desensitization and Counter-conditioning: Details Make All the Difference** <https://vimeo.com/136438725>

We hope that these resources will help to give you a better grounding in how fearful behaviors develop and what you can do to shape your anxious puppy or dog into a calmer, happier pet.

SPRING AND SUMMER TOXINS

TIPS FROM PET POISON HELPLINE TO HELP KEEP YOUR PET SAFE!



If you think your pet has been poisoned, contact us, Lakeshore Veterinary Specialists & Emergency Hospital, or Pet Poison Helpline at 800-213-6680. Pet Poison Helpline's fee of \$49 per incident includes follow-up consultation for the duration of the poison case.

Spring bulbs are just as excited to break through the ground to add some color to our yards as we are to see some greenery! That said, we need to be aware of the potential dangers plants can bring to our pets. Here is a list of some of the most common spring plants and their toxicities... so you know how to pet-proof your garden and keep your pet safe!

TULIPS AND HYACINTH

Tulips contain allergenic lactones while hyacinths contain similar alkaloids. The toxins in these plants are very concentrated in the bulbs (versus the leaf or flower), so make sure your dog is not digging up the bulbs in the garden. When bulbs are chewed or ingested, they can result in tissue irritation to the mouth and esophagus. Typical signs include profuse drooling, vomiting, or diarrhea, depending on the amount consumed. There is no specific antidote, but with supportive care from the veterinarian (including rinsing the mouth, anti-vomiting medication, and subcutaneous fluids), animals do quite well. With large ingestions of bulbs, more severe symptoms such as an increase in heart rate and changes in respiration can be seen. These more severe signs are usually seen in cattle or overzealous, chowhound Labrador retrievers.

DAFFODILS

These flowers contain lycorine, an alkaloid with strong emetic properties (something that triggers vomiting). Ingestion of the bulb, plant, or flower can cause severe vomiting, diarrhea, abdominal pain, and even possible cardiac arrhythmias or respiratory depression. Crystals are found in the outer layer of the bulbs, similar to hyacinths, and cause severe tissue irritation and drooling. Daffodil ingestions can result in more severe symptoms so if exposure is witnessed or symptoms are seen, we recommend seeking veterinary care.

LILIES

There are both dangerous and benign lilies out there, and it is important to know the difference. Peace, Peruvian, and Calla lilies contain oxalate crystals that cause minor signs, such as tissue irritation to the mouth, tongue, pharynx, and esophagus – these result in minor drooling.



The more dangerous, potentially fatal lilies are true lilies, and these include Tiger, Day, Asiatic, Easter and Japanese Show lilies – all of which are highly toxic to cats! Even small ingestions (such as the pollen or 2-3 petals or leaves) can result in severe kidney failure. If your cat is

seen consuming any part of a lily, bring your cat (and the plant) immediately to a veterinarian for medical care. The sooner you bring in your cat, the better and more effectively we can treat the poisoning. Decontamination (like inducing vomiting and giving toxin binders like activated charcoal) are imperative in the early toxic stage, while aggressive intravenous fluid therapy, kidney function monitoring tests, and supportive care can greatly improve the prognosis.

CROCUS

There are two Crocus plants: one that blooms in the spring (Crocus species) and the other in the autumn (*Colchicum autumnale*). The spring plants are more common and are part of the Iridaceae family. Ingesting these can cause general gastrointestinal upset, including vomiting and diarrhea.

Autumn Crocus, part of the Liliaceae family, contains colchicine. The Autumn Crocus, also known as Meadow Saffron, is highly toxic and can cause severe vomiting, gastrointestinal bleeding, liver and kidney damage, and respiratory failure. If you are not sure what plant it is, bring your pet to a veterinarian immediately for care. Signs may be seen right away but can also be delayed for days.

LILY OF THE VALLEY

The *Convallaria majalis* plant contains cardiac glycosides, which will cause symptoms similar to digitalis (foxglove) ingestion. These symptoms include vomiting, diarrhea, a drop in heart rate, severe cardiac arrhythmias, and possibly seizures. Pets with any known exposure to this plant should be examined and evaluated by a veterinarian and treated symptomatically.

FERTILIZERS

As you work on your rose gardens, be aware of those fertilizers. While most fertilizers are not very toxic (resulting in minor gastrointestinal irritation when consumed), some fertilizers can be fatal without treatment. Here are a few ingredients to be aware of so you know what toxins and symptoms to watch out for:

- **BLOOD MEAL** – This is dried, ground, and flash-frozen blood containing 12% nitrogen. While it's a great organic fertilizer, it can cause vomiting and diarrhea if ingested. More importantly, it can result in severe pancreatitis, meaning inflammation of the pancreas. Some types of blood meal are



also fortified with iron, resulting in iron poisoning, so make sure to know what is in your bag of blood meal!

- **BONE MEAL** – This is made up of defatted, dried, and flash-frozen animal bones that are ground to a powder. This bone smells and tastes good to dogs. Keep your pet from digging in it and eating the soil. If consumed in large amounts, the bone meal forms a large, cement-like ball in the stomach. This “ball” can obstruct the gastrointestinal tract and may require surgical removal.

- **SYSTEMIC ROSE AND PLANT PRODUCTS** – Some of these fertilizer mixes contain disulfoton or other types of organophosphates (OPs). As little as one teaspoon of 1% disulfoton can kill a 55 lb dog, so be careful! Organophosphates can result in severe symptoms including salivation, lacrimation, urination, defecation, seizures, difficulty breathing, hyperthermia, and death. Thankfully, an antidote is available for OPs (atropine).

- **HERBICIDES/INSECTICIDES** – Most ready-to-use herbicides or insecticides (typically those that come in a spray bottle) do not pose a significant risk for poisoning in dogs and cats unless a large amount was ingested. Fish and frogs can be very sensitive to these chemicals, so avoid use around outdoor ponds.

- **IRON** – This is commonly added to fertilizers and can result in iron poisoning from ingestion of elemental iron. This is not necessarily the same amount of iron reported on the label. Determining the amount of elemental iron ingested can be very confusing. When in doubt, have a veterinary professional at Pet Poison Helpline assist you to determine if the amount ingested was toxic or not. Large ingestions can result in bloody vomiting and diarrhea, and cardiac and liver effects.

The best thing any pet owner can do is to become educated on household toxins (both inside the house and out in the garden) in order to pet-proof your house appropriately. Make sure to keep all gardening and lawn products in labeled, tightly sealed containers out of your pet’s reach.

RESOURCES:

Pet Poison Helpline, an animal poison control center based out of Minneapolis, is available 24 hours, seven days a week for pet owners and veterinary professionals who require assistance treating a potentially poisoned pet. The staff provides treatment advice for poisoning cases of all species, including dogs, cats, birds, small mammals, large animals and exotic species. As the most cost-effective option for animal poison control care, Pet Poison Helpline’s fee of \$49 per incident includes follow-up consultation for the duration of the poison case. Pet Poison Helpline is available in North America by calling 800-213-6680. Additional information can be found online at www.petpoisonhelpline.com.



More Tidbits...

- Himalayan wolves live at high altitudes across northern India, China and Nepal, prey on gazelles and rodents, and have a distinctive howl, all of which sets them apart from neighboring gray wolves that live at lower altitudes. A study in the *Journal of Biogeography* found Himalayan wolves also have specialized genes that enable high-altitude survival, and scientists say the wolves should be considered a distinct species.

- Colorado State University received a \$1.5 million donation from Panacea Life Sciences, which makes cannabidiol products for human and veterinary use, to open a cannabinoids research center at the university’s College of Natural Sciences. A section of a chemistry building is being renovated for the new research center.



- Veterinarians in Russia reportedly used 3D printing to make new prosthetic paws for a cat that lost all four paws, along with both ears and part of its tail, to frostbite. The titanium implants were coated with a calcium phosphate compound and fused into the cat’s leg bones.

- Music composed specifically for cats was associated with significantly improved behavior and response to handlers in a small study comparing how cats respond to no music, cat-specific music and classical music. The cat-specific music contains sounds cats make at frequencies similar to feline vocal ranges.



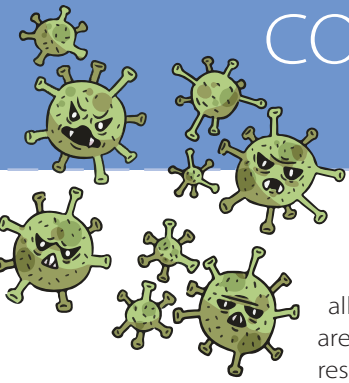
- Rottweilers and Labrador retrievers in the UK are six times more likely as cross-bred dogs to have elbow joint disease, and the risk is fourfold in German shepherds, threefold in golden retrievers and twofold in English springer spaniels, according to research by VetCompass. Arthritis accounts for about 76% of elbow disease, dysplasia (malformation) accounts for about 31%, and trauma causes a little more than 6%.

- *Clostridioides difficile*, or *C. diff*, is a common infection of humans often acquired during a hospital stay. Recurrence risk has been found to be lower for people with pets. Regular, close contact with a pet might reduce the risk for recurring community-acquired infection, and the more frequent the contact, the lower the recurrence risk, researchers reported in *Open Forum Infectious Diseases*. The researchers had expected a positive association between contact with pets and *C. diff* recurrence and were surprised to find an inverse relationship.

- One month after being severely burned in a house fire, a 10-month-old cat is continuing his recovery at home. Veterinarians closed wounds surgically and applied fish skin sourced from a local market to the burn wounds.



CORONAVIRUS AND PETS



Coronaviruses have long affected livestock, companion animals, wildlife and humans, and while not all coronaviruses are zoonotic, bats are increasingly seen as an important reservoir. "Veterinarians need to be part of identifying the animal reservoirs and

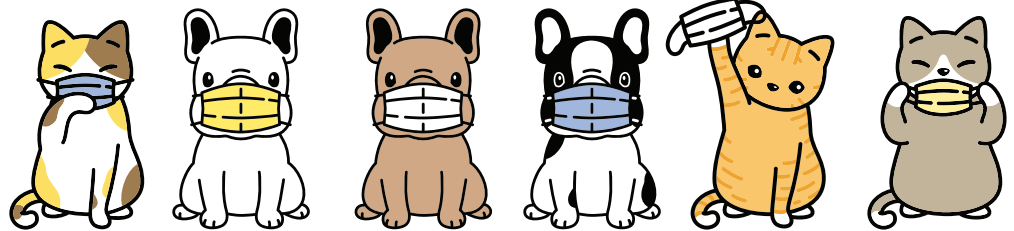
the intermediate hosts for these diseases," said Linda Saif, a coronavirus researcher at Ohio State University's College of Veterinary Medicine. "This may focus on wildlife medicine, such as understanding the habitats and diversity of bat species as reservoirs for coronaviruses and multiple other viruses," she said.

Demand may be rising for vaccines that prevent coronavirus infections in animals, and some veterinarians suspect people want the vaccines for themselves or to protect their pet from the novel coronavirus. The canine coronavirus vaccine protects against a virus that infects dogs known as CCoV but not SARS-CoV-2, which causes COVID-19, or CRCoV, another coronavirus that causes upper respiratory symptoms in dogs.

Researchers at Louisiana State University's

School of Veterinary Medicine are developing a vaccine to protect against the new coronavirus that they expect to test soon in monkeys at Tulane National Primate Research Center. Other vaccine candidates for the virus are being tested in mice. Mice bioengineered to have a humanized ACE2 gene, making them susceptible to coronaviruses, were created in 2007, and researchers at Jackson Laboratory Mouse Repository are using cryopreserved samples from those mice to breed new models for SARS-CoV-2 research. Some labs are skipping animal testing due to the urgency of the pandemic, but Jackson's Cat Lutz says infecting mice so therapies can be tested for efficacy is more informative and has the highest potential for success.

China permanently banned the trade and consumption of wildlife amid speculation that the COVID-19 coronavirus spread from bats to an intermediary species and then to people at a meat market. China's wildlife-farming industry is valued at an estimated \$74 billion, and the wild-meat industry's estimated value is \$7.1 billion, making enforcement of any ban "untenable," says wildlife-policy researcher. The city of Shenzhen in southern China has proposed allowing consumption of only nine different meats, and the list excludes dogs, cats, snakes, turtles and frogs. China has also banned consumption of most wild animals.



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