CORNELL COLLEGE OF VETERINARY MEDICINE

DOGWatch

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Expert information on medicine, behavior, and health in collaboration with a world leader in veterinary medicine

THIS JUST IN

Attempt to Stop Lyme

Target the primary carriers

The battle against Lyme disease just got more interesting. In an attempt to move away from just ridding areas of deer to prevent tick-borne illnesses, Connecticut entomologists now plan to target the start and vaccinate the white-footed mice that are major carries of the Lyme bacteria and popular tick targets.

According to *Scientific American*, the mice will be fed a kibble that contains an oral vaccine. "It's our secret sauce, if you will," says Mason Kauffman, a spokesperson with vaccine developer U.S. Biologic. The pellet has layers, "like a peanut M&M," Kauffman says. Purina custom manufactured the kibble. "The 'chocolate coating' around the peanut is the vaccine, then the 'candy coating'...is a coating that protects the vaccine from stomach acids," Kauffman says. "The vaccine enters the bloodstream through the animal's intestines."

According to the *Washington Post*, "In an endemic area . . . at least half and sometimes up to 90 percent of the mice are infected with Lyme bacteria." By targeting the mice, researchers hope to stop the spread of the bacteria before the tick bites. ■

White-footed mouse

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What Emergency Clinics See Most

Making the difference between life and death

Our dogs are often curious and full of life. While this makes them great companions, it also makes them prone to injuries and toxin exposure, which usually require immediate care.

Bite Wounds

Why this is an emergency: Bite wounds are often called the "tip of the iceberg." The wound itself can look superficial, belying significant trauma to the tissues underneath. Further, bites are prone to infection.

What you should know: If your dog will tolerate gentle cleaning of the wound with warm water and soap, you can do that at home. However, in all but the mildest punctures, veterinary evaluation is critical to avoid infection and rabies.

Lacerations

Why this is an emergency: Trauma from branches, fences, equipment, and other objects can require sutures and antibiotics. Treatment depends on the location of the laceration and its severity.

What you should know: Although dogs are resistant to the tetanus bacteria (and there is no vaccine), it can occur. Monitor your pup for a few weeks after any wound. If there is any indication of stiffness or pain around the wound, or your dog's posture becomes stiff and uncomfortable, get to the veterinarian.

Blunt Trauma

Why this is an emergency: Blunt trauma occurs when a dog is hit by a car, falls from a significant height, or is thrown from a vehicle while riding unsecured. Internal injuries are common.

What you should know: Externally, a dog may seem fine, but internal injuries —rupture of organs like the spleen or liver, leading to massive internal bleeding, bladder trauma leading to urine leaking into the abdomen, or damage to the gastrointestinal tract—can take more than 24 hours to be noticed. You don't want to wait that long. A blunt trauma victim needs an immediate check-up.

Toxic Food Ingestion

Most dogs love to scarf down a treat, whether they are supposed to or not, and many potential canine toxins are in our households. What you should know:

Xylitol sweetener is becoming more familiar in households, but it poses a significant threat to dogs. Ingestion will cause a massive spike in insulin with a resultant drop in blood sugar. Early signs are weakness, tremoring, and seizures. Symptoms start as early as 10 to 15 minutes after ingestion. At higher doses, xylitol can cause liver failure. If your dog eats this, this is an absolute emergency.

Chocolate toxicity is dose-dependent. If an 80-lb. pit bull eats a few M&Ms, clinical signs are unlikely. If a Chihuahua eats a few tablespoons of baker's chocolate, however, it could be lethal. You need to find out.

Raisins and grapes can cause some dogs to develop kidney failure. Why some dogs are OK and others experience toxicity is unknown. Bottom line: Don't let your dog eat raisins or grapes.

Macadamias are little nuts that can cause big problems: muscle tremors, high fever, stiffness, and vomiting.

Rising bread dough can cause major problems if your dog ingests it. The process of fermentation leads to the production of alcohol. Therefore, if a dog scarfs down a loaf of rising bread (and they will!), the dough will continue to rise in the warm environment of their stomach.

The rising action will cause abdominal bloating and discomfort, and the fermentation will produce ethanol alcohol, resulting in a drunk, uncomfortable dog. This can be life-threatening, so store bread dough away from curious noses. ■

Human Supplements and Your Dogs

Look for verifiable ingredients and amounts

Many calls to animal poison-control centers involve human medications, but medications are regulated and have toxicology data readily available. That is not always true for supplements.

An animal poison-control center and/or your own veterinarian can more easily determine if the product is toxic to your dog if the ingredients are listed on the label and amounts verified. For your own safety, as well as your dog's, look for products with USP (United States Pharmacopeia) and/or NSF (NSF International) seals on the bottles. These mean the product has been verified by an independent third party. Non-certified products leave questions as to whether they are toxic to your dog due to unknown dangerous ingredients and amounts of the ingredients present in the product.

Once you are home, check online to verify that these products are truly approved to further protect yourself (yes, some products have fraudulent or fake seals). If not, you may want to return the product.■

Name the Dog Health Center at Cornell

We have the expertise—now we need the perfect moniker

With nearly 90 million dogs living as pets in the United States, dog lovers, veterinarians, veterinary technicians, breeders, and others will benefit from Cornell's College of Veterinary Medicine establishing a state-of-the-art canine health center. This center will be dedicated to improving the health and well-being of dogs, while providing a reliable, respected source of information about the actual needs of the dogs and those who love them.

Our world-renowned experts are ready to conduct canine health studies. They will share that information with others and provide the latest in veterinary care to everyone interested in dogs and their health. All we need is the right name!

We would appreciate your help in finding that name. Please go to www.vet.cornell.edu/caninecenter and complete a short survey. We understand the link was down for a few days in December, so please try again if you still would like to participate.■

Study Looks at Brain Size and Intelligence

Bigger dogs may have better memory and self control, at least with treats

Bigger dogs may have better short-term memory and self-control than more petite pups, according to a study from the University of Arizona (UA) published in *Animal Cognition*. However, brain size didn't predict a dog's performance on tests of social intelligence, which was measured by testing each dog's ability to follow human pointing gestures. It also wasn't associated with a dog's inferential and physical reasoning ability.

Short-term memory was tested by dog owners hiding a treat, in view of their dog, under one of two overturned plastic cups. Owners then waited 60, 90, 120, or 150 seconds before releasing their dog to get the treat. Smaller dogs had more difficulty remembering where the treat was hidden.

To test self-control, owners placed a treat in front of their seated dog and then forbade the dog from taking it. Owners then either watched the dog, covered their own eyes, or turned away from the dog. Larger-breed dogs typically waited longer to snag the forbidden treat.

The study was based on data from more than 7,000 purebred domestic dogs from 74 different breeds from dognition.com. Brain size was estimated based on breed standards.■

Horschler, DJ, et al. Absolute brain size predicts dog breed differences in executive function. Animal Cognition, 2019; DOI: 10.1007/s10071-018-01234-1

DOGWatch

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Drool: Normal or Not?

Drooling can indicate an illness or an injury

Every dog owner has experienced ptyalism, aka drooling, at one time or another. Dogs salivate when they smell something tasty just like we do, but they don't mind as much if anyone sees them drool.

Basically, your dog drools when there is an excess of saliva in his mouth and it spills over rather than being swallowed normally. What you need to be aware of are changes in the quantity or quality of the drool, which may indicate a problem.

What Is Drool Anyway?

The water and mucus found in saliva help lubricate food, which protects the mucosal cells of the digestive tract from damage and makes swallowing easier. Enzymes in saliva start the digestive process by breaking down carbohydrates and fats.

White blood cells and antimicrobial and immune factors in saliva serve as a first line of defense against pathogens that enter the mouth. Not that our darling dogs would ever eat anything gross or contaminated.

Saliva also plays an important role in taste. As food dissolves in saliva, the resulting molecules are processed by the dog's taste buds, and that information is sent to the brain via nerves.

Epithelial cells are from the outer layer of the inside of your dog's mouth. These cells are why a saliva sample can be used to extract DNA to check your dog for genetic diseases and to figure out what breed or mix he is.

Causes of Drooling

Things that make your dog drool include:

- Dental problems
- Excitement
- Food
- Foreign bodies
- GI problems
- Growths (benign or malignant)
- Injuries
- Irritation
- Nausea
- Stress
- Systemic disease

Excitement, food, and stress are all normal causes of drooling. For an overly excited dog, you can calm him down by removing him from the situation or asking him to perform tasks that require him to focus, such as sit, down, or even to fetch a particular object. If your dog seems to be stressed, figure out why and address that issue. For example, if houseguests upset him, put him in a quiet room where he feels secure and can relax.

A dog who begins to drool for no apparent reason needs a prompt mouth inspection.

Dental problems, foreign bodies, issues in the gastrointestinal (GI) tract, growths, injuries, irritation, and nausea are more concerning causes of drooling. In some of these cases, drooling may be initiated by your dog's body to break down or remove something that shouldn't be in the mouth. It also could be due to structural damage.

Diagnosing a Problem

The first step is to check inside your dog's mouth, if he'll let you. Do this carefully by lifting his lips—don't stick your fingers between his teeth. Are his teeth clean and primarily white, or do they have large chunks of calculus (tartar) built up on them? Are his gums a healthy pink, or are they red and irritated? These signs indicate periodontal disease and that it is time for your dog to have a dental exam.

Look for cracked or broken teeth, missing teeth, cuts, growths along the gums and inside the lips, and anything stuck in his teeth. Dogs who like to chew on sticks can get pieces wedged in the roof of their mouths—to check, place your fingertips behind his canine teeth to encourage him to open his mouth. If you see an object caught in your dog's teeth and can easily remove it, he probably will be back to his normal self shortly.

If he resists having his mouth looked at, acts painful, or if you find something out of place, go to a veterinarian. The removal of growths or foreign bodies that are really wedged in will require sedation or general anesthesia.

Even if your dog otherwise appears fine, unusual excessive drooling is worth scheduling an exam to make sure that there isn't something going on. Blood work is a staple of systemic workups, as your dog's blood chemistry values can direct your veterinarian to what part of the body is having trouble. Some tumors within the head can cause excessive drooling if they affect the nerves associated with the salivary glands.

Normal Conformation Effect

Some breeds drool more than others. Dogs with large, loose lips are the most common offenders, including Bloodhounds, Mastiffs, Newfoundlands, and Saint Bernards. If you have a dog of one of these breeds or a mix of them, invest in some absorbent hand towels. Breeds with tighter lips, like Dobermans, have conformation better suited to keeping saliva in the mouth.■

What You Should Know

If your slobbery dog is happy and otherwise behaving normally, drool is probably a normal part of his day, or maybe there's reason for him to salivate, such as a sandwich he desires. Be concerned about drooling and investigate further if you see:

- Sudden drooling in a dog who does not normally do so
- Excessive and prolonged drooling
- Drooling accompanied by dry heaving and/or vomiting
- Abnormal behavior (just doesn't seem to be himself)
- Known or suspected ingestion of a caustic or toxic substance

Senility and Your Senior Dog

Recognizing it and realizing you can help is step No. 1

As our dogs age, we notice they sleep more, show signs of arthritis, and sometimes battle incontinence. We understand heart problems and cancers sometimes come with aging, but changes in neurologic function, known as canine cognitive disorder (CCD) or cognitive dysfunction syndrome (CDS) may take us back a step.

In a study looking at owner-reported symptoms and prevalence, 28 percent of dogs ages 11 to 12 showed signs consistent with cognitive decline, which rose to 68 percent by age 15 to 16. Amy L. Pike DVM, a board-certified veterinary behavior specialist in northern Virginia, believes owners sometimes dismiss these signs as normal aging. But we shouldn't. Ignoring the subtle signs of cognitive decline can delay treatment that might slow its progression.

Sleep/Wake Cycles

We often first notice changes in sleep and wake cycles. Your dog gets you up at night pacing and unable to settle. Maybe he can't get comfortable or has an increasing need to urinate.

It also could be "sundowners." Just as in humans with dementia, sundowners is when confusion and agitation set in around late afternoon through the evening. In dogs, they may wake their owner up with nose nudges or whining and then, once the person is up, the dog goes back to lie down.

Disorientation

Your dog may seem disoriented at times, walking into a corner, seeming confused about how to get out. But there's also actual "head pressing" that may signal neurologic disease such as brain cancers. Sometimes owners notice an older dog walks into walls or furniture, especially if things were moved. That may be a vision problem, not CCD. What about when you call your dog and he doesn't react? That could be hearing or CCD.

Social Interaction

Older dogs sometimes behave differently when out in public or if a new person or pet is added to the house. An example is a senior dog who always enjoyed puppy antics but suddenly starts snarking at the pups. Older dogs with CCD may no longer greet people with enthusiasm, even those with "top friend status." Maybe the dog who was always asked to go on errands now walks away from the door, choosing to stay home.

House Soiling

True incontinence is due to medical conditions. An arthritic dog or dog with vision problems may hesitate to ask to go out if he must negotiate stairs. Instead, he may relieve himself right by the door.

Many senior pets with CCD exhibit "house-training collapse." Your dog who faithfully went eight hours without a problem while you were at work now has accidents. He may wake up and leave a small puddle of urine in his bed or just suddenly stop while walking, urinate on the floor, and continue on as if nothing happened. Some dogs appear to be as shocked as you are that there is a mess on the floor and may act concerned and hide when there are puddles or piles. As always, the first step is to rule out treatable medical conditions such as a bladder infection or diabetes.

Activity/Anxiety

Activity can go both ways in dogs with CCD. Many families report that their

What You Can Do

Watch your aging dog for CDD by using the acronym DISHA:

- **D**isorientation
- **I**nteraction (social) changes
- **S**leep/wake cycle disturbance
- **H**ouse soiling
- **A**ctivity/anxiety changes

You may also see a decrease in self grooming, changes in appetite, less response to stimuli, and a decline in memory or learning ability. Because these symptoms could have a medical cause as well, bring a video of the changes you see in your dog to the veterinary appointment.

What Type of CCD?

Leticia Fanucchi, DVM, PhD, director of Veterinary Medicine Behavioral Services at Washington State University's Veterinary Hospital, classifies CCD into four categories:

Involutive depression may be caused partly by untreated anxieties, similar to chronic depression in humans. Untreated anxieties seem to play a key role. And, because some of the symptoms (house soiling) often result in the dog's confinement, both anxiety and symptoms worsen.

Dysthymia (dystemic disorders) involves a loss of proprioception, which is the awareness of body placement and movement. Dystemic dogs often get stuck in corners and behind furniture. But there's a more serious dimension to dysthymia: "If you interrupt a dog while he's in a dystemic state, he can get mad and bite," says Dr. Fanucchi.

You may notice your older dog seems depressed, unsure, or confused, seeming to be lost at times.

Hyper-aggressiveness in old dogs is associated with dysfunction related to serotonin. Cortical tumors can also be involved. "Dogs with this form of CCD lose their ability to communicate with other animals," says Dr. Fanucchi. "They bite first and warn second."

Confusional syndrome is a profound decline in cognitive ability. These dogs "just don't seem to learn well in any form," says Dr. Fanucchi, noting that confusional syndrome in dogs is the closest thing to Alzheimer's in humans.

dog is less active as he ages. This might be due to a mental status problem, obesity, or arthritis, or other problem. On the other hand, many dogs with CCD pace in the evening and late night, exhibiting increased activity. This may be a repetitive pattern or random walking. Sometimes senior dogs will pace, go to lie down for a few minutes, then get up and move again.

Anxiety levels may increase or decrease. Dogs with storm phobias that develop later in life may lose those phobias due to physical changes in the inner ear. More commonly, dogs with CCD become more sensitive to things that concern them. This may play out as separation anxiety or reacting strongly to situations that might have mildly concerned them before, such as strangers coming to the house or flickering lights with power brownouts.

Occasionally, increased anxiety may show up as mindless barking. This can be complicated by barking related to deafness.

Diagnosis

CCD is a "rule out diagnosis," which means you look at other possible causes for the symptoms (like a bladder infection for house soiling) and, when those potential causes are eliminated, you are left with CCD. A thorough workup—with a full physical examination, urinalysis, complete blood panel including CBC and thyroid evaluations—is important. If there are concerns about a possible brain malignancy, more serious diagnostics such as an MRI may be recommended.

A complete behavioral history is paramount here in developing a treatment. Keep a written record of your dog's behavior, including when and you saw the behavior.

Environmental Management

Treating CCD involves different options. Best results occur when you manage your dog's environment and lifestyle as well as trying supplements and medications. Remember, you are trying to slow down an inevitable process; you aren't going for a cure.

Keep your dog active and mentally engaged. Walks catered to your dog's physical status, with plenty of time for wandering and sniffing, are excellent. Try food puzzles and scent games, which are like crossword puzzles for dogs. Consider doing scent or nose-work training, as this

Cater your together time to your dog's mental and physical ability.

is mental work with minimal physical stress, and even blind and deaf dogs enjoy using their sense of smell.

Old dogs CAN learn new tricks. The adage "use it or lose it" fits for senior dogs, and learning new things keeps their brains active. Pick up a trick book and choose some tricks that fit with things your dog likes to do and that won't be too much physically. ***Dog Tricks (Idiot's Guides)*** by Debra Eldredge DVM and Kate Eldredge is a good choice with great photos.

Consider setting up an area with pee pads to encourage a senior dog who has limited bladder control to go there. Put washable covers over dog beds with water-resistant fabric, so you can just wash the cover and not the whole bed.

Senior dogs tend to do best with a regular daily routine. Try to keep mealtimes and walk times consistent. Don't rearrange furniture. When you go out, make sure your old dog is safely confined in a safe space he finds familiar. It's risky to leave him alone, as he could wander and get stuck behind the couch, for example.

Dietary Support

Look into diets designed for senior dogs. Your veterinarian might recommend a prescription diet for cognitive problems. Extra ingredients in these foods usually include antioxidants, like added vitamins and omega 3 fatty acids. Before adding a supplement, however, consult your veterinarian or a veterinary nutritionist to be sure that the diet will remain balanced with these additions.

Specific neuronal support supplements include ingredients such as S-adenosyl methionine (SAMe), ginkgo biloba, phosphatidylserine, and apoaequorin. Products that have some clinical trials to support their beneficial actions include Neutricks, Senilife, and Novifit. The goal of these supplements is to maintain and prolong the health of the nerves in your dog's brain.

Melatonin can help with the nightly pacing, as can veterinary-prescribed anti-anxiety medications.

When it comes to specific treatment for CCD, only Anipryl (selegiline) is FDA-approved. Selegiline acts directly on the brain to produce more dopamine. This medication can interact with other common medications, such as tick preventives and pain medications. ■

Stem Cells Promising

Stem cells may offer a new treatment option for dogs with CCD. A team of medical doctors and veterinarians at the University of Sydney's Brain and Mind Centre collaborated to restore normal function to two dogs with CCD. They grew neural cells from skin cells and then injected them into the dogs' brains. Both dogs showed remarkable improvement, which bodes well for the future for both dogs and humans, although the small sample size limits predictions.

Age-Related Physical Changes in Brain Anatomy

- Atrophy of cells with an overall reduction in neurons
- Increases in the "open spaces" of the brain, such as ventricles and sulci
- Decreased blood flow to the brain (which means less oxygen and glucose for fuel) due to systemic diseases such as heart disease, kidney disease, or diabetes
- Accumulation of substances that interfere with nerve transmission
- Decreased levels of dopamine, a critical brain neurotransmitter
- Various changes in brain vasculature

Bloodwork for Hepatic Problems

The interaction among the liver enzymes is key

Hepatic (liver) diseases are common problems in dogs, especially seniors, showing up due to aging, cancers, toxins, and neonatal defects. Liver ailments can be acute or chronic and prove fatal. While clinical signs and symptoms are important (is your dog drinking more than usual or not eating?), bloodwork is the backbone of diagnosis.

Breaking down the components of a liver/hepatic function panel will help you to better understand what is going on with your dog's health.

Albumin can be increased in dogs with hyperadrenocorticism (Cushing's disease) and possibly in cases of copper toxicity. Some liver cancers (hepatocellular carcinoma is one) will increase plasma levels of albumin. Long-standing malnutrition can lower albumin levels as can diseases of the gastrointestinal tract or kidneys that lead to albumin loss in the stool or the urine. Inflammatory bowel disease patients may have low albumin. With chronic liver disease, especially if liver function has reduced substantially, the liver cannot manufacture normal amounts of albumin. Dogs with systemic inflammatory conditions or sepsis (severe infections) may also have low albumin secondary to the primary problem.

AST (aspartate aminotransferase) is an enzyme found in the liver and in muscles. Muscle trauma or damage to red blood cells will increase levels of AST. AST is rarely run without ALT, due to the importance of the AST-ALT ratio, which can help your veterinarian determine if the liver is injured or disease. With liver damage, AST continues to rise.

ALT (alanine aminotransferase), another enzyme, may spike in the event of a liver injury or disease. Like AST, increased levels can be seen with severe muscle trauma, but this enzyme is fairly liver specific. Certain medications may increase the levels of this enzyme in the blood, such as corticosteroids, phenobarbital, and other anti-seizure medications, and acetaminophen, which is why routine blood work is recommended for dogs on long-term seizure medications or corticosteroids.

Glucose is made in the liver (as well as being derived from diet). Low levels of blood glucose may indicate severe liver damage. Hyperadrenocorticism (Cushing's disease) can elevate glucose levels. With severe hepatic damage, your dog may have lower than normal glucose levels in her blood.

Hepatic immaturity may be a factor in the hypoglycemia (low blood sugar) seen in toy breed puppies. In addition, they don't have adequate liver storage of glycogen. Hard-working hunting dogs may also show a transient decrease in glucose levels due to rapid use of the body's current stores.

Urea formation decreases with some liver diseases (portosystemic shunts, synthetic liver failure) and with liver damage. Since urea is excreted via the kidneys, an abnormal level could indicate either liver or renal (kidney) disease. The accumulation of this metabolite can lead to the neurologic signs seen in young dogs with portosystemic (liver) shunts. Urea is excreted via the kidneys so renal damage may lead to increased urea levels. Urea levels can be affected by a variety of conditions, including diet, and anytime the body metabolizes extra protein such as with a fever or injuries like burns.

ALP is alkaline phosphatase, an enzyme that is a sensitive indicator of gall bladder problems in dogs but also has bone connections. Anything that interferes with bile flow can increase ALP amounts. Levels may also increase as a side effect of corticosteroid therapy. Because of its involvement in bone growth, puppies and young dogs may have increased ALP levels without actual liver damage. Some Siberian Huskies have benign (and transient) familial hyperphosphatasemia. Dogs with bone cancer, some liver cancers, and mammary tumors may have elevations of this enzyme on blood screenings.

GGT or γ-glutamyl transferase is another enzyme commonly associated with the liver and biliary (bile) problems. Inflammatory problems involving the biliary tract are often associated with increases of this enzyme. Since the excess enzyme is normally excreted via urine, renal problems may also increase the levels detected.

T bilirubin stands for total bilirubin. Bilirubin is a marker for liver problems. Damage to the liver cells or to the biliary system can affect bilirubin levels. Hemolytic anemia, with massive breakdown of red blood cells, will also increase levels of this metabolite.

Cholesterol levels can indicate problems with hepatic function, gastrointestinal disease, or some metabolic disorders. In addition, dogs with hypothyroidism, Cushing's disease, pancreatitis, and certain kidney problems will have higher than normal levels of cholesterol. Low cholesterol levels are often seen in dogs with protein-losing enteropathies. Dogs with certain cancers, such as acute myeloid leukemia, also will often have low cholesterol levels on their blood work. ■

Liver Disease Symptoms

- Jaundice
- Ascites (accumulation of abdominal fluid)
- Abdominal pain
- Spontaneous bleeding (stomach, intestines, urine)
- Increased thirst
- Weakness
- Lethargy
- Weight loss
- Lack of appetite
- Head pressing
- Seizures
- Vomiting

Your veterinarian will look for signs of jaundice.

ACVIM Report on GI Protectants

Choosing a medication to ease gastric distress

Veterinary organizations like the American College of Veterinary Medicine (ACVIM) offer support to your veterinarian in terms of recommendations, diagnoses, treatments, and presenting research. Recently, the ACVIM released "Support for rational administration of gastrointestinal (GI) protectants to dogs and cats," which is the ACVIM's treatment recommendations after an extensive look at current research in both veterinary and human medicine.

For dogs with exercise-induced GI problems, your veterinarian may choose a PPI medication.

What Is a GI Protectant?

Your dog's stomach is his first line of defense for many problems. Dogs swallow toxins, eat things laden with bacteria, and take medications that can be irritating to the stomach. The stomach's mucosal lining helps protect it and normally has an acidic pH that can neutralize some of the threats. However, once the stomach lining is disrupted, the acidic pH can cause gastric ulcers, gastroesophageal reflux problems, and esophageal erosions and strictures. For this reason, gastric-healing medications to influence the pH and/or assist the mucosal lining may be prescribed.

Common Choices

The most common medications used as gastric protectants are PPIs (proton pump inhibitors), antacids, sucralfate, and H2RAs (histamine type-2 receptor antagonists). You may be familiar with these medications yourself. Few are FDA-approved for animals, but off-label use is common.

Antacids: Antacids lower gastric pH, but the effect is short-lived and unlikely to be of much help for dogs with gastric or duodenal (intestinal) ulcers or erosions, says the ACVIM statement. In addition, they may interfere with the absorption of some antibiotics and medications while potentially contributing to aluminum toxicity in dogs with advanced kidney disease.

H2RAs: The H2RAs include cimetidine (Tagamet), ranitidine (Zantac), and famotidine (Pepcid). Some sled-dog racers use famotidine for exercise-induced gastritis, but the results aren't consistent. PPIs tend to be more effective for this problem.

PPIs: Covering medications like omeprazole (Prilosec) and esomeprazole (Nexium), PPIs can interfere with the metabolism of drugs such as antifungal drugs, warfarin (Coumadin), clodiprogel (Plavix), and diazepam (Valium) in people. It's possible that they could have the same effect in dogs. Used twice daily, omeprazole appears to be more effective for exercise-induced gastritis than H2RAs. Long-term use is not encouraged, and dogs should be withdrawn gradually from this medication to prevent rebound hyperacidity.

Complications from the use of NSAIDs (non-steroidal anti-inflammatory drugs) along with a PPI are possible—decreased acidity allows bacterial overgrowth and, coupled with erosive damage from NSAIDs, could lead to illness. Common NSAIDs used in dogs include meloxicam (Metacam), deracoxib (Deramaxx), and firocoxib (Previcox).

Sucralfate (Carafate) is sometimes used to protect the mucosa in the stomach and esophagus. Given orally as a suspension, it can interfere with the absorption of medications including doxycycline, phenytoin, and digoxin. It appears most useful for esophageal lesions.

Recommendations

In general, gastric protectants may be overused for pets, but much more research needs to be done. As always, each dog and its medical conditions need to be evaluated individually. These are not drugs that you should administer without contacting your veterinarian as there are many potential drug interactions and complications. ■

5 THINGS

Garden Issues: Yard Plants to Avoid

Keep these common plants out of your dog's play areas

1. *Daffodils:* The flowers, leaves, and bulbs can cause abdominal pain, vomiting, and diarrhea. In severe cases, cardiac arrhythmias and respiratory problems may occur. Bulbs planted with bone meal attract dogs!

2. *Lily of the Valley:* Dogs who eat lily of the valley plants may show cardiac arrhythmias, decreased heart rates, and even seizures.

3. *Tulips and Hyacinths:* The bulbs are toxic. Mild cases show drooling and some vomiting, but if the dog eats too many, he may show an increase in heart rate.

4. *Oleander:* If your dog chews on leaves, flowers, or branches he may suffer from a decreased heart rate and could potentially die.

5. *Azaleas:* These can be fatal if your dog even chews on leaves. Initial gastrointestinal signs can lead to coma and even death. ■

Yellow daffodils look pretty as a background for this Rhodesian Ridgeback, but they could make him ill.

Why Do Dogs Bark for No Reason?

Actually, they don't—and not all woofs are the same

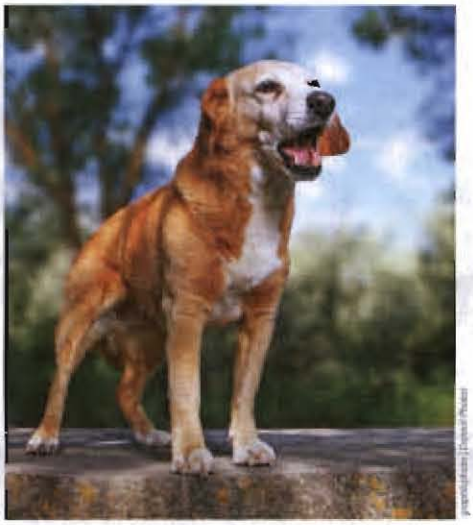
Almost everything a dog (or horse or person) does has a reason. Barking takes energy, so there's usually a goal. The dog won't waste all that effort unless there is a reward.

To discover the reason for the barking, look at the circumstances in which the dog is barking. The most common reason dogs bark—and one of the reasons we have domesticated dogs—is to warn us when someone is coming. The dog barks because he is territorial and is responding to another dog or person entering his territory.

Not all barks sound the same. Barking at a trespasser sounds different than a play bark and that sounds different from the bark of a dog left alone. The late Dr. Sophia Yin made sonograms of three types of barks. A sonogram measures the length and frequencies of a sound. Dr. Yin found that the sonograms from the same dog were different when the dog was playing vs. when he was reacting to an intruder vs. being isolated.

The sonogram reveals that when a dog is barking aggressively there are many more harmonics—it is noisier than a friendly bark. Even people who do not own dogs can recognize the difference between the barks. This natural ability of humans to gauge a dog's intentions has probably saved many, many people from getting bitten.

The territorial bark can be stimulated by a person approaching your house in the middle of the night, although your dog is most likely to bark when he hears another dog bark. Each dog is saying, "This is my turf." My favorite example of that is my first Westie, Dudley. Every night, Dudley would go outside after dinner and bark and then the dog across the street would bark and then the dog a few houses down would bark. After 10 or 15 minutes of this, Dudley would return to the house.



If your dog is barking, he's trying to tell you something that he's concerned about.

Dudley lived to be 16 and, in his final years, he became deaf. Every night he would go outside and bark, but he could not hear the other dogs return his call, so he would come back inside, apparently convinced that he had finally rid the neighborhood of all those pesky dogs.

Cornell's renowned behavior expert Katherine Houpt, VMD, Ph.D., shown here with Yuki, her West Highland White Terrier, provided the advice in this column.

Coming Up ...

- *The Scoop on the New Anti-Allergy Drugs*
- *Titers vs. Vaccinations*
- *Pemphigus Skin Lesions*
- *Capnocytophaga Bocteria and Dog Kisses*

Hearing Differences

Two reasons dogs appear to bark for no reason:

- Dogs can hear high-pitched noises they we cannot
- Dogs can smell things at much, much lower concentrations than we can

So, when your dog is staring at the ceiling and barking, he probably hears the house mice who are squeaking away behind your walls. When he barks at the floor grates, he may smell that interesting toad in your basement.

Remember, dogs bark for a reason. We just don't always understand it.

Consider the Pack

The most serious kind of barking problem is the dog that barks when left alone. He is not barking for no reason. He is barking because he has been abandoned by his pack. That bark sounds different than aggressive or excitement barks in that it is a very discreet burst of sound repeated again and again and again.

An all-too-common history presented to the Cornell University College of Veterinary Medicine Animal Behavior Clinic is that of the owner who lives in an apartment and whose dog has separation anxiety. The owner knows he will have to pay for the damage the dog may have caused by scratching at the door while he is away, but the immediate problem is that he may be evicted because the dog is disturbing the other residents. The person who complains may be the crabby old retiree or the fellow who works nights and needs to sleep during the day while the dog's owner is away.

A veterinarian may be able to help by prescribing an FDA-approved medication for separation anxiety in dogs. The two drugs are fluoxetine and clomicalm. It may also be wise to request a referral to a board-certified veterinary behaviorist (see the American College of Veterinary Behaviorists at dacvb.org) because behavior modification in addition to medication is usually necessary in these cases. ■

HAPPENING NOW...

Better Cities for Pets Program - Mars Petcare developed a program to ensure we can always find pet friendly places to live. The program certifies cities that are deemed pet friendly, based on an assessment of shelters, homes, parks, and businesses. Cities already certified include Washington (DC), Fort Worth (TX), Richmond (VA), and St. Petersburg (FL). Learn more at bettercitiesforpets.com to see if your city would qualify.

PACT Act - House bill HR1494, which is the Preventing Animal Cruelty and Torture (PACT) Act will make any act of animal cruelty a felony, regardless of what state it occurs in. Some states already have laws that make it a felony. In 2010, the Animal Crush Video Prohibition Act prohibits anyone producing videos with gruesome content of animals being harmed. ■