Cornell DogWatch

Expert information from the Cornell Richard Riney Canine Health Center February 2023 – Vol. 27, No. 2

THIS JUST IN

Protozoa Affects Wolves

Increases risk-taking behavior

Toxoplasmosis is a disease caused by the protozoan parasite *Toxoplasma gondii*. The disease is most commonly associated with cats and pregnant women. However, the parasite also affects behavior. Mice with toxo in their brains become bolder and less fearful of cats. That makes those mice more likely to be caught and eaten by a cat, providing the protozoa with the host it needs to reproduce. Studies have shown that people with toxo infections tend to show more risk-taking behaviors.

No studies have been done in dogs to date, but a recent study done with grey wolves in Yellowstone National Park showed some interesting results. According to an article in *Nature*, a research team checked 256 blood samples taken over time from 229 wolves. These wolves have been studied extensively with careful data kept on behavior, social interactions, and pack dynamics. Wolves infected with toxo were 11 times more likely than wolves without the parasite to take off on their own, leaving their pack. These infected wolves were also 46 times more likely to become pack leaders, showing bold and risky behaviors. It would be interesting if research would look at toxo infections in dogs demonstrating aggression. ■

Meyer, CJ, et al. "Parasitic infection increases risk-taking in a social, intermediate host carnivore. Communications Biology, volume 5, article number 1180 (2022)

INSIDE THIS ISSUE

Microchips, GPS, and Tags

Learn the pros and cons of each type of ID

With all the different identification options available, trying to decide which one(s) your dog truly needs can be overwhelming. A good rule of thumb is to have at least two different means of identification on your dog, so that if one fails, there is still another way for your dog to be reunited with you.

Why ID?

If your dog gets lost, identification allows whoever finds him to figure out where he belongs. Studies have found that dogs are at least 50% more likely to be returned to their owners if they have up-to-date identification and contact information at the time they are lost.

Tags, collars with identification embroidered or engraved on them, and microchips all allow someone who finds your dog to then get in touch with you. GPS collars allow you to locate and pick up your dog yourself.

Tags and Collars with ID

Every dog should have some sort of physical identification on them when traveling, and it is a good idea for most dogs at home as well. These visible identification methods are inexpensive and make it very easy for any person to reach you if they find your dog.

The exact style of collar or harness plus/minus tag will depend on your personal preference and your dog's lifestyle. For example, if your dogs love to wrestle and chew on each other, it is safer for them to either wear breakaway collars or to be "naked" when playing or at home. Dogs who are a flight risk and like to wander should have identification on them at all times.

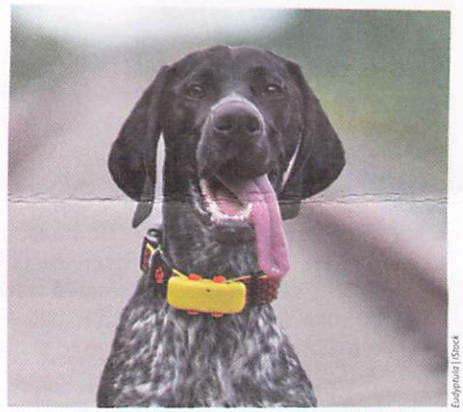
If you are worried about dangling tags getting caught or lost, there are many "slider" tags that slip on and stay flush with the collar. These tags are both lower-profile and won't jingle and jangle.

Pros:

- Easily visible, and anyone who finds your dog can immediately call the number on the tag or collar.
- Can have multiple contact numbers or methods listed.
- Endless customization options for color and style.
- Inexpensive options available, and no repeating costs.

Cons:

- Some engravings can become worn, making tags hard to read.
- Dangling tags can get stuck on things, presenting a hazard to your dog or getting ripped off and lost.
- Collars also pose a choke hazard if they get stuck on debris or another dog's mouth when playing.
- Breakaway collars may release and be lost.



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The options available on dog collars with GPS tracking are fun and give owners some security.

Microchips

Every dog should have a microchip. Microchips are recommended by the American Veterinary Medical Association and other animal organizations. This easy, permanent identification method stays with your dog at all times, and dramatically increases the odds that your lost dog will be reunited with you.

When your dog is microchipped, you will need to either fill out a form for your breeder or veterinarian to register the chip for you, or you will need to register it yourself online. Do not skip

(continues on page 6)

Treatment Options for Arthritic Dogs

Fish oil, Synovetin OA, and weight control are big players

Steve Budsberg, DVM, a professor of orthopedic surgery at the University of Georgia College of Veterinary Medicine, gave veterinarians a seminar on VETgirl, a continuing education network for veterinarians, about treating osteoarthritis (OA). Interestingly, Dr. Budsberg noted that signs of OA pain may not always include lameness.

Four areas that help dogs with osteoarthritis are weight control, nutrition, exercise/physical therapy, and medical therapy. Weight control often must be a combination of decreased calories and increased activity. In the area of nutrition, research has confirmed that omega-3 fatty acids, such as in fish oil, can help with arthritic pain. Before you add any supplement, however, verify with your veterinarian or a veterinary nutritionist that your dog's current diet doesn't already have plenty.

More research with clinical trials needs to be done to determine which rehab techniques are the most effective for dogs with OA. For treatment, nonsteroidal anti-inflammatory drugs (NSAIDs) are the standard, but new treatments are on the horizon, and in some cases, being used.

Stem cell injections help but currently require harvesting and processing the cells first. Work is underway looking at using standardized stem cells, including those from other species. In addition, says Dr. Budsberg, don't count out cannabinoid products. A Cornell study showed an 80% decrease in OA pain with CBD.

Finally, Tin-117m (also designated 117mSn) is a radionuclide that is put into a colloidal suspension and injected to help with elbow pain in dogs. The product, Synovetin OA, is showing some good results, and effects can last for up to a year.■

FDA Issues New Guidelines on Heartworm Meds

Concerns about effectiveness caught the FDA's attention

In November, the FDA issued new draft guidelines for heartworm preventatives. Heartworm is a potentially fatal disease spread by mosquitoes infected with the parasite *Dirofilaria immitis*. The disease is found throughout most of North America.

Concerns about the effectiveness of some medications has led to tightening requirements for drug approval. Now, it is proposed that the companies conduct two laboratory dose confirmation studies and do one multi-site field effectiveness study. The lab studies would evaluate worm burdens (larvae and adults) in dogs dosed with infectious larvae and treated with the "new product" as well as control dogs.

In addition, the new guidelines want a field study of the drug in actual real-life settings, stating, "actual conditions of use in client-owned dogs and with the current enzootic status, ecologic, and genetic factors affecting heartworm disease in dogs in each location." This would be a realistic test of any new preventive.■

New Medication for Treating Pancreatitis

It's conditional approval, but this drug is needed

Pancreatitis, inflammation of the pancreas, can come on spontaneously and be deadly or can be a low-grade chronic problem. Most canine cases require hospitalization and intensive care. It can lead to the need for digestive enzymes daily or even contribute to diabetes mellitus.

In November, the FDA gave a one-year conditional approval to the injectable drug Panoquell-CA1 (fuzapladib sodium) to use in treating hospitalized dogs with acute pancreatitis. This is usually granted to drugs that will provide more options for treating animals with uncommon conditions, serious or life-threatening diseases, or diseases without existing or adequate therapies. While the medication is hopefully helping to save lives, the drug company must show through evidence-based medicine, i.e., clinical trials, that the drug is truly effective.

Panoquell-CA1 has been used in Japan since 2018. The clinical data from there helped pave the way for this conditional approval.■

Cornell DogWatch

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Accidental Poisoning

Knowing what substances are potentially toxic to dogs is the first step in keeping them safe

Last month we gave you a list of toxins dangerous for dogs and a general first-aid for poisonings guide, including how to induce vomiting. Some of the information in this story refers back to that (new subscriber? email us at dogwatcheditor@cornell.edu for a copy of our January 2023 issue). With the ongoing veterinarian shortage, it's increasingly important that pet owners are prepared for emergencies and can recognize potential bad situations.

Knowing what substances may harm your dog can be critical to a good outcome. In this article we go into more detail for many common canine toxins. We placed this article in the newsletter in a spot where you can easily pull these pages and place them in a quickly accessible spot, especially if you don't always save your issues.

This list is not all-inclusive. We focused on the most common sources of canine poisoning. If you have any question that your dog ate something he shouldn't, call your veterinarian immediately. If for some reason you cannot reach a veterinary professional, or you call and they say, "Sorry, we are at capacity and can't help you," call the ASPCA 24/7 Poison Control Hotline at 888-426-4435 or the Pet Poison Helpline at 855-764-7661. There are fees associated with these services, but they're well worth it. With that in mind, we begin our quick-reference guide:

Chocolate

Toxicity levels depend on the type and amount ingested. Ingestion causes GI, cardiac, and neurological issues. Theobromine, the bitter-tasting alkaloid in cocoa, and caffeine are the issues here.

"The toxic level of chocolate in dogs is dependent on the type of chocolate ingested—the darker and more bitter the chocolate, the more toxic—and the size of the dog," says Sarah Guest, DVM (Cornell 2010), an associate at VCA Fairmount in Syracuse, N.Y.

White chocolate. Usually only causes possible GI upset.

Milk chocolate. A half (0.5 oz.) to 1 oz. per pound of body weight may be toxic.

Semisweet chocolate. An ingestion level of 0.15-0.3 oz per pound of body weight may be toxic. That starts at 7 semisweet chips/morsels.

Baking chocolate. This unsweetened form is the worst. A level of 0.06-0.1 oz per pound of bodyweight could be toxic. That's less than a quarter teaspoon.

Signs of poisoning: Vomiting, diarrhea, restlessness, agitation, high heart rate, cardiac arrhythmias, seizures, and death.

What to do: Induce vomiting as soon as possible. Chocolate stays in the stomach for a while so inducing vomiting may help even if some time has elapsed since ingestion. If you successfully induce vomiting early enough, and lots of chocolate comes up, it may be OK to just monitor your dog carefully. If more symptoms develop or worsen, get to a veterinarian as soon as possible.

Grapes and Raisins

These are potentially very bad. The mechanism of this toxicity is not well understood but may involve varying levels of tartaric acid in grapes. As little as one or two raisins (dried grapes) has caused severe kidney failure in dogs.

Signs of poisoning: Diarrhea and vomiting, lethargy, weakness, abdominal pain, and tremors/shivering.

What to do: Induce vomiting as soon as possible and see your veterinarian to monitor for kidney failure.

Onions and Garlic

Ingestion of onions or garlic causes massive destruction of red blood cells (hemolytic anemia) and formation of a substance called methemoglobin, both of which dramatically decrease the oxygen-carrying capacity of red blood cells in the bloodstream. The toxic dose is 15 to 30 grams per kilogram of bodyweight. This means a medium onion (approximately 130 to 250 grams), the size of a lemon, could be enough to poison a 20-pound dog. Garlic is three to five times more toxic. The dogs don't have to eat much to suffer from poisoning.

Signs of poisoning: Signs usually start around 24 hours after ingestion and peak at three days and include vomiting, diarrhea, abdominal pain, depression, pale or yellow gums, elevated heart rate and respiratory rate, and red to brown colored urine.

What to do: There is no antidote. Induce vomiting as soon as possible and get to the veterinarian. Prognosis depends on how much the dog ate and how quickly he receives treatment.

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Grapes are particularly bad because it only takes one or two to cause kidney failure.

Xylitol

This popular sugar substitute is lethal to dogs. It is found in things like sugar-free gum and mints, toothpaste, sugar-free pudding, and some human meds. The list is incredibly long. A small dog can be severely poisoned by ingesting one stick of gum. It can be disguised in the ingredients list as "birch sugar." Xylitol causes life-threatening low blood sugar and destroys the liver. Low blood sugar occurs within 30 minutes of ingestion; liver necrosis in 8 to 12 hours.

Signs of poisoning: Disorientation, tremors, seizures, collapse, and death.

What to do: Induce vomiting and see your veterinarian as soon as possible for monitoring and treatment of blood sugar levels and liver disease.

Rat Poison

All rat poisons are poisonous, but toxicity varies. The product, how quickly you act, and how long the dog must be treated all affect recovery.

Bromethalin rodenticide. This one is the absolute worse. This is a neurotoxin with no antidote, and a dog doesn't need to eat much to be poisoned.

Signs of poisoning: Signs may occur within hours or days and include agitation, tremors, seizures, paralysis, coma, and death.

What to do: Induce vomiting as quickly as possible and get to a veterinary hospital immediately. Expect a two- to three-day stay while your dog is administered agents to minimize absorption of the poison from the GI tract and frequent monitoring blood tests are performed.

The dog either never develops signs and survives, or starts showing signs despite life-saving efforts and dies.

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Inhalers are especially dangerous to dogs. Never leave one out and unattended.

Cholecalciferol rodenticide. This poison is a vitamin D derivative that causes severe increases in blood calcium levels, which leads to kidney failure and severe cardiovascular abnormalities. It can be lethal.

Signs of poisoning: Signs usually occur 18 to 36 hours after ingestion and include vomiting, diarrhea, depression, lethargy, loss of appetite, and excessive thirst and urination.

What to do: Induce vomiting as soon as possible and get to a veterinary hospital immediately. You can expect several days of hospitalization for aggressive decontamination, monitoring, and medical intervention as needed to manage calcium levels, cardiac arrhythmias, and kidney damage. Once your dog is discharged from the hospital, careful monitoring will still required for several weeks because of how long this stuff stays in the system.

Anticoagulant rodenticide (brodifacoum, bromadiolone, difethialone). It's poison, but at least there is an antidote for this one. These rodenticides cause vitamin K deficiency, which results in a clotting problems. Massive internal and external bleeding is possible.

Signs of poisoning: Signs usually don't show up for a couple of days, and they vary widely depending on how bad and where the bleeding is.

What to do: Induce vomiting and get to a veterinary hospital as soon as possible. Decontaminants will be administered by the veterinarian and blood clotting times checked. Oral vitamin K supplementation is the treatment and may be necessary for up to 30 days.

Antifreeze

Antifreeze poisoning is very bad. It doesn't take much to poison your dog and, because antifreeze tends to taste sweet, your dog likely had a feast when he found that greenish liquid.

Signs of poisoning: Early signs are neurological and include depression, stupor, staggering (looks like the dog is drunk). Within a day or two, signs of kidney failure appear, including lethargy, inappetance, vomiting, and excessive thirst and urination. At this point, it's pretty much too late.

What to do: If you see the dog drink antifreeze, induce vomiting, as long as they are not staggering. Get to the vet immediately, as this is fatal without treatment.

Human Medications

All medications can be bad, especially if overdosed.

Signs of poisoning: These vary with the drug and may be fatal.

What to do: Consult with Poison Control (see p. 3) no matter what the medication. Specific recommendations will be made based on what the medicine is and how much was ingested.

Albuterol Asthma Inhalers

When a dog bites an albuterol inhaler he potentially gets over 200 doses all at once. Albuterol is a beta-adrenergic agonist with profound effects on the heart and blood pressure.

Signs of poisoning: Signs occur right away and include rapid heart beat, depression, vomiting, muscle tremors and weakness.

What to do: Get your dog to a veterinary hospital ASAP where he can be monitored and medications can be administered to manage heart rate and electrolyte derangements. Outcomes with treatment are generally good. Without treatment these dogs may die.

Cannabis (marijuana, CBD)

This is scary, but it's not usually fatal.

Signs of poisoning: About 30 to 90 minutes after ingestion, drowsiness, incoordination, dilated pupils, slow heart rate, and dribbling urine.

What to do: If you saw him eat it, induce vomiting right away. Cannabis has anti-vomiting properties, so if it's been too long, you may be unsuccessful. Also, if the dog is becoming stuporous (groggy), inducing vomiting could be dangerous as the dog may aspirate and choke on the vomitus. Definitely get to the veterinarian ASAP, where they can do further detoxification and provide supportive care and monitoring as your dog "sleeps it off."

Cigarettes and Electronic cigarettes (E-cigarettes, vapes)

Nicotine is the issue here, and it's really bad. Time is definitely of the essence. A loaded E-cigarette contains enough nicotine to kill a small- to medium-sized dog. Even worse are the refill cartridges, which contain enough to kill large dogs. Nicotine toxicity from E-cigarettes begins within 15 minutes of ingestion as it is rapidly absorbed into the system. Cigarettes have to be digested a little first so they're more like a few hours.

Signs of poisoning: Signs include

drooling, agitation, vomiting, disorientation, rapid heart rate, tremors, seizures, and death.

What to do: Because of the rapid absorption, inducing vomiting doesn't help. Get to a veterinary clinic ASAP, where they will likely do seizure control, blood pressure management, provide an airway, and intravenous fluids to save your dog's life. It is not always enough.

Liquid Fuels (gasoline, kerosene, paint solvents, etc.)

Do not induce vomiting! In the stomach, these chemicals are not so bad, mostly causing self-limiting irritation. But if they are aspirated into the lungs, which can happen during vomiting, they cause a lot of damage.

Signs of poisoning: Signs include coughing, gagging, drooling, rapid breathing, loss of appetite, vomiting, and confusion.

What to do: If your dog is vomiting or symptoms are worsening, get to a veterinarian right away. If not, treatment at home basically involves fasting (no food) for several hours and continued observation.

Food Oxidizer Packs

These depend a bit on the size of the dog and the amount ingested. These contain iron which can be poisonous. If you're not sure that what he ate contained iron, it's easy to tell if you have a duplicate packet and a magnet. Because iron is metal, it will show up on an X-ray, so that's another way to tell.

Signs of poisoning: The main sign of toxicity is vomiting, but shock and liver damage can follow.

What to do: Following induction of vomiting, which can be done at home, your veterinarian may recommend oral treatment with milk of magnesia, which binds to heavy metals, allowing them to pass safely through the GI tract.

Disposable Hand Warmers

Ingestion of these packets is somewhat concerning. Some contain iron (see food oxidizer packs above). There is definite GI foreign body potential. Even worse, if the hand warmer is active, it can cause severe internal burns to the stomach lining.

What to do: Inducing vomiting is recommended. See your veterinarian if the hand warmer does not come up with the vomit, and/or if your dog shows signs of abdominal pain.

Batteries

Batteries contain extremely caustic substances. If your dog bit into one, immediately flush his mouth copiously with water and get to the veterinarian ASAP. If he swallowed one, or may have swallowed one, do not induce vomiting. If the battery was punctured before swallowed, it can cause a lot more harm to the esophagus coming back up. An x-ray will determine if a battery has been ingested or not. If it has, endoscopic or surgical removal is usually recommended. Medications to protect and heal any damaged esophageal or stomach burns will be prescribed.

Pennies

Pennies minted after 1982 contain zinc. One penny contains enough zinc to poison your dog. Zinc damages the red blood cells, leading to severe, life-threatening consequences.

Signs of poisoning: Depression, loss of appetite, vomiting, anemia, weakness, and trouble breathing.

What to do: If you think your dog may have ingested a penny, get him in for X-rays ASAP. Treatment involves surgical or endoscopic removal of the coin, supportive care, and whatever medical therapy is indicated based on bloodwork results.

Snakes

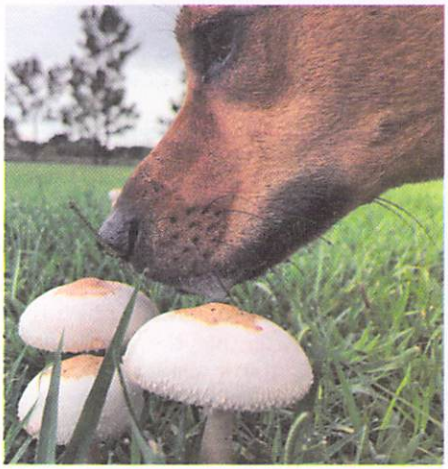
Depending on the type of snake, an encounter with a snake can be fatal.

What to do: If you live in an area with poisonous snakes, get to a veterinary or emergency clinic immediately. There is anti-venom available for several poisonous snakes. It's OK to take a few minutes to rinse the wound copiously with water to try to remove some poison. If the bite is on a limb, keep the limb lower than the heart to slow circulatory spread. If possible, describe the snake to the vet's office while on your way so they can be prepared.

Toads

Most toads have low toxicity, but two, called "Bufo" toads, are super poisonous: the cane, marine, or giant neotropical toad (*Rhinella marina*) and the Sonoran Desert toad or Colorado River toad (*Incilious alvarius*). The cane toad is found mostly in Florida, Louisiana, Hawaii, and Texas. The Sonoran Desert toad is found mostly in California and the southwestern deserts.

Signs of poisoning: Initial signs



Christian Phillips iStock

Your dog doesn't know which mushrooms might make him ill, so don't take a chance. Keep him away from them.

of toad toxicity include drooling, retching, gagging, vomiting, frantically pawing at the mouth, and head shaking. Depending on the toad and amount of toxin ingested, these can progress to hyperexcitabilty, tremors, seizures, shock, collapse, coma, and death.

What to do: The first thing to do is flush your dog's mouth with copious amounts of water. Make sure his nose is pointed down so the water flushes out. Do not let him swallow it! Inducing vomiting is generally not helpful. After you thoroughly flush his mouth, get the dog to the veterinarian. Be prepared to describe the toad or better yet bring a picture. Prognosis varies with the toad and the amount of toxin ingested. The cane toad is the worst. There is no antidote.

Mushrooms

Several toxic species of mushrooms can cause issues ranging from kidney damage, liver damage, severe GI disturbance, neurological impairment, hallucinogenic behavior, and coma.

What to do: If you see your dog chowing down on mushrooms, inducing vomiting is acceptable, then get to the veterinarian ASAP. Be prepared to describe the mushroom.

Hopefully, these tips will help you achieve a good outcome should your dog get into any of these dangers. The best advice we can give to avoid toxicities is to pet-proof your home, keeping dangerous items well out of reach. Confine your dog when you are not home to supervise his activity. Keep him on a leash when adventuring in the great outdoors.■

(raw, continued from page 1)

this step! Registration is what matches the unique ID number in the chip to your contact information. Update your contact information regularly. This can be done online through most microchip services.

It is extremely rare for a properly implanted microchip to cause harm to your dog. Most dogs will be a little sore for a couple days after the implant, just like getting a vaccination or having blood drawn. After that, they go about their lives. The chip is about the size of a grain of rice, and you will likely be able to feel it under your dog's skin. This is normal. In the unlikely event that a larger lump develops in that area, contact your veterinarian promptly.

Pros:

- Always with your dog, can't be lost.
- One-time cost for implantation and registration, relatively inexpensive.
- Quick and easy to implant.
- Easy to update contact information if it changes.
- Most veterinary clinics, shelters, and animal-control departments now carry microchip scanners.
- Optional subscription services that may include custom lost dog posters, access to networks if your dog is lost, medical advice, and travel assistance.

Cons:

- Microchips are not GPS. Without a scanner, the chip is useless.
- The chip contains a unique ID number. Once scanned, the microchip registry must be contacted to access your contact info, which may slow contacting you.
- If the chip isn't registered with your contact information, it is useless. Some veterinary clinics register microchips for you once implanted, but always double check.
- Some chips may "migrate" and move from where they are implanted near the top of the shoulder blades. Most people using a scanner will scan the entire dog to be sure, but some migrating chips may be missed.
- Rarely, chips can fail or cause irritation or a tumor at the implantation site.

GPS Collars

GPS collars and collar attachments can be excellent for dogs prone to wandering, if you are in an area with good cell coverage. They are not necessary for all dogs, and the subscription can be off-putting, but more options are coming on the market and they can be fun to play around with. Utility can be limited in a hiking setting due to limited cell service.

Pros:

- You can track your dog by yourself, usually using an app on your phone.
- Some devices can be programmed to alert you if your dog leaves a designated area, such as your yard.
- Increasing options available.

Cons:

- Range is often limited by cell service. If your dog gets lost out hiking in a remote area, you may not be able to use the GPS.
- Many collars or GPS attachments are too bulky for small dogs.
- Collars pose a choke hazard if they get caught on debris or another dog's mouth during play.
- Devices attached to collars can become dislodged and fall off.
- Battery life varies. Many devices can be switched from a "standby" mode to actively tracking. Some must be changed manually while others can be controlled remotely with an app. Battery life is significantly shorter when actively tracking your dog.
- Most devices require a monthly subscription to use GPS tracking features.

Smart Tags

Every dog should have some form of visible identification on them when traveling, and many smart tags can accomplish this basic task along with additional features to speed up your reunion. Smart tags make it easy for someone to reach you if they find your dog, and some even allow you to find your dog yourself as long as your pup is in an area with plenty of devices that pick up the tag's Bluetooth signal.

Whether your dog wears a collar or harness with a smart tag at all times depends on your personal preferences and your dog's lifestyle. Smart tags that piggyback off Bluetooth from cell phones to help you locate your dog are most useful in densely populated areas. Most smart tags make it easier for the average person to contact you directly, as all they will need is either a smart phone or a phone with the correct app (easy to install). No microchip scanner needed.

Pros:

- Small and lightweight.
- Inexpensive.
- Easily visible.
- Easy to update contact information if it changes.
- Can be scanned by most smart phones.
- Some products can be customized with your contact info on the surface, like a basic ID tag.
- Some products use Bluetooth and can be detected by devices nearby, allowing you to locate your dog. This is basically how Apple AirTags work.
- Some products, like the Fetch tag by LifeKey, will give you GPS coordinates when the tag is scanned.

Cons:

- Smart tags do not currently allow real-time GPS tracking. Unless the tag is scanned or near someone in the app network (depending on product), it can't be used to find your dog.
- Some smart tags may depend on a network of people using the same app. If your area has few people using the app, it will be more difficult to locate your dog.
- Smart tags can get caught on debris, presenting a hazard for your dog, or get knocked off and lost. If the tag is separated from your dog's collar, you will still be able to find the tag but not your dog.
- Many are made of silicone, which dogs can chew up and destroy.

How to Choose

The best ID and tracking method(s) for your dog depend on your personal preferences and your dog's lifestyle. We recommend that all dogs have a registered microchip injected, as microchips stay with your dog at all times and scanning lost dogs for a chip has become standard practice. But you must keep the correct contact information in the database.

For the couch potato who prefers to be at home, a basic collar with either your phone number engraved on the buckle or a tag is probably sufficient.

For the suburban or urban pooch who sometimes likes to go for a solo stroll, a smart tag that uses Bluetooth may be a good option so you can locate your wayward hound quickly yourself. Customize the tag with your info for extra security.

For the long-distance wanderer or talented escape artist, a GPS collar may be a good fit. Keep the device charged and look for one that allows you to enable "lost mode" remotely. Be wary of cell coverage limitations, especially if you are using the collar while out hiking.■

Uncontrollable Itching

Consider pyoderma, a bacterial infection

In a healthy dog, the bacterial skin infection called pyoderma generally develops secondary to another problem—most commonly, one that causes the dog to itch—like flea bites. The dog's scratching damages the skin, which opens the door for invading bacteria. The more he scratches, the worse things become.

Damaged Barrier

"If the dog has normal skin, it's very hard to get a skin infection without some insult to the skin," says William H. Miller, Jr., VMD, professor emeritus of medicine at Cornell University's College of Veterinary Medicine. "That could be road rash from an accident, poor wound care after surgery, etc., but itching is by far No. 1 on the hit parade. If little or no flea control is used, flea-bite hypersensitivity is No. 1, atopy No. 2, and other ectoparasites like scabies or demodex No. 3. If the dog has abnormal skin to begin with, then infection is just waiting in the wings. People always talk about immune deficiency, but that's rare and doesn't result in skin infections unless the skin is damaged in some way."

That means that any dog who has skin parasites or allergies may develop secondary bacterial infections like pyoderma. These infections can range from superficial impetigo (an infection in the upper layers of the skin) to deep-seated furunculosis (a deep inflammatory infection in the skin) in hair follicles.

The appearance of pyoderma varies depending on the dog. Some dogs simply have a few pimples in the groin area. Others have a "moth eaten" coat appearance. And some dogs have oozing, inflamed skin.

Any dog with deep skin folds such as on the face and muzzle, around the tail, or anywhere due to obesity are prone to skin infections. The folds hold moisture and can be tedious to clean daily.

Photo courtesy of William H. Miller, VMD

A relentless itch cause scratching, which damages the skin and leads to infection.

Treatment

Treatment includes killing the pathogenic bacteria and providing an environment for the normal bacteria to recover. Your veterinarian will try to determine and then attack the primary cause for the itch and resulting skin infection. Causes can include flea bites, thyroid disease, skin disorders, infected hair follicles, parasites, and poor grooming. In addition to treating the cause, your veterinarian will prescribe treatments to clear the infection.

Topicals are the treatment of choice for most pyodermas, although it depends upon the depth of the infection. "If the pyoderma is on the surface of the skin or within the superficial lumen of the hair follicle, topicals are all that are needed in an otherwise normal dog. Infection in the mid-to-deep follicular lumen usually will require antibiotics as well as topical treatments," says Dr. Miller.

"The deepest infections, like furunculosis and cellulitis, need antibiotics. Topicals are either curative or beneficial to some degree in all skin infections and don't typically promote bacterial resistance as can occur with inappropriate antibiotic use. The kicker with topicals is whether the owner can or will do the treatments. To be effective, most topicals need to be used daily. Most owners and dogs will be OK with the application of a cream or ointment to one or two spots on the dog's body, but what about when the infection is widespread, and a rinse or shampoo is needed, which can be stressful with a large hairy dog in the middle of a very cold winter."

Antibiotic Choices

For mild or first-time pyodermas, your veterinarian may rely on superficial cytology to make an empirical choice for an antibiotic. Some bacteria are resistant to some antibiotics. For deep, recurring, or long-seated skin infections, it can be wise to do a culture and sensitivity. This is particularly important if your dog is on corticosteroids or has a chronic condition that can affect his immune system such as Cushing's disease. Depending on the severity of the infection, your dog may need to be on an antibiotic for weeks.

Preventing a skin infection starts with good management. Use topicals or other medications to reduce external parasites, such as mange or fleas. If your dog has allergies, stay on top of the required care. Healthy skin is resistant to infections, so keep up good grooming. A healthy, balanced diet is also important. Supplements should be used if your veterinarian recommends them for healthy skin (see sidebar).■

Diet for Healthy Skin

Emerging research is looking at diet's effect on healthy skin. A recent study published in the August 2022 issue of *Animals* looked at eight dogs and their skin microbiome (bacterial population). The dogs ate regular dry kibble for 30 days. Then, after a four-day transition, ate a fresh processed diet for 30 days. The dogs had a healthier bacterial population on their skin when eating fresh food. More research needs to be done, but this could be a promising aid for dogs with recurrent pyoderma.

Puppy Pyoderma

Puppy pyoderma, more commonly called "impetigo" in puppies, is a mild staph infection on the belly and groin area of young puppies. You will notice pimples in the area and the puppy may be itchy. This is generally treated with mild topical cleansing agents. Severe cases may need some antibiotics but that is unusual.

Photo courtesy of William H. Miller, VMD

Sign Up for Obedience Class

Young dog needs help socializing and adjusting

Q Our dog Vinny is a year old. He bites and lunges and walks on his hind legs when we try to walk him. He bites his paws and tail, my husband, me, the furniture, the rugs, and once in a while a toy. He runs like crazy in circles. Unfortunately, we found out months ago he came from a puppy mill.

We want so much to help him get rid of these habits. We give him melatonin for puppies before bed. We appreciate any information you can give us.

A Vinny does sound like a handful. Although his origin as a puppy mill product is not ideal, other things are probably affecting his behavior. If he is biting himself, he has either itching or pain in the areas where he is biting. Please take him to your veterinarian to be examined for dermatological or even orthopedic causes of pain.

As for toys, well, you can spend a fortune on dog toys, and probably should, so that you can find something with which he likes to play. Ball and bones are favorites of some dogs; others like stuffed toys (if he disembowels them, there are some without stuffing for dogs like that).

You can get rawhides or dried body parts of a variety of animals, as most dog really like to chew. You must be aware, however, that some dogs cannot tolerate rawhides and will have gastrointestinal consequences if they devour them. A greater proportion of dogs may guard rawhides and, if that happens, he should have them only when he is in his crate or a room where he is not disturbed.

Try using a harness to walk him so you can safely support him without injuring his neck. He probably won't spend too long on two legs. If your neighborhood is very busy with dogs and people, find a quieter place to walk him. A dog stroller could be used until he is familiar with your neighborhood and won't be so excited. Try to find him a playmate either informally or at day care.

If he bites you, leave him alone for three to 10 minutes. Absolutely alone. No shouting, no spraying with water, and no spanking. The worst punishment for most puppies is loss of companions. A nip means five minutes of solitude.

Sign him up for obedience classes. He is not really a puppy, although he won't be socially mature until 2 years of age, but that's OK. Select a trainer who uses only positive methods.

I have not seen him, and there is the remote possibility that he is truly hyperactive. If that were true, he could be treated with the same medication, Ritalin, given to hyperactive children. Of course, if he is not truly hyperactive, the drug will make him even more active, but it only lasts a day or two.■

Some dogs love stuffed toys, while others destroy them.

Shutterstock

Difficult Golden Retriever

Her lack of appetite remains

Q I hope you have some insight to share about my 18-month-old Golden Retriever. Winnie went into her first heat cycle late at 15 months in January. During the cycle her appetite changed. She refused her regular food. I have tried many different varieties and even made my own dog food. Our veterinarian thinks it is possible that she is experiencing a false pregnancy.

I have her scheduled to be spayed this week. She has gotten worse, though. She smells her food and refuses to eat it, she will not eat out of her bowl. For a while, she would eat only off a paper plate. Now she will eat chicken if I toss it to her. She will eat some treats.

I know she senses my frustration because she lays on her bed and looks at me like she is in trouble. She plays with our 3-year-old Golden and acts normal in all other ways. I can't leave her food down because of the other dog. How do I correct this, and where did I go wrong?

Thank you in advance for your time. She is our fifth Golden.

A You have led a Golden life with all those dogs, and I hope they all had long lives. Goldens are often short-lived, mostly falling victim to cancer.

Lately, it has been discovered that early neutering (less than 6 to 12 months of age) of Goldens and some other larger breed dogs increases the risk of cancer as well as musculoskeletal problems. You are wise to wait to have her spayed.

The drop in appetite during heat or estrous is normal. What is not normal is her continued inappetence. You could try feeding her in a separate room with the door closed to prevent your other dog from eating her dinner.

Your veterinarian will do bloodwork before she is spayed and that might reveal a medical cause of her lack of appetite. If she continues to have a poor appetite a month after her surgery, your veterinarian can prescribe one of two drugs to stimulate appetite. They have different modes of action. One, mirtazapine (Temeron), acts directly on the brain whereas the other, capromorelin (Entyce), mimics a hormone (ghrelin) produced by the stomach when it is empty. These medications may help.■

Do You Have a Behavior Concern?

Send your behavior questions to Cornell's renowned behavior expert Katherine Houpt, VMD, Ph.D., shown here with Yuki, her West Highland White Terrier. Email to dogwatcheditor@cornell.edu or send by regular mail to DogWatch, 535 Connecticut Ave., Norwalk, CT 06854-1713.

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- *What You Need to Know About Dew Claws*
- *Could Your Dog Truly Have ADHD?*
- *Effective Control for Fleas and Ticks*
- *Emergency: The Ball Is Stuck in His Throat*