

The Whole Dog Journal™



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A monthly guide to natural dog care and training

OCTOBER 2011

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EDITOR-IN-CHIEF – Nancy Kerns
TRAINING EDITOR – Pat Miller
PUBLISHER – Timothy H. Cole
CIRCULATION DIRECTOR – Greg King

EDITORIAL OFFICE

E-MAIL: WDJEditor@gmail.com
ADDRESS: 1655 Robinson Street
Oroville, CA 95965

SUBSCRIPTION SERVICES

PHONE: (800) 829-9165
INTERNET: whole-dog-journal.com/cs
U.S. MAIL: PO Box 8535
Big Sandy, TX 75755-8535
CANADA: Box 7820 STN Main
London, Ontario N5Y 5W1

REPRINTS

For price quote, contact
Jennifer Jimolka at (203) 857-3144.
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Jocelyn Donnellon, (203) 857-3100

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Feed Back?

We'd like to know what you want to see more of in WDJ.

BY NANCY KERNS

Can we talk? I need some advice about WDJ. Last month, I mentioned that both my writers and I have endured some various challenging life events this summer, which delayed the appearance of a few articles. Fortunately, other terrific pieces were prepared ahead of schedule, or in a few cases, appeared out of thin air from one of my regular contributors. Despite the drama, we've been able to bring you a full 24 pages of information you could immediately put into practice – even if it wasn't on the topics we hinted at in the “what's ahead” bar that appears on page 24.

Mentioning these difficulties last month accomplished one nice side effect: I received a number of notes or email messages containing suggestions for other articles. It gave me an idea: While regrouping, I should take this opportunity to formally ask all of you about what you'd like to see in WDJ. And so I've asked the Web guys at our publishing HQ to add a link to WDJ's home page (whole-dog-journal.com) for a short survey. Would you please go to the survey and answer just a few questions about what you'd like to see more of, or less of, in WDJ? We promise not to ask you any personal questions about your age or household income or *weight*, for goodness sakes! I just want to learn what you'd like more information about.

Just so you know: When planning each issue, I try to maintain a balance between dog-friendly, force-free training; holistic healthcare (including conventional medicine) for dogs; product reviews; and nutrition. In the best of all possible worlds, I'd have a bit of information about each of these in each issue.

Sometimes, however, the pendulum swings hard one way or the other for an issue or two. Last month, for example, we had a *lot* of training and behavior-related

articles; this month, the issue is top-loaded with two in-depth articles having to do with health: chemotherapy for dogs with cancer, and Addison's disease. We're going to have a ton of food-related coverage in the next few months. It all evens out eventually – at least, I hope it does.

I also try to balance some of the very long, detailed feature articles with shorter offerings, such as the “5-Step Action Plan” column and “Canine News You Can Use.” Generally speaking, the idea with the long pieces is to give a reader who is struggling with that particular subject everything they need to know to really make a difference to their dog's condition, whether the issue is health- or behavior-related. I understand that if you are not, yourself, dealing with that issue with your dog, these long pieces can be tedious. The idea is, though, that if your dog – or your brother's dog, or your neighbor's dog – ever *did* develop that condition, *boom!* You'd have an article on file that would really help address the problem.

Check out the “Survey” link on whole-dog-journal.com. And thanks for your interest in WDJ!

MISSION STATEMENT: WDJ's mission is to provide dog guardians with in-depth information on effective holistic healthcare methods and successful nonviolent training. The methods we discuss will endeavor to do no harm to dogs; we do not advocate perpetrating even minor transgressions in the name of “greater good.” We intend our articles to enable readers to immediately apply training and healthcare techniques to their own dogs with visible and enjoyable success. All topics should contribute to improving the dog's health and vitality, and deepening the canine/human bond. Above all, we wish to contribute information that will enable consumers to make kind, healthy, and informed decisions about caring for their own dogs.

MERIAL RUNS OUT OF IMMITICIDE FOR HEARTWORM TREATMENT

Here's what owners of heartworm-positive dogs can do until the only approved heartworm treatment is available again.

The supply of Immiticide (melarsomine dihydrochloride), the only drug approved to treat heartworm infections in dogs, has been low since December 2009, but now it's completely gone. Merial confirmed that it was officially out of the drug on August 9, 2011. The current situation is due to a new and separate manufacturing challenge related to technical issues with the company who provides the finished product, according to a Merial spokesperson. Merial said the company is working hard to make the drug available again, but cannot speculate when that might happen.

With Immiticide unavailable, the American Heartworm Society (AHS) has issued guidelines for treating heartworm-positive dogs to try to mitigate the damage that heartworms cause while in the body and the danger they present when they die. Briefly, here is what the AHS advises:

1 Verify all positive antigen tests with a second antigen test from a different manufacturer.

2 Give monthly heartworm preventive medication to prevent further infection. If the dog tests positive for microfilariae, pretreat with corticosteroids prior to giving the first dose of heartworm preventive medication and keep the dog under veterinary observation for at least 8 hours afterwards, due to the risk of anaphylactic shock from the rapid die-off of the microfilariae.

3 Treat dogs with doxycycline at the rate of 10 milligrams per kilogram of body weight twice a day for four weeks (give half as much if a dog cannot tolerate the higher dose). Repeat this dose quarterly (one month on, two months off) for as long as the dog is infected with heartworms. This will reduce the possibility of the infection being passed to other dogs through mosquitoes, shorten the lifespan of the adult worms, and lessen the chance of adverse side effects from worm death.

4 Restrict all activity and limit all exercise, as the danger from adult heartworms increases with physical activity.

5 Dogs with symptoms from the heartworms should receive medical treatment to alleviate respiratory distress. Surgical removal of the worms should be considered if cardiac function is affected.

6 When Immiticide becomes available, proceed with treatment if the dog still tests positive for heartworms.

I'd like to offer a few additional suggestions, based on what I've learned about this disease over the years.

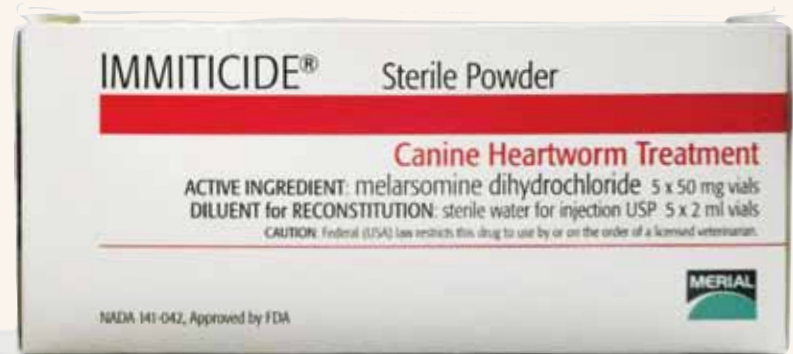
While the AHS does not suggest any particular heartworm preventive medication, I recommend using Heartgard (ivermectin) or generic equivalent. Of the four drugs currently used to prevent heartworms, ivermectin has the strongest effect against adult worms. It also has a weaker effect against microfilariae, and so is unlikely to cause an adverse reaction, making pretreatment and observation less critical.

I also suggest giving weekly heartworm-preventive doses of ivermectin to most infected dogs. Be sure to use Heartgard, not Heartgard Plus or any other combination product, when giving weekly. Studies have shown that weekly ivermectin used along with pulsed doxycycline can reduce the number of adult heartworms by more than 78 percent over 36 weeks.

Do not combine Comfortis (spinosad), a newer flea-control product, with weekly doses of ivermectin, as it increases the risks of neurological side effects. Ivermectin should not be given more often than monthly to dogs with the MDR1 gene mutation making them more susceptible to certain drugs. Commonly affected breeds include the Australian Shepherd (standard and mini), Collie, Long-Haired Whippet, and Silken Windhound. **See www.vetmed.wsu.edu/depts-VCPL for a list of affected breeds, and an inexpensive test to identify affected dogs.**

As we discussed in "Update on Doxycycline and Heartworm Disease" (WDJ August 2009) and "Shortage of Immiticide for Heartworm Treatment" (April 2010), doxycycline is given to kill wolbachia, a symbiotic parasite that lives within heartworms. Destroying wolbachia weakens heartworms, makes them unable to reproduce viable offspring, reduces their adverse effects on the body, and decreases the likelihood of adverse reaction from their death. Doxycycline must be pulsed (given periodically) to keep wolbachia from repopulating. Studies that combined doxycycline with ivermectin for 36 weeks gave doxycycline during weeks 1 to 6, 10 to 11, 16 to 17, 22 to 25, and 28 to 33, but the schedule suggested by the AHS may be equally effective. Giving doxycycline with food can reduce gastric upset.

If Immiticide becomes available while your dog still tests positive for heartworms, you'll have to decide whether treatment is warranted. Remember that the worms are doing damage as long as they are in the body, and danger of pulmonary embolism from their death also remains as long as any worms are present. Dogs showing symptoms of heartworm infection, those with heavy infections, and those who have been infected for a long



time are most likely to benefit from Immiticide treatment, as are very active dogs, since the need for activity restriction would be shorter. Young heartworms are killed more quickly by the combination of ivermectin and doxycycline, so if the infection was caught early, later treatment with Immiticide is less likely to be needed. Keep in mind that dogs may test positive for heartworms for up to six months following the death of all worms.

If Immiticide treatment is not done, continue to give doxycycline quarterly until your dog tests negative for heartworms. Give ivermectin weekly to monthly while your dog remains infected.

For those considering natural heartworm treatment, remember that natural does not necessarily mean either safe or effective. These products are untested and usually contain toxic ingredients, such as wormwood (*Artemisia absinthium*) and

black walnut (*Juglans nigra*). The biggest danger of heartworm treatment is from the death of the worms, which can cause pulmonary embolism no matter how the worms die. There's no reason to believe that alternative treatments are safer than conventional therapy, particularly if you do not give doxycycline as well.

– Mary Straus

FOR MORE INFORMATION

- ❖ The American Heartworm Society: Guidance for Heartworm Disease Management During the Adulticide Unavailability heartwormsociety.org/UrgentAlert-8-9-11.pdf
- ❖ Heartworm Disease in Dogs: Prevention and Treatment dogaware.com/health/heartworm.html

RABIES CHALLENGE FUND STUDIES ARE IN YEAR FOUR

Progress is being made in the quest to reduce the frequency of legally required rabies vaccinations, but contributions are needed.

Rabies is nearly always fatal to the animals (including humans) who become infected with the disease. That's why vaccinating our dogs against this deadly virus is required by state law – in order to protect public health, by preventing transmission of this disease from infected wildlife to our pets and to us. Each state requires that dogs and cats be vaccinated for rabies every one, two, or three years.

Over the past few decades, it's become increasingly clear that modern rabies vaccines reliably convey immunity from rabies for longer periods than their labels guarantee. It's also become evident that some dogs suffer from adverse effects of rabies vaccination. Rabies vaccines can trigger both immediate and delayed adverse vaccine reactions. Documented reactions include:

- Behavior changes such as aggression and separation anxiety
- Obsessive behavior, self-mutilation, tail-chewing
- Pica (eating wood, stones, earth, stool)
- Destructive behavior, shredding bedding
- Seizures, epilepsy
- Fibrosarcomas at injection site
- Autoimmune diseases such as those affecting bone marrow and blood cells, joints, eyes, skin, kidney, liver, bowel, and central nervous system
 - Muscular weakness and/or atrophy
 - Chronic digestive problems

These reactions are all good reasons to reduce the frequency of rabies vaccinations as much as possible, while continuing to vaccinate dogs frequently enough to protect them from

contracting rabies if exposed. Which begs the question: what is that ideal frequency of administration for the rabies vaccine?

There is lots of anecdotal evidence to suggest that modern rabies vaccines convey protection in most dogs for far longer than their labels suggest. However, public health officials need the results of formal "challenge studies" (in which vaccinated animals are exposed to the live rabies virus) before they can responsibly recommend reducing the frequency of rabies vaccination in their states.

That's where the Rabies Challenge Fund comes in. After her dog Meadow developed a malignant mast cell tumor directly on his rabies vaccination site (the syringe hole still visible in the tumor center), Kris L. Christine of Maine began researching rabies vaccines. Eventually, she established the Fund in order to conduct the studies needed to prove that the vaccine confers a longer duration of immunity than previously shown. She enlisted the support of canine vaccine experts such as W. Jean Dodds, DVM, (a co-trustee of the Fund), and Ronald D. Schultz, PhD, professor and chair of the Pathobiological Sciences department at the University of Wisconsin-Madison School of Veterinary Medicine, who designed and is conducting the studies.

So, who is paying for this research? Animal lovers, that's who. "Because the USDA does not require vaccine manufacturers to provide long-term duration of immunity studies documenting maximum effectiveness when licensing their products, concerned dog owners have contributed the money to fund this research themselves," says Christine. "We want to ensure that rabies immunization laws are based upon independent, long-term scientific data."

The Rabies Challenge Fund studies are in their fourth of seven planned years. Annual budget goals of \$150,000 must be met to complete this work, which will benefit all dogs by, it's hoped, proving that rabies vaccines may be given as infrequently as five to seven years with full efficacy. Donations to this 501(c)(3) Fund are tax-deductible. – Nancy Kerns

FOR MORE INFORMATION

- ❖ Rabies Challenge Fund (714) 891-2022; rabieschallengefund.org

Chemo Can Be Kind

Chemotherapy isn't as onerous to dogs as it is to humans, but its many benefits are balanced by some risks.

BY BARBARA DOBBINS

Cancer. My heart dropped to my stomach. In February 2010 my Border Collie Daisy became one of an estimated six million dogs diagnosed with cancer each year.

Chemotherapy. My stomach tumbled to my feet. The diagnosis was scary enough; how could I possibly consider chemotherapy? I had visions of a treatment worse than the disease itself.

As it turns out, my preconceptions of chemotherapy were far worse than its reality. Chemo hasn't cured my dog – more on that later – but it's given us more than 18 months (and counting) of joyful, quality time together. It's even given Daisy a dozen new friends and routines to look forward to, in the form of her oncologist and chemotherapy technicians and the special things they do to make her comfortable on her “chemo days.”

CHEMO BASICS

Chemotherapy at its most basic definition is simply chemical treatment of an ailment. In this sense, we use chemotherapy everyday: antibiotics, NSAIDs, vitamins, herbs. Chemotherapy for the specific treatment of cancer involves infusing the dog's system or a specific place in the dog's body with cytotoxic chemicals in an attempt to destroy the cancer cells while hopefully doing as little damage as possible to normal healthy cells. Other than a few specially designed

drugs for a couple of specific cancers, chemotherapy drugs attack cells in the process of rapid growth or division.

Cancer chemotherapy was developed in the 1940s when researchers became aware of the effects of mustard gas, which was being used as a chemical warfare agent. Those exposed to the gas were found to have very low white blood cell counts and researchers reasoned that if the chemical had an effect on the rapidly

growing white blood cells, it might have a similar effect on the fast growing cells in some of the blood cancers. This led to further research and development of similar drug protocols.

Daisy has transitional cell carcinoma (cancer of the bladder). It is not curable, but it is treatable. I had to ask myself why I would treat her with toxic drugs. For this type of cancer, the first reason is to prevent metastasis – the spread of cancer to other parts of the body. The second reason was to control the disease and thereby increase her longevity and enhance her quality of life. For other types of cancer, chemotherapy might be used to reduce the size of the tumor so that surgery can be performed. Chemotherapy can also enhance the effectiveness of other cancer destroying treatments such as radiation. In some cases, it can rid the body of the disease, though this goal is not realistic at this time for many with the disease.

The goal of chemotherapy drugs is to kill the cancerous cells, while administering a dose that causes “tolerable” harm to the body's normal tissues. Since a distinct trait of cancer cells is that they grow at a faster rate than most normal cells, chemotherapy agents usually affect the process of replication of these rapidly



The author's dog Daisy is shown being prepped for the administration of her chemotherapy. An intravenous catheter is being inserted into her vein through which the agents will be injected. Alternating sites are used on each visit.

dividing cells by interfering with DNA or RNA at the cellular level. Most agents kill cancer cells by affecting DNA synthesis or function, a process that occurs during the cell cycle. The agent binds to the DNA and alters the replication process; the cellular activity is thereby halted and the cell dies. There is a balancing act between destroying as many malignant cells as possible and leaving enough normal cells to recover.

There are more than one hundred chemotherapy drugs being used to treat canine cancers and more are being developed all the time. Many years of research have resulted in established (but evolving) treatment protocols – treatment plans developed for a specific cancer type in which drugs are selected for their unique and complementary cancer-fighting properties and administered in a particular order and schedule. Combination chemotherapy is a protocol in which different drugs are rotated or given concurrently. With this approach, the drugs are given so as to attack the cancer cells in different ways thereby decreasing the possibility that the cancer cells will survive and become resistant to the beneficial effects of the agents.

There are many factors that your dog's oncologist will take into account when selecting the protocol to use for your dog, including the type and extent of the cancer, the nature of the agents, published evidence of their efficacy, any potential adverse reactions, and your dog's medical history and overall well-being. Your dog's breed, too, may affect the protocol; some

breeds with the MDR1 mutation cannot tolerate certain chemotherapy agents. (See www.vetmed.wsu.edu/depts-VCPL for a list of commonly affected breeds, and a test to identify affected individuals.) And of course, the oncologist's own training and experience plays a part in the decision.

If an oncologist does not see a response within a certain timeframe, the particular agent may be determined to be ineffective and another protocol may be administered or the treatment halted. The oncologist may even develop a protocol that isn't standard but is the best way to treat your dog.

The common routes of drug administration are by mouth (orally), or by injection, which can be given through a vein (intravenous), into a muscle (intramuscular), or under the skin (subcutaneous). These are systemic treatments that travel throughout the body to reach the cancer cells wherever they may exist. More recently, other methods have been developed to increase the local concentration of the agent at the tumor site. Such site-specific applications can direct the agents to the affected areas of the abdomen, lungs, bladder, the central nervous system, and the skin. This process can reduce the systemic effects as well as provide a stronger action of the drug at the disease location.

Your dog's specific dosage of a drug will be generally based on his body weight; other factors include your dog's overall health and sensitivity to drugs. The dose must be high enough to be

medically effective but not so high as to cause unnecessary damage to healthy cells.

Most plans begin intensive therapy with higher and more frequent doses of the agent in attempt to beat the disease back. The duration of the protocol depends on the type of cancer, the extent of disease, and how responsive it is to the treatment; the general recommendation is to administer 2-3 doses of a particular agent before determining if it is having an effect. Treatment periods can range from weeks to years. While the sound of "years of chemotherapy treatment" may sound daunting, remember that it means the treatment is working.

In addition to the chemotherapy administration itself, other exams and tests will be performed during the course of treatment. Some tests are done to see if your dog can safely receive treatment; others, such as ultrasounds, urinalysis, x-rays, CT scans, MRIs, and scopes monitor overall health and cancer status.

A routine checkup will take place during every visit. Like a report card, the following information should be relayed: your dog's overall well-being, medications given, any changes in eating/drinking/elimination habits, any sign of illness, change in behavior, change in tumor (if visible). Report any changes to your veterinarian's staff, no matter how insignificant the changes may seem. Thorough awareness and inspection of your dog is your responsibility. Veterinary technicians will perform a physical examination that will include obtaining heart rate, weight, and a blood sample.

Because many agents also affect healthy cells and organs, your dog's laboratory data will be checked before each chemotherapy administration. In addition, an assessment of the effects on organs may be performed on a periodic basis. Abnormalities in any of these values may require dose adjustments or delay of therapy.

POSSIBLE SIDE EFFECTS

Every dog will be different in his or her ability to handle treatment. Some dogs will experience side effects; some won't. Side effects tend to be temporary, spanning just the amount of time that it takes normal cells to be replaced or to repair the damage incurred from the chemo.

Canine oncologists have considerable experience with many of the standard drugs and how they affect dogs; they may

QUESTIONS TO ASK YOUR VET

- ✓ What is the life expectancy without treatment?
- ✓ What is the gained life expectancy with treatment?
- ✓ What chemotherapy agents will my dog be given?
- ✓ How are they administered?
- ✓ What is the process?
- ✓ How is the effectiveness evaluated?
- ✓ How frequently will treatment be given?
- ✓ How long will my dog receive treatment?
- ✓ What is the estimated cost of treatment?
- ✓ What side effects might my dog experience?
- ✓ What clinical signs should I be concerned about?
- ✓ What signs require me to bring my dog in immediately for examination?
- ✓ Who should I contact after office hours if my dog has symptoms that worry me?

WEIGHING THE CHEMOTHERAPY OPTION

- ✓ Is the expectation of the treatment worse than the treatment itself?
- ✓ How healthy is my dog?
- ✓ How does my dog handle trips to the veterinarian?
- ✓ How sensitive is my dog's gastrointestinal system?
- ✓ Do I have emotional, financial, and/or time commitment constraints that will lessen my ability to commit myself fully to my dog?

prescribe medications to help prevent known potential issues. As with the administration of any drug, there can be a severe immediate reaction; this is extremely rare. This is why your dog will be monitored closely during the administration of the drug and observed for about an hour afterward. Other side effects can appear 1 to 3 days after administration and include lethargy, decreased stamina, diarrhea, nausea, and or/vomiting.

To counter the potential for nausea and vomiting, anti-nausea medication such as metoclopramide is often administered along with the chemotherapy agent or drugs such as Cerenia will be dispensed to give at home should these symptoms occur. Pepcid AC may also be suggested to prevent stomach upset. Bland diets can also help.

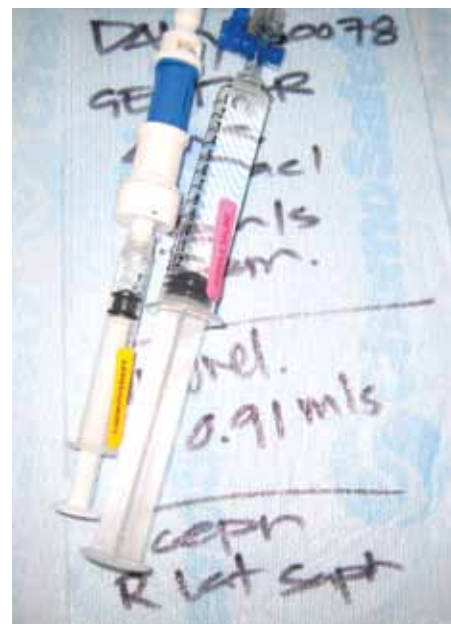
Guardians need to learn what the potential side effects are for the drugs their dog is receiving and how to watch for them. At times, it can be difficult to determine if a side effect is caused by the treatment or from the disease itself. Symptoms are especially difficult to evaluate during the beginning stage of treatment when there is nothing to compare them to. A day or two of nausea or a vomiting episode or two is not unexpected and is rarely dangerous. Notify your veterinarian immediately if your dog does not eat or drink for one day or longer, or if vomiting is continuous and water cannot be kept down, or if you notice blood in vomit or diarrhea. Record and report all your observations to the oncologist. If your dog does have a reaction, you may wonder whether to continue treatment; remember that the dosage can be adjusted or a different drug selected for use.

Unfortunately, the treatment drugs cannot distinguish between cancer cells

and non-cancer cells. As a result, the destruction of the fast growing cells of the bone marrow and gastrointestinal tract becomes a concern. In addition, some drugs may damage the reproductive tract (not a problem in neutered or spayed dogs); others may affect specific organs such as the heart, liver, and/or kidneys and thus require frequent monitoring.

Some chemotherapy drugs affect the bone marrow, thus affecting the body's ability to produce new white blood cells (WBCs). Your dog's WBC count will generally be at its lowest 5 to 7 days after treatment. The lowering of the white blood cell count can make your dog more susceptible to infections, which generally arise from bacteria that normally live in the dog's intestinal tract and on the skin, not from the environment. (So let your dog do the things he or she usually does, just use common sense and avoid known hazards such as dog parks with an outbreak of a contagion). Your veterinarian may also prescribe prophylactic antibiotics to prevent the possibility of infection if your dog's neutrophil (a component of white blood cells) count is low (neutropenia), even if there is no evidence of infection.

Early detection of infection is important so that antibiotic treatment can be started immediately. Signs of infection can include loss of appetite, vomiting, diarrhea, lethargy, or depression. To help monitor for infection, familiarize yourself with how to take your pet's temperature. Contact your vet immediately if the temperature is higher than 102.5°F (or otherwise indicated by your veterinarian), as a fever is an indication of infection. A dog's normal temperature is about 100.5°F to 102.5°F. Again, severe vomiting or diarrhea, bloody diarrhea, or lethargy are indications you should



One of Daisy's two chemotherapy agents prepared for administration, shown with a sterile saline flush that will follow the injection. A description of Daisy's patient ID and her drugs, dosage, and injection location are written in large letters on a sterile mat as a double-check.

contact your veterinarian immediately; severe infections may require hospitalization for intensive supportive care.

The cumulative effects of multiple doses of certain chemotherapy drugs can cause permanent side effects; if the risks outweigh benefits, treatment should be discontinued. Certain powerful drugs can only be used a limited number of times before the risk of toxicity to certain organs becomes too great. Other drugs may be inappropriate because of reactions or debilitating side effects. Sometimes, the cancer develops a resistance to the drug. The list of effective chemotherapy agents may diminish as treatment progresses; this is where the knowledge, experience, and creativity of your dog's oncologist come in.

LIVING WITH A DOG POST-CHEMOTHERAPY

As with humans being treated with chemotherapy, people and pets are not thought to be at risk from living and interacting with a chemotherapy-treated dog. Most chemotherapy drugs clear the system through the urinary and/or intestinal tract within 48 to 72 hours of administration. To limit exposure of these drugs to yourself and other pets, try to have your dog eliminate in one

WIGS REQUIRED?

The first question many people ask about canine chemotherapy is whether the dogs lose their hair! **Most** breeds have fur, not hair, and it grows and sheds in a cycle, not continuously. However, some curly-coated breeds with hair (such as Poodles) may experience hair loss. Chemotherapy drugs target fast growing cells (like hair); fur is not a fast growing cell. Sometimes dogs will lose their whiskers and shaved areas may not regrow as quickly, but that's about it.

particular area, away from areas where children play and other pets frequent. Wear disposable gloves to pick up feces immediately and place in a plastic bag and seal before disposal. If possible, thoroughly rinse areas of elimination with running water to dilute any chemical residue.

If your dog vomits or eliminates in the house, wear disposable gloves and use paper towels to clean up as much of the waste as possible. Again, bag the gloves and soiled paper towels before disposing. Depending on the location of the accident, you may want to use a thorough water rinse to clean the area. If your pet is receiving daily doses of a drug that you administer orally, the drugs should be handled only while wearing protective gloves (and kept out of the reach of children and other pets). Always wash your hands after handling medications or waste! If any member of the household is pregnant, trying to become pregnant, or immune-compromised, she should not handle any treated animal's waste or anti-cancer medications.

FINANCIAL CONSIDERATIONS

Chemotherapy treatment can be expensive as it involves professional time and expertise, the high costs of the drugs themselves, the duration of treatment, the associated procedures and diagnostics, as well as the removal of biomedical hazardous waste (including the leftover drugs, the catheters and needles used to deliver the drugs, the technicians' smocks and gloves, etc.). Most veterinary centers will bill per treatment, not in one lump sum. If you have pet insurance, check your policy; some plans cover treatment. CareCredit also offers special financing for approved veterinary procedures. On her blog, speakingforspot.com/blog, Dr. Nancy Kay has a great resource page for "Financial Assistance for Veterinary Care." This information also appear in

her book, *Speaking For Spot*. Ask for an estimate of expected costs so that you can evaluate the financial impact and discuss any financial concerns you have with your veterinarian so that he or she can offer the best treatment options based on your budget.

FRIENDLY FORCES

Your dog's body must work harder to maintain good health; not only is it battling a disease, it is working to repair the collateral damage from the chemotherapy agents.

Be especially aware of symptoms of pain; as we know, dogs are especially good at hiding any signs that they might be hurting. But pain can cause stress and stress can be detrimental to your dog's overall health and healing process. Work with your veterinary team to prevent and treat it.

The presence of cancer can result in significant alterations in your dog's digestion. There are some general concepts that can be followed to provide good nutritional support: provide a variety of foods that are aromatic and tasty; minimize the feeding of simple carbohydrates (starches and sugars – studies have shown these to be fuel for cancer); give foods with high quality protein sources; and consider the addition of omega 3 fatty acids. While optimal nutrition is ideal, it may come down to feeding whatever your dog will eat. There are a myriad of supplements that claim to be of benefit, but many of these are unfounded and

unproven; discuss any supplements that you consider giving your dog with the oncologist.

If your dog is on chemotherapy for any period of time, you may find she needs non-cancer treatment or medications. While on chemotherapy, no regular vaccinations should be given, though heartworm and flea preventatives can be given as long as not contraindicated with the chemotherapy or your dog's overall health. Always coordinate regular veterinary care with your oncologist.

Other areas of support you might want to consider include acupuncture, chiropractic, herbal, and homeopathic remedies. Daisy receives acupuncture twice a month and takes herbal supplements as prescribed by her holistic veterinarian, who works closely with her oncologist to check for drug interactions. Her herbal supplements are ceased 24 hours before and after chemotherapy administration to reduce the potential for any interactions.

One of the most important aspects of treatment is to maintain a positive attitude and keeping your dog's life – and your life – as normal as possible. Exercise within your dog's abilities, play, and enjoy every moment. While we have to remember the clinical reality, it's best to focus on your dog's reality!

LIVING FOR TODAY, PREPARING FOR TOMORROW

Chances are there has been research and studies (try searching online using Google Scholar) on your dog's particular kind of cancer. These studies will often include statistics such as median survival times and side effects of particular agents. They can be disheartening or encouraging. Do discuss your findings with your dog's oncologist, but remember there is no crystal ball to predict how your dog might react or respond. Each dog is unique and each cancer that develops is unique. A disease that develops in

CLINICAL TRIALS

The identification and development of effective new anticancer drugs is an ongoing process. Agents with a potential for anti-tumor activity are evaluated in clinical trials. Many veterinary teaching hospitals run such trials. If you are interested in having your dog participate in a trial, ask your oncologist or check caninecancer.com for a list of links.

DAISY'S CHEMO DAY

We arrive at the veterinary clinic at 7:45 AM. Daisy leaps out of the car and heads for the grass in front of the door; after a long squat, she makes a beeline for the entrance, pulling me behind her. It's always at this point I watch carefully to see if I can observe any signs of distress or apprehension about this almost weekly visit.

Instead, she is excited about going in to seeing her buddies; if I were a betting person, I would put money on the notion that she enjoys these outings. She greets the staff at the front desk and then waits not so patiently beside me as I complete her chemotherapy intake form. I have a pre-printed list of her medications that I attach to the form and note by hand if there are any changes in her health. After a few minutes, one of the oncology technicians arrives to escort her to the back; they greet each other like old friends.



I walk part way with her and then watch her happily trot off away from me, down the corridors she has come to know by heart. She turns and glances back; I think this is more for me than for her as I leave her for the day.

Her kind veterinary team at Sage Centers for Veterinary Specialty and Emergency Care in Concord let me observe Daisy's day, so I know what happens after she disappears from sight. She knows the routine by heart: she'll round the corner and step on the scale for her weigh in; she then pulls the technician to her next stop, the

blood draw area. One technician holds her while another quickly draws the sample that will determine if she can receive her chemotherapy treatment that day. While the sample runs, Daisy is taken to her kennel, where she'll spend the time in between treatments. Yes, *her* kennel. She knows which one is hers and apparently gets disconcerted if another animal needs it on her day. There's comfort in familiarity.



The results from the blood work indicate that Daisy is good to go with the administration of her chemotherapy agents. She's receiving a combination therapy of two drugs. The first one will be given during the morning, and the second in the afternoon, at least two hours later. When it's her turn, one of technicians leashes her and releases her from her kennel. Daisy leads her down the hallway to the chemotherapy

administration room. There are two technicians who will perform the administration and they are both covered in protective gear. It is a reminder that these are hazardous chemicals being handled.



The technicians devote their full attention to my girl. One holds her gently while the other shaves a small patch of fur from her front leg; this is down low, near her paw. The administration site will rotate each time from leg to leg. An intravenous catheter is inserted into her vein and secured with vet wrap. This will be used for the administration of both drugs, along with a drug transfer device called a PhaSeal system, which is used to contain and administer the toxic agent. Daisy relishes the attention and often attempts to give hugs or ask for tummy rubs while receiving her treatment.



During her stay, Daisy is examined by her oncologist, who reviews her blood work, completes a physical examination, and performs an ultrasound (more tummy rubs). In between her treatments and checks, she spends

the day observing the hustle and bustle of the backroom from her prime viewing spot. I like to think of it as her spa day with special attention being given every step of the way in an effort to help her maintain her health.

I arrive to pick my girl up around 5 PM on the days of her treatment. Daisy's team is notified and I wait to hear the clickety-clack of her nails on the tile as she leads the technician to the reception area. She's happy to see me, as I am her. Her attention turns quickly to the reception desk and the bowl of treats. My consummate counter-surfer stands up and not so gently touches the bowl with her paw to indicate she wants a treat. She charms the front assistants into responding to her request. She repeats this over and over. And over. We are fortunate: there is no dampening of her appetite from her treatment.

Her oncologist meets with me to review his findings; I've been doing this long enough now to know that if I hadn't heard from him during her stay, that it will be a good report. We head home to play.



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ADVOCATE

- ✓ Be an informed guardian.
- ✓ Research your dog's specific disease.
- ✓ Discuss your findings with your dog's oncologist.
- ✓ Join or start an online support group.
- ✓ Record every detail about your dog's behavior during treatment.
- ✓ Act quickly if immediate medical attention is needed.
- ✓ Familiarize yourself in advance about the potential side effects.

one dog may not be treatable in another for a variety of reasons such as location of disease, the dog's age and health, and the cost and availability of treatment. That said, it can be helpful to review the statistics, however extensive or limited, and use them as guidelines for weighing potential risks and benefits.

Realistically, there are few cancers that can be cured by chemotherapy. Some can go into remission (no detectable evidence of the disease), and even multiple remissions (such as with lymphoma). Others can become static (reduction and or no advancement of the disease).

Remember, if you decide to embark on the chemotherapy route, you can stop at any time. When I started treatment with Daisy, my guiding principle was that if it affected her quality of life in any way, we would cease therapy immediately. She's been receiving chemotherapy for over 16 months now, including intravenous mitoxantrone, carboplatin, and vinblastine; we also tried the oral drugs Leukeran (chlorambucil) and Palladia. Unfortunately none of these had the desired effect of combating the disease, but fortunately they did not have any detrimental affect to her well being. She's also received piroxicam (an NSAID that has anticancer properties) for over a year; we're not sure if this had any effect on the disease, but it did seem to have a palliative effect (she now takes Deramaxx instead).

There was a period when I did stop treating her with conventional chemotherapy agents, but that was because we had run out of drug options for her particular type of cancer. At that point, I put her on an herbal chemotherapy as

recommended by her holistic veterinarian. She continues taking it now in conjunction with a special combination protocol of two chemotherapy agents as developed by her oncologist. We're now at 18 months since diagnosis (her prognosis was less than a year) and I can joyfully report that her disease is static and she is happy and feisty. She comes home from her oncology visits ready to play frisbee. 🐾

The author wishes to extend her heartfelt thanks to Daisy's amazing and caring oncologists, Jeffrey N. Bryan, DVM, MS, PhD, DACVIM (Oncology), at the College of Veterinary Medicine, University of Missouri and Martin Crawford-Jakubiak, MLAS, DVM, DACVIM (Internal Medicine, Oncology), and his wonderful team at Sage Centers for Veterinary Specialty and Emergency Care in Concord, CA.

Author Barbara Dobbins is a dog trainer on hiatus who has been inspired to return to school to study veterinary oncology.



Daisy with her oncologist, Dr. Martin Crawford-Jakubiak, at Sage Centers for Veterinary Specialty and Emergency Care.

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Mine, All Mine!

Improve the behavior – and emotional response – of dogs who guard resources from other dogs.

BY PAT MILLER, CBCC-KA, CPDT-KA, CDBC

Resource guarding is a natural, normal canine behavior. In fact it's a natural behavior for most warm-blooded animals. Even we humans guard our resources – sometimes quite fiercely. Think about it. We lock our doors. Store clerks have loaded .22 rifles under checkout counters, while homeowners keep shotguns and baseball bats leaning in the corner by the back door. Companies hire security guards. Banks keep valuables in vaults. Some of us get insanely jealous if someone pays too much attention to our significant other. I could go on . . .

Dogs guard their resources as well, sometimes quite fiercely. This is most troublesome when they guard from humans, but can also get them in hot water when they guard from other dogs. That said, some dog-dog guarding behavior is quite appropriate and acceptable. The wise dog owner not only knows the difference between appropriate and inappropriate guarding, she also knows when and how to intervene, manage, and modify.

GUARDING SCENARIOS

If dogs didn't guard their resources from other dogs they'd be in danger of starving – both in the wild and in multi-dog households. It's this survival instinct that triggers everything from the canine dirty look known as a "hard stare" to the ferocious blood-letting, sometimes fatal battles that can occur when dogs fight over valuable, mutually-coveted resources: food, toys, objects, locations, beds, and human attention.

There are several different scenarios that can occur when one dog chooses to guard something from another dog, ranging from a very healthy, normal interaction, to those that risk the very lives of one or more of the combatants:

1 Ideal: Dog A and Dog B are both appropriate – The ideal resource-guarding scenario probably plays itself out frequently in multi-dog households, dog parks, doggie daycares, and anyplace dogs randomly gather. It looks something like this: Dog A is chewing happily on a (insert any valuable resource here). Curious, Dog B approaches. Dog A gives Dog B "the look." Dog B quickly defers, saying, "Oh, excuse me!" by calmly turning and walking away. No harm done. Much of the time the dogs' owner isn't even aware that this occurred.

2 Second Best: Dog B is inappropriate but Dog A defers – Dog A is chewing on (insert resource). Dog B approaches. Dog A gives Dog B "the look." Dog B gives Dog A "the look" back. Dog A defers, "Oops, sorry!" by dropping the resource and leaving. Dog B was inappropriate, but Dog A didn't want to argue about it. The danger here is that somewhere along the line Dog A may get fed up with Dog B's inappropriate behavior and decide not to defer.

3 Now We're in Trouble, Part I: Dog A is inappropriate – Dog A is chewing on (insert valuable resource). Dog B approaches. Dog B would defer if warned, but rather than giving "the look," Dog A leaps into action and attacks without giving Dog B the opportunity to defer.

4 Now We're in Trouble, Part II: Dog B is socially inept – Dog A is chewing on (insert valuable resource). Dog B approaches. Dog A gives "the look." Dog B is oblivious, and keeps blundering forward, until Dog A feels compelled to escalate the intensity of his message, to

Peanut guards his food bowl from the other resident dog, Otto – even though Otto couldn't care less about Peanut's food. In order to prevent scenario # 3 described above, we're working to counter-condition Peanut's response to having Otto near his food.



aggression if necessary, to get his point across.

5 Now We're in Trouble, Part III: Dog B is inappropriate and Dog A doesn't defer – Dog A is chewing on (insert valuable resource). Dog B approaches. Dog A gives “the look.” Dog B gives Dog A “the look” back. Instead of deferring, Dog A takes offense and escalates his aggressive behavior to maintain possession of his resource. Dog B reciprocates with increased aggression, and a serious fight ensues.

The same five scenarios can apply to other guarding situations – the dog who doesn't want to share his sticks or toys; who becomes tense if another dog approaches him on his bed; or who claims his owner's total and undivided attention. So whether it's food or some other valuable possession your dog is guarding, what do you do about it?

BEWARE, AND BE AWARE

First, you have to be aware of the guarding tension. It's hard to miss in Scenarios 3, 4, and 5, but if you have dogs engaged in one of the first two you may have overlooked it. Time to sit up and take notice! With Scenario 1, where both dogs respond appropriately, all you need to do is keep an eye on things and breathe a sigh of relief. As long as the pattern repeats itself, you needn't worry. You just need to stay calmly observant and take note if the pattern changes – if, for example, Dog B is slower to defer over time, which may cause an increase in Dog A's tension and possibly escalate to higher-intensity guarding. Many dogs live happily together their entire lives politely signaling and deferring in relation to valuable resources. That's how it's supposed to work – perfectly appropriate and normal.

If you see subtle signs of increasing tension, however, or if you see Scenario 2 behavior, where Dog B is bullying Dog A into giving up the resource, you have potential trouble brewing. It's possible that Dog B will calmly defer for the rest of the dogs' lives together. You could continue to observe, and intervene only if things start to escalate. Maybe it never will. Or you could intervene with management and/or modification now, before you have significant relationship damage to repair, and a more difficult behavior modification challenge.

Of course, anything more dramatic than Scenario 2 behavior requires im-

mediate action in the form of management and, if you choose to do so, modification.

YOU CAN MANAGE

I'm a huge fan of management. If your dogs' list of guardable items is relatively short and the dog-dog guarding interactions are reasonably predictable, then management may be a realistic option. Feed meals to your dogs or give them pig ears only when they are safely crated or closed in separate rooms. If you have a toy guarder, do toy-play with the dogs separately, and put coveted toys away when the dogs are together. Case closed.

Modification is in order, however, if battles grow increasing likely to erupt unexpectedly over an ever-growing list of miniscule triggers, such as a crumb dropped on the floor, a preferred resting spot on the rug, the hallway to the kitchen, equitably delivered treats to both dogs, or a rapidly growing radius around a valued human. Of course you'll manage in the meantime, but since management always carries a risk of failure and guarding battles can be fierce, the more generalized the guarding, the more critically important it becomes to convince your dogs to act appropriately with other dogs in the presence of high-value resources.

MODIFY

Aggression is caused by cumulative stress that pushes a dog over his aggression threshold. We're all grumpier when we're stressed. (See “A New Threshold,” WDJ October 2010). Begin your modification program by minimizing as many other stressors as possible in your dogs' world. That includes creating structure and predictability in their lives; exploring and treating any possible medical conditions that may cause pain or distress; and eliminating the use of any coercive or pain-causing training tools and methods (shock, choke and prong collars, physical or harsh verbal punishment).

At the same time, incorporate calmness-inducing products and procedures such as increased aerobic exercise, the “Through a Dog's Ear” recordings, Thundershirts or Anxiety Wraps,



Oh yeah; he guards his bed, too.

calming massage, and TTouch.

There are a few different options for modifying resource-guarding behavior between dogs. You can classically condition Dog A (the guarder) to love having another dog around him even in the presence of valuable resources; you can operantly condition Dog A to perform a different response when he's in possession of a valuable resource and another dog approaches; and you can operantly condition Dog B to avoid the guarder when he has a valuable resource. Here's how each of these work:

■ COUNTER-CONDITION DOG A

The point of counter-conditioning is to change Dog A's emotional response to the proximity of Dog B in the presence of

What you can do . . .

- **Manage, manage, manage. We cannot stress strongly enough the importance of managing your dogs' behaviors to prevent the triggering of over-threshold guarding behavior.**
- **Be observant. Watch your dog's behavior around other dogs in the presence of valuable resources to determine if everyone is being appropriate or if intervention is needed.**
- **Remember that it's natural for dogs to guard their valuables. If appropriate “go away” signals are being given and the approaching dog defers, don't interfere. That's how it's supposed to work!**



The Whole Dog Journal

a guardable resource. This procedure will require dogs with very solid sit-stays and down-stays. Alternatively, you can use tethers. It's critically important that Dog A not be triggered to guard during these training sessions; awareness of threshold distance and the dogs' proximity to each other is paramount.

- **Step 1:** Start with the two dogs sitting a few feet from each other – farther, if necessary to avoid guarding behavior. Have a bowl of pea-sized, high-value treats. Give a treat to Dog B (the non-guarder), and then give one to Dog A, accompanied by happy-voice praise. If the dogs are so far apart you have to walk some distance to get to Dog A, start praising as you walk. Repeat until you see Dog A brighten noticeably when Dog B gets his treat; this tells you he's made the association between Dog B getting a treat and the next delicious treat coming to him. This is a “conditioned emotional response” (CER) – the physical manifestation of the emotional change that happens because of the pairing between the presence of the other dog and the arrival of a high-value treat.

If you start with the dogs far apart, when you have established a consistent CER with Dog A, gradually move them closer together, continuing with the counter-conditioning and achieving CERs at each new distance until the dogs are happily taking treats a few feet apart. Depending on your dogs, this could take one session or many.

- **Step 2:** Have a bowl of high-value treats. Hang out with Dog A in a good-sized quiet room with the door closed – watch TV, read a book, work on the computer – but don't feed him any treats. In fact, ignore him completely. After 20 to 30 minutes, bring Dog B into the room

on leash and have him sit. Feed him a treat, then spend 20-30 seconds giving generous treats and praise to Dog A. Then remove Dog B from the room.

At varying intervals, bring Dog B back into the room and repeat the procedure – always bringing Dog B into the room before you make any move to reach for the treats in the bowl. Repeat until Dog A looks consistently happy – the CER – as you move to bring in Dog B.

- **Step 3:** Repeat Step 2, but this time Dog A is in possession of a guardable resource – a bone, a toy, a favorite bed. If there are things he guards less intensely than others, start with a lower-value resource.

Tether Dog A with his resource as far from the door as possible, and hang out for another 20 to 30 minutes before bringing in Dog B. Step in the door with Dog B, have him sit, feed him a treat, and then do your 20- to 30-second praise-and-treat routine with Dog A. Repeat until you have a consistent CER – Dog A brightens happily when you enter the room with Dog B.

As you do these repetitions, occasionally encourage brief eye contact between the dogs several times at each distance, so that trigger gets built into the procedure. If eye contact triggers significantly greater intensity from Dog A, stay at the door until that intensity goes away and you are getting consistent CERs even with eye contact.

Gradually move closer with Dog B, obtaining consistent CERs from Dog A at each new distance before moving closer again. Remember to look for and reward some eye contact between the dogs.

When you have closed the distance by half, mark that spot and start over again at the full distance, but this time with Dog A untethered. This should not trig-

ger any tension from Dog A, and you should be able to move closer to him with Dog B more quickly than before.

- **Step 4:** Repeat Step 3 with the same value resource, in all the rooms in the house, until Dog A displays consistent CERs everywhere.

If you have multiple dogs who Dog A guards from, repeat Steps 1 to 4 with each of the dogs. Then do the same thing with multiple dogs in the presence of Dog A and a low-value guardable resource.

- **Step 5:** Go back to Step 3, again with Dog A tethered, but now in possession of a somewhat more valuable resource. Repeat all steps with all dogs, individually at first, then in larger groups, until Dog A offers consistent CERs regardless of what dog or what room. Continue up the resource-value ladder until Dog A shows no sign of tension

- **Step 6:** Do occasional “cold trials” without the set-up and repetition – a deliberate “management failure” in which counter-conditioning meets real life. Do at least one cold trial per day, and if you see tension reappearing, go back and do repetitions of the procedure at whatever step is necessary for your dog to regain his equilibrium. Then move through the steps to completion – probably much more quickly than the first time through.

■ OPERANTLY CONDITION DOG A

Resource-guarding behavior lends itself beautifully to the “Constructional Aggression Treatment” (CAT) operant conditioning protocol developed by Dr. Jesus Rosales Ruiz and Kellie Snider, MA, a few years ago at the University of North Texas. (See “Build Better Behavior,” WDJ May 2008). Our Dog A gets tense and eventually aggressive because he is

Trainer Sarah Richardson feeds Otto (a.k.a. “Dog B”) a small, high-value treat. Peanut (Dog A, the guarder) is tethered. He intently watches Otto eat.

Then Sarah feeds Peanut a treat. She repeats this Step 1 exercise a number of times. Soon, Peanut doesn't look at Otto when Otto is eating a treat . . .

Instead, the little guarder brightens and looks at Sarah every time Sarah feeds Otto, anticipating correctly that he (Peanut) will receive a treat next.



concerned that the approaching dog is a threat to his valuable resource. These aggressive distance-increasing signals are often successful in making the other dog go away, hence they are reinforced, and behaviors that are reinforced are repeated.

To use the CAT procedure, tether Dog A with a low-to-moderate-value guardable resource, and approach from a distance with Dog B. If you know that Dog A begins showing signs of guarding at a distance of 15 feet, start at 25 feet. As you approach, watch Dog A for any small sign of tension. The instant you see it, stop with Dog B, mark the spot, and wait. As soon as you see any decrease in Dog A's tension, any sign of relaxation, quickly turn and walk away with Dog B, back to the 25-foot distance.

Pause there for at least 15 seconds (longer, if you think Dog A needs more recovery time), and then repeat, returning to the marker at the spot where you stopped before. Continue these repetitions until you see *no* sign of tension from Dog A when you arrive at the marker with Dog B.

On your next approach move four to six inches closer and mark that spot. You will likely see Dog A display signs of tension again at this distance. Repeat approaches and departures at this distance until the tension is gone, then decrease distance slightly again.

What you are doing with this procedure is teaching Dog A that a *new* behavior – acting calm and relaxed – makes the threat to his resource go away. As he continues to deliberately act calm and relaxed, he actually *becomes* calm and relaxed, and eventually no longer feels threatened by the approach of Dog B. Ideally you will see “crossover” behavior, where he acts very friendly and affiliative as Dog B approaches, offering

Sarah demonstrates Step 3, where the guarder (Peanut) has a very guardable resource – in this case, a Kong toy stuffed with yummy treats.



distance-decreasing signals instead of his previous repertoire of distance-increasing signals. When you've worked through the procedure with low-to-moderate-value resources, repeat with high-value resources.

With counter-conditioning, you change your dog's emotional response, and as a result his behavior changes. With operant conditioning (CAT), you change your dog's behavioral response, and as a result his emotional response changes.

■ OPERANTLY CONDITION DOG B

You can also operantly teach Dog B a new behavior in the presence of Dog A and a valuable resource. This is a useful second line of defense, in combination with modifying the behavior of the guarder. You can teach Dog B to withdraw on your cue; you can also teach Dog B to withdraw in response to any noticeable warnings from Dog A, such as a hard stare or a lip curl. The advantage of a cue from Dog A is that it happens, and Dog B responds by leaving, even if you're not there to give your cue.

Eventually you may find that the mere presence of Dog A-with-resource becomes the cue for Dog B to leave, which is just fine and dandy. If you see Dog B leaving the room before the cue, go ahead and reinforce that – it's a good thing!

When the cue is given (yours, or Dog A's), guide (lure or prompt) Dog B to a specified target, ideally in another room. Throw a treat-and-praise fest there for Dog B, and hang out with him there for several minutes before returning to Dog A's room and repeating the process. Dog B should soon be dashing to the other room when the cue is given – either yours, or Dog A's lip curl.

So what happens if Dog A is in the designated target room with a valuable

She feeds Otto a treat, and then spends 20 to 30 seconds feeding one treat after another to Peanut, praising him warmly the whole time.



resource? Great question! It's a good idea to operantly condition Dog B to a second target location in a different room. When Dog A is in Room X, Dog B learns to target to the spot in Room Y. But if Dog A is in Room Y, Dog B learns to target to a spot in Room X.

IT'S WORTH THE WORK

Keep in mind that you are likely to always need some degree of management, even with your successful modification programs. For example, even if you've done a great job of modifying the behavior of a dog who tends to guard toys, the high-arousal of a dog-to-dog game of tug carries a high likelihood of retriggering guarding aggression. Reserve his tug playing for games with you, and limit his play time with his canine pals to romping and running games. Be smart. Manage as needed, keep your eyes open for signs of returning tension, and be prepared to do a little remedial modification as needed.

So there you have it. Select the method(s) that appeal to you and get started. It will do your heart good to see the decreasing tension between your canine family members. It will also be gratifying to see your guarder gain new associations and learn new behaviors without fear of losing his valuables to his four-legged siblings. 🐾

Pat Miller, CBCG-KA, CPDT-KA, CDBC, is WDJ's Training Editor. Author of numerous books on positive dog training, she lives in Fairplay, Maryland, site of her Peaceable Paws training center, where she offers dog training classes and courses for trainers. See "Resources," page 24, for more information.

Thanks to Sarah Richardson, CPDT-KA, CDBC, of The Canine Connection in Chico, California, for modeling with Otto and Peanut. See page 24, for contact information.

Within just a few repetitions, Peanut's emotional response to the sight of Otto near his Kong has changed from guarded to a happy and anticipatory.



The Great Pretender

Addison's disease can mimic many other conditions; here's how to positively identify it.

BY CJ PUOTINEN AND MARY STRAUS

Something's wrong with your dog but you're not sure what. She seems listless, her eyes have lost their spark, and she just seems "off." You might notice intermittent muscle weakness, tremors, and an inability to jump into the car or onto a sofa. Or your dog frequently ignores her dinner, vomits, or has diarrhea. These vague symptoms, which may improve and then return, could stem from a dozen canine illnesses – or they might point to Addison's.

Addison's disease, named for the 19th century physician who defined this adrenal gland dysfunction, is also known as **hypoadrenocorticism** or **adrenal insufficiency**. While fatal if left untreated, with appropriate treatment Addison's can be managed so that affected patients lead normal, active lives. First diagnosed in dogs in the 1950s, it is considered an uncommon canine disorder. However, veterinarians who routinely test for Addison's often find it, suggesting that the illness is not really rare but rather under-diagnosed and under-reported. You don't find Addison's unless you look for it. Some veterinarians speculate that Addison's disease occurs in dogs at a rate as much as 100 times the rate in humans.

Aiyana, a three-year-old Italian Greyhound who lives with Lydia Kunzler in Northern Utah, developed symptoms when she was nine months old, but none of the several veterinarians Kunzler consulted could find the cause.

"Last fall I noticed Aiyana was starting to lose weight," she says, "and because I had a lot of things going on I attributed her loss of appetite to stress and tried to feed her

more. But a week after one of my other dogs passed away she became very sick. She was vomiting, very lethargic, and her digestive system just shut down, sometimes going days without a bowel movement. A few weeks went by, and we had to keep her on intravenous fluids or she'd get really sick again. Finally I decided to change vets. I knew all this vomiting, alternating diarrhea and con-



Before a dog is diagnosed with Addison's, it's all too easy to inadvertently "chase symptoms" – to treat the dog with various medicines – without realizing that all of the dog's disparate symptoms are actually related.

stipation, and other symptoms weren't normal."

Aiyana's new veterinarian immediately recognized the signs of Addison's and did an ultrasound test, saw how small the dog's adrenal glands were, and ordered an adrenal hormone blood test to confirm the diagnosis.

RECOGNIZING ADDISON'S

Dogs of any breed, either sex, and any age can develop Addison's. About 70 percent of dogs with Addison's are female, although in *some* breeds, including Standard Poodles and Bearded Collies, males and females are equally affected. The median age of dogs diagnosed with Addison's disease is 4 to 6 years, but it has been reported in puppies and in dogs as old as 12.

Certain breeds may be predisposed to Addison's, including Portuguese Water Dogs, Bearded Collies, Standard Poodles, Great Danes, Soft Coated Wheaten Terriers, Airedale Terriers, Basset Hounds, Springer Spaniels, West Highland White Terriers, Leonbergers, Labrador Retrievers, Rottweilers, Saint Bernards, Nova Scotia Duck Tolling Retrievers, Airedale Terriers, German Shepherd Dogs, German Shorthaired Pointers, other Poodles, and mixes of these breeds.

Commonly reported symptoms, which can vary dramatically from dog to dog, include loss of appetite, weight loss, depression, listlessness, vomiting, diarrhea, hind-end pain, muscle weakness, tremors, shivering, increased thirst, excessive urination, a painful or sensitive abdomen, muscle or joint pain, and changes in coat, which may become thicker, thinner,

Aiyana, a 3-year-old Italian Greyhound owned by Lydia Kunzler, developed Addison's last fall, but like many dogs she was initially misdiagnosed. Aiyana is better now, but her medications still require some adjustment.

longer, or even curly. About 15 to 20 percent of Addisonian dogs will have dark, tarry stools (melena, caused by gastrointestinal hemorrhage) or blood in their vomit. Symptoms often wax and wane, with the dog getting worse, then better, for months or even years.

Veterinarians examining Addison's patients may notice mental depression, a thin or emaciated body, muscle weakness, dehydration, patches of darkened skin, a slow and weak pulse, low body temperature, low blood pressure, and pale mucous membranes. Blood tests may show any of the following: elevated potassium, low sodium, elevated BUN and creatinine, elevated liver enzymes, low glucose, high calcium, low protein (albumin and globulin), anemia, low cholesterol, and metabolic acidosis. Urine may be dilute (low specific gravity). A sodium/potassium ratio of less than 27 is strongly indicative of Addison's, but a normal ratio does not rule it out as many veterinarians assume. A sick dog with normal or elevated lymphocytes and eosinophils (lack of a stress leukogram) can point toward Addison's.

Addison's disease, called "The Great Pretender," is often misdiagnosed because it resembles so many other illnesses. Patients with Addison's are often erroneously diagnosed as having gastrointestinal diseases such as inflammatory bowel disease (IBD), infections, parasites, cancer of the gastrointestinal tract, or poisoning. Acute renal failure, liver disease, urinary blockage, pancreatitis, insulinoma, hyperparathyroidism, and protein-losing enteropathy are other common misdiagnoses.

The most dramatic Addison's symptom is the endocrine emergency called **Addisonian crisis**. This occurs when the dog goes into shock due to circulatory collapse, and it can happen so quickly that a healthy looking dog is suddenly, within a few hours, close to death.

In an Addisonian crisis, the lack of adrenal hormones depletes sodium levels (hyponatremia) and body fluids (hypovolemia), resulting in potassium retention (hyperkalemia), bradycardia (slow heart rate), hypotension (low blood pressure), associated cardiac arrhythmias (abnormal heart beats), and collapse. In other diseases, hypovolemia and shock cause tachycardia (rapid pulse); in Addison's, the pulse *slows*. Low blood sugar levels (hypoglycemia) can cause seizures. Vomiting and diarrhea are common.

For many dog owners, the crisis is their first sign that something is wrong. About 30 to 35 percent of dogs with Addison's are initially diagnosed during a crisis. Patients treated in time with intravenous fluid therapy and glucocorticoid steroids show such rapid improvement that it seems a miracle cure, though some have to be monitored and treated for several days before their condition stabilizes. And the cure is temporary, for without appropriate maintenance care, another crisis will follow.

As many as 90 percent of dogs in adrenal crisis will have elevated creatinine and BUN, which can lead to a misdiagnosis of acute renal failure. Dehydration and low blood pressure cause blood filtration to drop, resulting in "prerenal azotemia," where waste products build up even though the kidney itself is functioning. Gastrointestinal bleeding can also cause increased BUN. The response to treatment is more dramatic for dogs with Addison's disease than for those with kidney disease.

ADDISON'S ANATOMY

The adrenals are two small glands positioned next to the kidneys. The center of each gland is called the medulla and the outer area is called the cortex.

The adrenal medulla secretes the "fight or flight" hormones: adrenaline (also called epinephrine) and noradrenaline (also called norepinephrine). These hormones are generally not affected by Addison's disease, which affects only those secreted by the adrenal cortex: glucocorticoid and mineralocorticoid hormones. Addison's can cause deficiencies of both types of steroid hormones.

Glucocorticoids (primarily cortisol) affect nearly every tissue in the body. They help maintain blood pressure and cardiovascular function, activate the body's stress response, regulate metabolism and blood glucose levels, stimulate appetite, modify red and white blood cell production, and promote a general sense of well-being. Glucocorticoid levels are controlled by adrenocorticotropic hormone (ACTH), which is produced by the pituitary gland.

Mineralocorticoids (primarily aldosterone) are responsible for regulating electrolytes (sodium, potassium, and chloride) and water balance, which affects blood pressure. Electrolytes also affect nerve and muscle function, including heart rate and rhythm.

What you can do . . .

- **Become familiar with Addison's symptoms so you can recognize them in a hurry.**
- **If your dog shows symptoms, go to a veterinarian at once. Prompt treatment saves lives.**
- **Learn about treatment options and cost-saving tips.**
- **Schedule checkups and blood tests to monitor your dog's condition.**
- **Observe your dog's behavior and appearance to help determine the ideal medication dosage for her.**



The Whole Dog Journal

Typical Addison's, often called **primary Addison's**, is caused by adrenal dysfunction that creates both glucocorticoid and mineralocorticoid deficiencies. The adrenal glands atrophy, usually because of an autoimmune response that may be hereditary. Other possible causes include granulomatous disease, tumors, injury, prescription drug side effects, infection, or inflammation. By the time symptoms appear, an estimated 85 to 90 percent of the adrenal cortex has been destroyed. Dogs with typical Addison's will have electrolyte imbalances, but this alone is not enough to diagnose the disease, nor can normal electrolytes rule out Addison's disease.

In **atypical Addison's**, the adrenal cortex continues to produce aldosterone but not cortisol. Patients with atypical Addison's have normal sodium and potassium levels. Most eventually progress to typical Addison's disease within a few months or, in some cases, years.

In **secondary Addison's**, the pituitary gland no longer produces ACTH because of immune-mediated damage, inflammation, trauma, or cancer. Similar to atypical Addison's, only cortisol production is affected, but secondary Addison's will never progress to the typical form of the disease. Because aldosterone is still produced by the adrenal cortex, secondary Addison's disease does not cause electrolyte imbalances.



The ACTH response test is the definitive test for Addison's disease. The cortisol level of a dog's initial blood sample is measured; then the dog is injected with ACTH. An hour later, another blood sample is taken, and the cortisol level measured again. If there is little or no change in the dog's cortisol levels after the ACTH stimulus, Addison's is the diagnosis.

Addison's disease can be brought on by treatment for Cushing's disease designed to suppress or destroy overactive adrenal glands. The antifungal medication ketoconazole is sometimes used to treat Cushing's because it suppresses adrenal function. The sudden withdrawal of prednisone or other cortisone medications after long-term use can also trigger an Addisonian crisis.

CONFIRMING DIAGNOSIS

The ACTH (adrenocorticotropic hormone) response (or stimulation) test is considered definitive for Addison's. Dogs must be off all corticosteroid hormones except dexamethasone for at least 12 to 36 hours (or more, if they've been on steroids for a long time) to prevent the drugs from affecting test results.

The cortisol level of an initial blood sample is measured; then the dog is injected with a form of the pituitary hormone ACTH that signals the adrenals to produce cortisol. One hour later, the blood cortisol level is measured again. In healthy dogs, cortisol levels rise, indicating a normal adrenal response. If the dog's initial cortisol level is low and there is little or no response after ACTH stimulation, the diagnosis is Addison's disease.

Synthetic ACTH (cosyntropin, Cortrosyn) is preferred for consistency; ACTH gels are not recommended for this test, because the results may not be

accurate. An older protocol used one vial (250 mcg) of Cortrosyn for every dog, but only 5 mcg/kg is needed to achieve maximal adrenal stimulation when given intravenously. This can translate into a substantial cost saving for small dogs.

If the ACTH response test is positive and electrolytes are normal, then a separate test to measure endogenous ACTH levels can differentiate between primary and secondary Addison's. Endogenous ACTH levels will be greatly elevated with primary Addison's but low or undetectable with secondary Addison's. Dogs with secondary Addison's will never develop electrolyte abnormalities, making treatment and monitoring much less expensive.

Two situations can result in a misdiagnosis of Addison's disease. Dogs from breeds originating around the Pacific Rim, including the Akita, Shiba Inu, and Jindo, often have elevated potassium values. This can be confused with Addison's, particularly when symptoms are similar.

Whipworms can create a syndrome nearly identical to Addison's, including low sodium and elevated potassium. Fecal tests for whipworms are often negative because eggs are shed infrequently.

In both cases, ACTH response tests will be normal. Always confirm a diagnosis of Addison's disease before beginning mineralocorticoid supplementation.

TREATING ADDISON'S

In Addisonian crisis, treatment with intravenous fluids, glucocorticoids such as dexamethasone, and sometimes glucose as well can literally save a dog's life. Once the patient's condition has stabilized, treatment moves to the life-long replacement of adrenal hormones, along with careful monitoring of electrolyte levels for dogs with typical Addison's.

Glucocorticoid hormones such as prednisone, prednisolone, methylprednisolone (Medrol), or hydrocortisone are needed for all Addisonian dogs. For atypical and secondary Addison's, this is the only drug prescribed. Prednisolone and methylprednisolone have been converted to a bioactive form, a process which otherwise must be done by the liver, so these may be good choices for dogs with elevated liver enzymes. Methylprednisolone and hydrocortisone may be associated with fewer side effects. Hydrocortisone is synthetic cortisol, closest to the natural form.

The starting dose is 0.1 to 0.2 mg prednisone (0.4 to 0.8 mg hydrocortisone) per pound of body weight daily. This is a physiologic dose, meant to mimic the amount of cortisol the body would produce itself if it were able. It should not cause the type of side effects associated with prednisone given at therapeutic levels for dogs with problems such as allergies or autoimmune disorders.

Many dogs do well on 0.05 mg prednisone (0.04 mg Medrol, 0.2 mg hydrocortisone) per pound of body weight daily. Even large dogs usually do not require more than 5 mg daily, except during times of stress. The dosage is best divided in half and given every 12 hours in order to keep cortisol levels more even, particularly when using hydrocortisone, which has a much shorter half-life.

Dogs with typical Addison's also need mineralocorticoid supplementation. Two options are available: fludrocortisone acetate (Florinef) and desoxycorticosterone pivalate (DOCP, commonly known by the brand name Percorten-V).

Florinef is an oral medication that is given once a day in the morning or split into two daily doses. Missing even a single dose can be dangerous. It can be difficult to regulate dogs taking Florinef, and increases in the initial dosage are frequently required, especially during the first year, as any remaining adrenal function is lost.

Percorten-V is given by subcutane-

ous injection once every 25 days or so. Experts find that in addition to having fewer side effects, Percorten-V regulates electrolytes more effectively than Florinef. Dogs who have problems when taking Florinef, including excessive thirst, urination, or incontinence, may do better with Percorten-V.

Aiyana, the Italian Greyhound who was finally diagnosed with Addison's disease, was initially treated with Florinef. "Her electrolytes wouldn't stabilize, and she didn't respond as expected," says Kunzler. "My vet switched her to Percorten-V injections, which has made a lot of difference."

Dogs on Percorten-V require glucocorticoid supplements, such as prednisone, in addition to their monthly injections. Fludrocortisone has some glucocorticoid activity, so about half of the dogs who take this medication do not require regular glucocorticoid supplements, and others may need supplements every two or three days rather than daily.

All dogs with Addison's need additional glucocorticoids during times of stress, injury, or illness. What constitutes stress will vary from one dog to another. Stress can be physiological, such as a medical procedure, injury, or even a particularly active play session. Stress can also be emotional, such as from a move, the loss of a human or animal companion, thunderstorms, fireworks, a visit to the vet's office, or anything that disrupts familiar routines.

Stress increases the need for glucocorticoids from two to four times the maintenance level. A dog undergoing surgery may need even more, starting with a high dose and quickly tapering back to normal during the following week. An alternative would be to give an injection of dexamethasone during surgery, followed by oral steroids after. Fluid support should always be provided for Addisonian dogs during surgery.

MONITORING TREATMENT

With appropriate treatment, dogs with Addison's share an excellent prognosis, with no anticipated disease-related problems affecting their life expectancy. Dogs usually feel better within days of starting treatment, and most symptoms are gone within two to four weeks. The main challenges to life-long treatment are its expense and the effort involved in

monitoring electrolyte levels, administering medication, and keeping a close eye on the patient for signs of problems.

It's important to monitor electrolytes through regular blood tests, especially when treatment begins. With Florinef, blood tests are initially done weekly, then gradually decreased once electrolytes reach normal levels, with continued monitoring two to four times a year after the dosage has stabilized. Dogs receiving Percorten-V are tested before each injection as the dosage is tapered to the lowest level needed, and then tested at least once or twice a year thereafter. Electrolytes should also be tested whenever the dog seems "off." Dogs with atypical Addison's require monitoring as well, in case the disease progresses to the typical form.

Dehydration or elevated potassium is indicative that the dosage may be too low. Dehydration causes tacky gums or shoulder skin that doesn't snap back when pinched. Elevated potassium levels may slow the heart rate – a normal pulse for large dogs ranges from 60 to 100 beats per minute, and for smaller dogs 100 to 160 beats per minute. Severe muscle weakness may be due to low potassium from a dosage that is too high. Symptom changes should be reported as soon as they occur so that medication can be adjusted.

Cortisol levels are monitored not through blood tests but by observation of behavior. The goal is to give the lowest dose of glucocorticoids needed to keep your dog symptom-free, eating well, and happy.

Symptoms such as excessive thirst and urination, ravenous appetite, panting, hair loss, muscle atrophy, elevated liver enzymes, and frequent infections are indications that the glucocorticoid dosage is too high. Lack of appetite or energy, vomiting, diarrhea, and

weakness or lethargy indicate that the dosage may be too low. Similar problems may be seen with too much or too little Florinef.

Zala Bu, a five-year-old Great Dane who lives with Jenny Schultz of Denver, North Carolina, was diagnosed with Addison's at 18 months. "Her previous family did not follow up with their vet by doing continual blood testing to monitor her progress," says Schultz. "To add to that, their vet was not prescribing a high-enough dose of Florinef, her first medication. As a result, Zala's health declined. She came to me as a foster dog when she was in her second crisis and her family was fed up with dealing with her illness. She was anorexic, vomited frequently, and had chronic diarrhea. She had lost 30 pounds in six months."

Schultz changed Zala's medication to Percorten-V, which she says is "by far our preferred choice as it keeps the dog's electrolytes consistent throughout the month and helps get a dog back to good health much faster.

"Her life started over the day she joined my pack," she says. "Zala has been healthy for three years now and is a very



Zala Bu lost 30 pounds to Addison's and her first owners gave up on her. Thanks to the right meds (and a more dedicated owner), she worked as a therapy dog and continues to have an active life.



Jenn, a 14-year-old chocolate Labrador Retriever, owned by Margaret Daunt, trained in obedience, competed in agility, and is still busy at age 14 – all despite living with Addison’s for the past 10 years!

balanced. Zala Bu started on 2.8 ml of Percorten-V and I have tapered her down to a .9-ml dose.”

According to Schultz, a big challenge after an Addison’s diagnosis is to find a veterinarian who is willing to fine-tune the dog’s medication. “When dogs are at their lowest effective dose, they feel their best,” she says. “There are still many vets who don’t know how to treat this disease. As a result, dogs in their care are not as healthy as they could be.”

If problems continue after electrolytes are stabilized and the appropriate glucocorticoid dose is determined, consider other concurrent causes, such

as liver disease, spay incontinence, or gastrointestinal disease. Dogs with Addison’s may be particularly prone to other autoimmune diseases such as hypothyroidism.

Jenn, a chocolate Labrador Retriever belonging to Margaret Daunt of Modena, New York, developed typical Addison’s 10 years ago at age 4. One year later she was diagnosed with hypothyroidism. At age 13 she survived bloat (“I believe quick action on my part saved her life,” says Daunt), and earlier this year, she was diagnosed with the tick-borne disease ehrlichiosis.

“Jenn has led an active life,” says Daunt. “She competed in agility, trained in obedience, and even dabbled in drug detection work. Now that she has recovered from ehrlichiosis, 14-year-old Jenn is back to her old self!”

active Dane. She takes an extremely low dose of Percorten-V as a shot that I give her at home, along with 1 mg prednisone daily. She gets her electrolytes checked every two to three months at the vet’s office to make sure the medicine is working well and that her electrolytes are

HOLISTIC CARE FOR DOGS WITH ADDISON’S DISEASE

While treatment of Addison’s disease focuses on prescription drugs and electrolyte tests, holistic veterinarians add various support therapies to help their patients.

Nutrition is the cornerstone of every holistic therapy, and while diet cannot cure Addison’s disease, foods made of poor-quality ingredients or diets that lead to nutritional deficiencies are a significant source of stress, and additional stress is just what Addison’s dogs don’t need. Because wheat, corn, and soy are problem ingredients for some dogs, many holistic veterinarians recommend avoiding them. Some tell their clients to avoid grains altogether. In general, foods made from high-quality animal-source ingredients that are easy to digest work best, but because individual responses vary, caregivers should observe their pets’ responses and avoid ingredients that seem to trigger symptoms.

Veterinarians used to recommend adding salt to the food of dogs with Addison’s, but the benefits of the practice are not supported by research. Addison’s dogs do not require additional salt, which may lead to excessive thirst and urination.

The addition of probiotics can improve any dog’s diet, whether home-prepared, raw, cooked, canned, frozen, or packaged. Digestive enzyme powders are a sensible addition for any dog with digestive problems. These products are widely available in pet supply stores and online. Follow label directions.

Prior to the development of synthetic adrenal hormones, Addison’s disease was treated with glandular extracts. Adrenal

cortical extracts given orally or injected are still available, though because synthetic versions have so thoroughly replaced them, few veterinarians are familiar with their use. Those who are often prescribe Standard Process Canine Adrenal Support, a powdered supplement that contains animal tissue extracts and other ingredients that support the adrenals. “The goal of Canine Adrenal Support,” explains the manufacturer, “is to help maintain the adrenal glands’ response to metabolic demand, normalize adrenal function, support the body’s ability to handle stress, and promote the adrenal glands’ ability to rebuild and regenerate.” Adrenal glandulars may reduce the amount of medication needed or just help the dog feel better, but their use requires close supervision from a knowledgeable veterinarian.

Some medicinal herbs are known for their effect on the adrenals. Six years ago, the *New Zealand Veterinary Journal* published a case report by R.H. Jerrett, et al, that examined the effect of whole, natural licorice (*Glycyrrhiza glabra* – what we would call licorice) on a dog with Addison’s. The 4-year-old neutered male subject had persistently high potassium levels despite receiving a moderate dose of fludrocortisone. “Financial considerations and the



It's important to be alert, as Daunt was, to all symptoms. Don't assume that every time your dog doesn't feel well it must be due to Addison's disease. Addison's dogs develop illnesses just as other dogs do. If an Addison's dog is sick from something else, her prednisone dosage may need to be increased temporarily.

THE COST FACTOR

To make Addison's treatment affordable, many caregivers purchase compounded fludrocortisone from a compounding pharmacy. "The compounded version is much more cost-effective for larger dogs than brand-name Florinef," says Schultz, who participates in online forums for canine Addison's. Most dogs who receive Percorten-V injections and about half of those who take Florinef require a small daily oral dose of inexpensive prednisone as well.

The online Addison's groups share information about the disease and suggestions for reducing costs. "Our FaceBook and Yahoo groups help peo-

ple understand lab test results and talk to their veterinarians about adjusting medications," says Schultz. "We also help people find lower-cost options for treating their pets. In some cases owners were able to keep their pets when they couldn't afford the prices their vets were charging. One single mom was paying \$300 per month for her Great Dane's shots until she switched to compounded medications that cost only \$30 per month. Two years later, her Dane is still with her and doing well."

Other money-saving strategies include giving shots at home to avoid having to pay for an office visit for each injection, purchasing medications online at a discount with the help of veterinarians willing to write the necessary prescriptions, or negotiating with veterinarians to keep office visit costs to a minimum. Schultz estimates her monthly expenses at \$35 for Percorten-V and another \$25 for electrolyte tests. "We test Zala Bu every other month now because we're adjusting her dose downward," she

says. "She is small for a Dane, weighing in at 102 pounds. I get a large script for prednisone filled at a pharmacy for \$4. Zala Bu is the poster child for low-dose effectiveness in big dogs."

Elizabeth Andrews of Pleasantville, Nova Scotia, Canada, joined the online AddisonDogs Yahoo group in 2006, when Raider, her 75-pound Labrador Retriever, was diagnosed with typical Addison's. Raider is now six years old and thriving, and Andrews is a list moderator. "The AddisonDogs group was founded in 2002 and currently has 4,594 members," she says. "We also run a 501(c)(3) non-profit organization called AddisonDogs to educate and support the companion animal community about this condition, and the AddisonDogs website helps re-home dogs with Addison's disease and assists with vet bills and other expenses. I am also the owner of a new FaceBook Group, 'Addison's Disease in Dogs,' which has 559 members and is growing daily."

Andrews explains that in the U.S.,

potential for adverse effects made increasing the dose of fludrocortisone undesirable, so liquorice was added to the dog's diet in hopes that the hyperkalemia would be corrected," wrote the researchers. The dog's potassium levels returned to normal, where they remained for the duration of the 14-month study. "Given these very preliminary findings," the authors concluded, "we believe it is possible that liquorice may, in future, prove to be a useful adjunct in the management of canine hypoadrenocorticism." It may also prolong the effect of corticosteroids.

Licorice is an adaptogenic herb, a category that describes medicinal plants that help the body deal with stress. Relaxing or sedative herbs help Addison's patients, too. Oatstraw (*Avena sativa*) and German chamomile (*Matricaria chamomilla*) brewed as teas separately or together can be added to food or even applied to the skin and coat to help dogs feel relaxed. Other herbs may be beneficial for gastrointestinal upset and liver support.

Aromatherapy's essential oils are more concentrated than herbal teas, so they should be diluted with vegetable oils before being applied to the skin, coat, or paw pads. For details see "Smell This, You'll Feel Better," WDJ December 2004.

In her book *Holistic Aromatherapy for Animals*, Kristen Leigh Bell describes her Calm Canine Essential Oil Blend, made with ½ fluid ounce (1 tablespoon) hazelnut, sweet almond, or other vegetable oil, 3 drops valerian (*Valeriana officinalis*), 2 drops vetiver (*Vetivera zizanooides*), 4 drops petitgrain (*Citrus auranthium* leaf), 3 drops sweet marjoram (*Origanum morjorana*), and 2 drops sweet orange (*Citrus sinensis*) essential oils. Combine and store in a dark glass bottle.

"This is my standard calming blend," says Bell, "which has had a very impressive track record for dogs in numerous situations. The calming effect ranges from 'taking the edge off' to soothing a dog to the point where she gets very mellow and takes a nap."

For best results use therapeutic-quality essential oils. Several pet aromatherapy companies make their own calming sprays and oils.

Melatonin, a hormone produced by the pineal gland, is sold as an over-the-counter supplement to help people with insomnia sleep through the night. Veterinarians have found that when given to dogs, melatonin helps manage separation anxiety and fearful reactions to thunder, fireworks, and other noises. In other words, it helps reduce stress levels.

Melatonin is recommended (one 3-mg tablet or capsule for a medium-sized dog) 20 to 30 minutes before stressful events. Although some experts warn that melatonin may interfere with corticosteroids and other medications, others consider the benefits of occasional use to outweigh the risks. Consult your veterinarian as to whether melatonin is appropriate for your dog.

Calming pheromones provide stress relief, too. The product Comfort Zone contains "dog appeasing pheromone" (DAP), which may significantly reduce destructive behavior, fears, and phobias and help some dogs deal with stressful environments. Comfort Zone is sold in pet supply stores as a spray or with a plug-in electric diffuser.

Other techniques that help Addison's dogs include massage, the playing of soft classical music, and energy therapies such as Reiki.

brand-name Florinef costs about \$1 per 0.1-mg tablet, and the minimum starting dose is 0.1 mg per 10 pounds of body weight with dogs normally needing two to three times the starting dose. In Canada, Florinef costs about 27 cents per tablet when purchased at a drugstore. Florinef can also be purchased in the U.S. from compounding pharmacies, which reduces the total monthly cost regardless of dose to about \$30.

Percorten-V purchased online costs \$150 to \$190 per vial depending on the supplier. “Most AddisonDogs members buy it for \$150 from the online pharmacy 1-800-PetMeds,” says Andrews, “because that company price-matches the lowest price online. However, many veterinarians in the U.S. refuse to give their clients a prescription for Percorten-V, arguing that the drug sold online may be counterfeit. A few vets will price-match. Veterinarians pay approximately \$130 U.S. for a 4-ml (100-mg) multi-use vial directly from the manufacturer, Novartis, but this life-saving drug often has a high retail markup.”

The typical starting dose of Percorten-V is 1 mg per pound of body weight. Dr. David Bruyette, DVM, DACVIM, of VCA West Los Angeles Animal Hospital and an internal medicine specialist with an emphasis on Addison’s disease, prefers to start large dogs (over 60 pounds) at half that amount, because their metabolism is slower. He points

out that electrolytes should be measured more frequently when using a lower starting dose; he recommends checking at two, three, and four weeks after the first injection.

Julia Bates, DVM, of Veterinary Specialty & Emergency Care in Madison, Wisconsin, is a veterinary internist whose research during her residency involved the use of low-dose Percorten-V in the management of Addison’s disease. She routinely treats dogs diagnosed with Addison’s disease with a low dose of Percorten-V. In her experience, the majority of those dogs do very well.

Ideally, the dose is gradually tapered down until the lowest effective dose is found. “We know that lowering the dose works,” says Andrews, “as many in our Yahoo group have been doing so for over five years.”

As mentioned, dogs should be monitored while their drug dosages are being adjusted. “With Percorten-V, blood electrolytes should be tested at day 14 and then at day 25,” says Andrews. “The day-14 electrolytes show how well the Percorten-V is working, and the day-25 electrolytes show whether the dog will be ready at day 28 for more Percorten-V and whether the dose can be reduced. It is very common for a dog not to be ready for more during the first few months. Giving more Percorten-V before the dog is ready just drives potassium levels down. By waiting for potassium levels

to rise and then reducing the dose, you ‘balance’ the electrolytes. Once the lowest effective dose has been found, you can test electrolytes every six months or whenever the dog’s behavior or symptoms seem different.”

Adjusting patients to Florinef requires much closer monitoring of electrolyte levels. “It’s important to test weekly until they stabilize,” says Andrews. “Most dogs need their dose increased frequently over the first few weeks and months. Once you find a dose that maintains stable electrolytes for a few weeks, you can move to biweekly testing and then monthly tests. After an effective dose has been found, testing every three months is recommended for life. Of course not everyone does this, and those who don’t generally end up having a dog go into crisis.”

LIVING THE GOOD LIFE

All the experts agree that a properly treated dog can live a normal, happy, healthy life despite Addison’s disease.

“Since stress can be an issue for dogs with Addison’s,” says Jenny Schultz, “caregivers may have to cut back on stressful activities depending on their dogs’ temperament. My Great Dane used to make therapy dog visits to a nursing home. She enjoyed the activity and it didn’t seem to stress her too much. A little extra prednisone as a boost and a good nap was all she needed to continue on with her day. She is by far the most



Raider, a 6-year-old yellow Labrador Retriever, has lived with Addison’s for 5 years. His owner, Elizabeth Andrews of Pleasantville, Nova Scotia, is active in online forums about dogs with Addison’s.

active dog in our pack. Some dogs with Addison's continue to compete in agility and obedience events with no problem after their condition has been stabilized."

In her book *Addison's Disease in Dogs*, Stephanie Kenrose describes the importance of long-term stress management and supplying extra prednisone whenever an Addison's dog is stressed by injury, trauma, illness, or other events. She also discusses the stress created by annual vaccinations and heartworm prevention medications, noting that titer tests can be used to monitor immunity to common canine illnesses, and decisions about heartworm prevention depend on one's location as well as the dog's condition. "You'll want to discuss these risk factors with your veterinarian," she says, "so that you can decide whether it's worth giving these medicines to your Addison's dog."

After eight months of treatment, Aiyana, the Italian Greyhound, is doing much better. "She was spayed just three weeks ago," says Lydia Kunzler, "which caused her Addison's to flare and her electrolytes to go a bit off again, but she was *much* easier to stabilize this time. The blood work we took last Wednesday was the best it's been since she was first tested!

"She still struggles with muscle weakness especially in her rear from time to time, and she needs a little extra prednisone some days, but getting her spayed so those hormones weren't complicating things seems to have made a big difference. I've also stopped feeding any dry food, per my vet's advice, as we were having a hard time maintaining her hydration levels. She mainly eats raw now, or canned food if I'm going to be traveling, and I feed her three to four small meals a day instead of two big meals to make it easier on her GI system."

Caring for a dog with Addison's disease can seem overwhelming at first, both financially and emotionally. But properly treated, your Addisonian dog can live just as long and just as well as her disease-free counterparts. 🐾

Freelance writer CJ Puotinen lives in Montana. She is the author of The Encyclopedia of Natural Pet Care and other books and a frequent contributor to WDJ. See "Resources," page 24 for book purchasing information.

Mary Straus is the owner of DogAware.com. She and her Norwich Terrier, Ella, live in the San Francisco Bay Area.

REFERENCES

- ❖ **ADDISON'S DISEASE IN DOGS, BY STEPHANIE KENROSE.**
Published by the author, 2009, paperback, 78 pages, \$12
- ❖ **"ADDISON'S DISEASE: UNCOMMON OR UNDERDIAGNOSED?"**
A roundtable discussion with Ellen Behrend, VMD; Catharine Scott-Moncrieff, MA, VetMD; Deborah Greco, DVM; and Peter Kintzer, DVM. Novartis Animal Health U.S., 2003
- ❖ **"LIQUORICE AND CANINE ADDISON'S DISEASE,"**
by RH Jarrett, EJ Norman, and RA Squires. *New Zealand Veterinary Journal* 2005 Jun;53(3):214, sciquest.org.nz/node/36508

RESOURCES

- ❖ **1-800-PETMEDS.COM**
Discount pet pharmacy. (800) 738-6337
- ❖ **ADDISONDOGS.COM**
Non-profit organization that offers support, information, and assistance to owners of dogs with Addison's.
- ❖ **CANINE ADRENAL SUPPORT FROM STANDARD PROCESS**
(800) 558-8740; standardprocess.com
- ❖ **COMFORT ZONE**
Canine pheromones. petcomfortzone.com
- ❖ **FACEBOOK.COM/GROUPS/2347518387/
PETS.GROUPS.YAHOO.COM/GROUP/ADDISONDOGS
PETS.GROUPS.YAHOO.COM/GROUP/K9ADDISONS/**
Online support groups.
- ❖ **NUTRI-WEST**
Adrenal glandular supplements (for humans). (800) 443-3333; nutriwest.com
- ❖ **PET HEALTH PHARMACY**
Compounding pharmacy. (800) 742-0516; pethealthpharmacy.com
- ❖ **TIFFANY NATURAL PHARMACY**
Compounding pharmacy. (908) 233-2200; tiffanynaturalpharmacy.com

EXPERTS

- ❖ **ADDISON'S DISEASE STUDY AT THE UNIVERSITY OF CALIFORNIA, DAVIS**
Blood samples are requested for the following breeds: Bearded Collie, Great Dane, Leonberger, Portuguese Water Dog, Standard Poodle, & West Highland White Terrier. (530) 752-4997; cgap.ucdavis.edu/Addisons.htm
- ❖ **JULIA BATES, DVM** Veterinary Specialty & Emergency Care, Madison, WI
(608) 845-0002; vetspecialtycare.com/juliaBates.shtml
- ❖ **DAVID BRUYETTE, DVM, DACVIM** VCA West Los Angeles Animal Hospital, West Los Angeles, CA (310) 473-2951
vcaspecialtyvets.com/west-los-angeles

 RESOURCES 

TRAINING AND INSTRUCTION

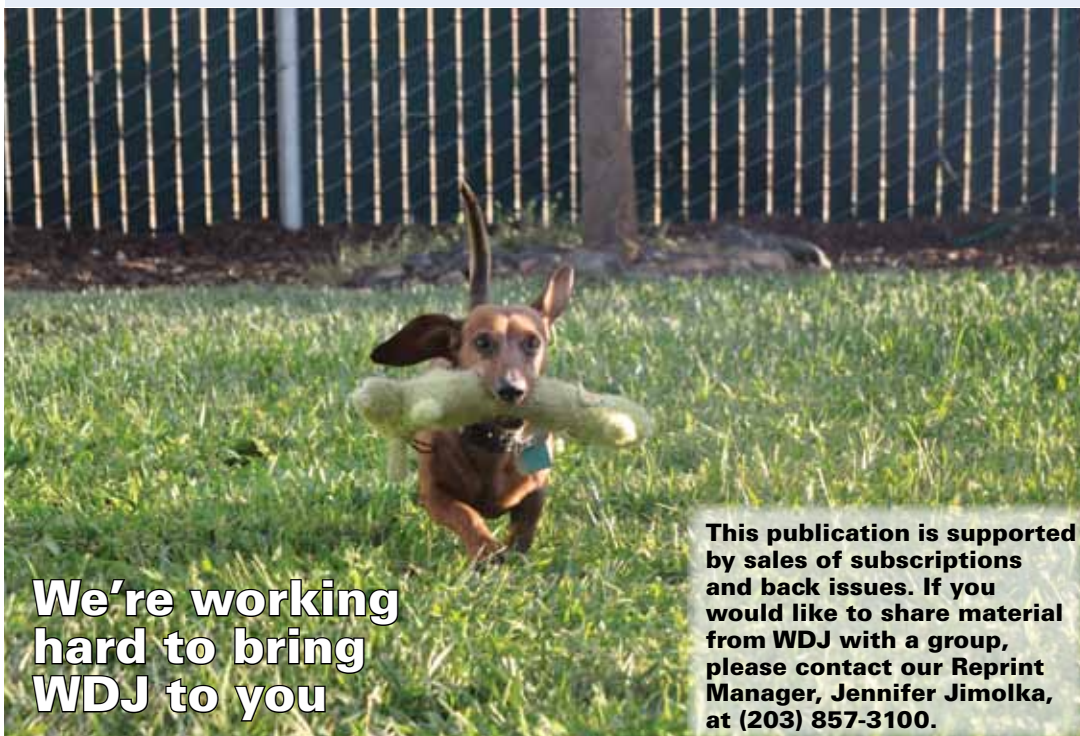
- ❖ **Pat Miller**, CBCG-KA, CPDT-KA, CDBC, Peaceable Paws Dog and Puppy Training, Fairplay, MD. Train with modern, dog-friendly positive methods. Group and private training, rally, behavior modification, workshops, intern and apprentice programs. Trainers can become “Pat Miller Certified Trainers” (PMCT) by successfully completing Pat’s Level 1 (Basic Dog Training and Behavior) and both Level 2 Academies (Behavior Modification and Instructors Course). (301) 582-9420; peaceablepaws.com
- ❖ **Sarah Richardson**, CPDT-KA, CDBC, The Canine Connection, Chico, CA. Training, puppy classes, socialization sessions, “playcare,” boarding. Force-free, fun, positive training. (530) 345-1912; thecanineconnection.com

HOLISTIC VETERINARIANS

- ❖ **American Holistic Veterinary Medical Association** (AHVMA). PO Box 630, Abingdon, MD 21009. Send a self-addressed, stamped envelope for a list of holistic veterinarians in your area, or search ahvma.org

BOOKS AND DVDS

- ❖ WDJ Training Editor Pat Miller is author of *Positive Perspectives: Love Your Dog, Train Your Dog*; *Positive Perspectives 2: Know Your Dog, Train Your Dog*; *Power of Positive Dog Training*; *Play With Your Dog*; and *Do Over Dogs: Give Your Dog a Second Chance at a First Class Life*. Available from Dogwise, (800) 776-2665 or dogwise.com



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WHAT'S AHEAD ...

- ❖ **SWIMMING FOR HEALTH**
Hallmarks of a good hydrotherapy program; what they are good for; and a review of swim caps for dogs!
- ❖ **BRAKING THE BARK**
Help for those who live with a very barky dog. More than one? Have a medal.
- ❖ **IT'S IN THE CAN**
WDJ's 2011 wet food review.
- ❖ **DON'T DRINK THE WATER**
Giardia, Coccidia, and Cryptosporidium, oh my.
- ❖ **HATES CRATES**
What to do when your dog just can't stand confinement.
- ❖ **CUSHING'S DISEASE**
This condition results when the adrenal glands are overactive.
- ❖ **AMAZING APPLE CIDER VINEGAR**
It's used as a topical rinse for skin and coat and internally to help over-alkaline dogs.