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The Whole Dog Journal™

A monthly guide to natural dog care and training

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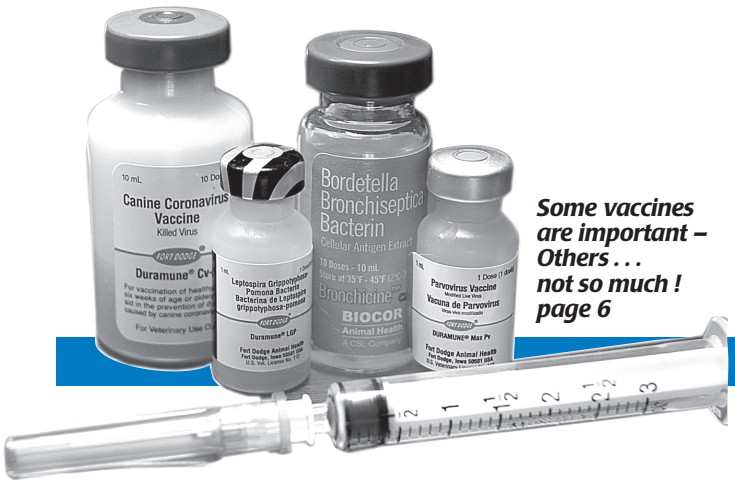

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EDITOR'S NOTE

Strange Excitement

We're finally getting invited to pet food plants.

BY NANCY KERNS

Tell the truth: Who among you would get elated at the possibility of taking a trip to Utah, say, to visit a dog food factory? Oh, never mind; you guys are probably just as weird as me! I guess this is a backhand way of bragging that *I got to go to Utah and see a pet food canning plant! Yippee!*

And, to make the holiday season complete for me, I get to go to Chicago and see another cannery (*and* attend the famous H.H. Backer pet products industry show), and *then* go to New York and see some more dry dog food get made. I'm so excited.

Part of the thrill for me is getting to see processes that I've only read and interviewed people about. It's definitely a different experience to go and see something for yourself. No matter how assiduously I have questioned a pet food executive, asking him or her to slowly but metaphorically "walk" me through a plant, describing each manufacturing step and challenge along the way, and no matter how enthusiastic that person is about proper pet food production, it's not as educational as *actually* walking through a plant.

For one thing, in this and the handful of other plants I've gotten to tour, I've gotten to *see* the raw ingredients of dog food: huge tubs of chilled chicken, giant blocks of frozen meats, bins of granular poultry meal. Silos of grain flour. Sacks that are bigger than my car, full of potatoes. In the case of a company whose foods contain carrots, apples, and cottage cheese, I got to see the boxes of carrots, bushels of apples, and immense tubs of cottage cheese. Not that I doubted it, but, hey! It was all great to see.

Seeing the areas and the machines and the people that do the processing is helpful, too. How clean are the floors, and the machines themselves? Where are all the places that a foreign object could possibly contaminate the food, and what can and does the manufacturer do to stop that? It's one thing to have that conversation on the phone, and another to have it while standing on the production floor next to a clacking assembly line of shiny cans, full of dog food, whizzing along to the part of the machine that seals them closed.

There are so many details that I'm finding fascinating. What sort of laboratory testing do they do, where is the equipment, who operates it, how often – and what happens if they get a poor test result? Can the pet food company executive find her way from one area of the contract manufacturing plant to the next? Can he explain the advantages of the shiny new mechanism the plant manager is showing us? And the people working on the line – do they have a busy, absorbed, competent demeanor, or are they wandering around with that "temp worker" look of being lost?

I'll be discussing what I've learned on these tours in upcoming articles. Suffice to say for now, as you could guess, I've been nothing but impressed by the facilities I've seen so far. But the places I've seen are the places that invited me, not the ones who steadfastly refuse to allow *any* observers in their plants.

NK

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.

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Fix the Fetch

How to teach your dog to retrieve, even if he's not a "natural."

BY PAT MILLER

Last week a trainer friend stopped by to visit with her three dogs: Star, Kaiya, and Lhotse. As we were chatting, Laura confessed to me that she thought she'd ruined Star's "fetch" with the clicker.

"She had a great retrieve," Laura said, "until I started clicking her for it. Now she just drops it as soon as I click. I stopped working on it because I knew I was messing it up."

I chuckled to myself. I knew this would be a fun – and easy – training fix. We set to work, and in three short sessions, Star and Laura were well on their way to rehabilitating their great retrieve.

There's a small ceramic plaque sitting on my bookshelf that depicts a spotted dog running with a stick in his mouth, and the inscription, "Born to Fetch." It's a constant reminder to me that dogs are very oral creatures. They are, indeed, born to put things in their mouths, as any puppy owner can attest to. When you don't have hands with opposable thumbs, the next best way to transport objects is with your teeth. So why all the angst about teaching dogs a behavior that comes so naturally to them?

If your dog is only lukewarm about fetch, preserve the behavior by keeping it fun; don't overdrill! If your dog, in contrast, is a fetch addict, you can use a game of fetch as a reward for performing other, less-enjoyable behaviors.

For starters, mouth behaviors are one of the first that owners tend to suppress. The majority of the time when a puppy picks something up, he gets yelled at. He learns to restrict his teeth to a small list of legal chew objects, knowing he could be in deep doo-doo for picking up anything not on the list.

Sometimes mouth behavior isn't suppressed by punishment. Instead, a pup may learn that picking something up in his mouth is a nearly foolproof way to get humans to play "chase-me" games, as his owners flail wildly after him trying to rescue valuable or harmful items. He'll still pick things up, but any inclination to bring them back is long gone. It's no wonder so many owners tear their hair out and give up when they try to teach their dogs to fetch. They've unintentionally taught their dogs to "not-fetch."

The retrieve is such a useful behavior, it's a darn shame we make it so hard for our canine pals. A dog who retrieves can:

- Be kept easily exercised and amused with long sessions of "Fetch the Ball" in the backyard, or even in the house in inclement weather. Exercise is a great behavior modifier: a tired dog is a well-behaved dog.
- Be taught to find and bring back lost objects.
- Compete in obedience trials and other canine competitions.
- Learn to do other things with his mouth, including open doors, pick up dropped objects, pull wagons, carry groceries, remove items of clothing, and more.

Having a dog excited about retrieving also gives you a tool for keeping his attention around distractions, and for getting really sharp recalls and other operant behaviors. A highly valued tennis ball can be

What you can do . . .

- Look for opportunities to encourage your dog's inclination to pick up things in his mouth.
- Decide if you prefer a formal or informal retrieve, and start creating your plan for teaching your dog to fetch.
- Don't overdrill. Keep your sessions short and fun. Stop before your dog loses enthusiasm.
- Always respond positively if your dog brings you an item – even if it's a forbidden item! Trade him for something more appropriate.

a great reinforcer for spiffy recalls and downs, among other behaviors.

Informal v. formal retrieves

There are different types of retrieves. The majority of dog owners are delighted with a dog who dances in anticipation of the ball, chases after it the instant it's thrown, maybe runs around with it for a bit, then eventually brings it back, and drops it at the owner's feet.

Compare that to the formal show retrieve, where the dog sits motionless in heel position while the owner throws the dumbbell, dashes forward when the owner gives the cue, grabs the dumbbell by the center bar, returns quickly to the owner, and sits in front, perfectly straight, waiting for the cue to release the object carefully into the human's hands.

There are more criteria for a show-ring retrieve, but the behavior can be built with the same techniques as a "backyard" fetch.

Even if you're not interested in a formal retrieve, consider taking advantage of a good game of fetch as an opportunity to reinforce good manners behaviors. Consistently ask your dog to "Sit" before you throw the ball, until he starts offering to sit without being asked. "Sit" makes good things happen! It's also a deference behavior and a good "self-control" lesson. When he's good at "Sit for the ball!" try doing the same thing with "Down for the ball!"

You can also use a valued fetch toy to install an off-switch for your dog. When it's time to stop the game, use a cue like "All done!" or "That's all!" and immediately put the ball where he can't see it – in a pocket, drawer, or cupboard. Turn and walk away – totally ignoring any attempts on the dog's part to reengage you in the game. In time, your "All done!" cue will not only serve notice to the dog that the fetch game is over, you'll also be able to use it to end other behaviors.

Whether you're interested in an informal fetch or a formal retrieve, your task will be easier if you encourage rather than discourage retrieve-related behaviors early in your relationship with your dog. When he has something in his mouth, praise him – tell him he's a good dog. If it's something he shouldn't have, cheerfully trade it for a high-value treat, divert his interest to a "legal" toy, and make a mental note to increase your management efforts to minimize his access to things he shouldn't fetch. If it's something he's allowed to have, sometimes praise and let him be, and sometimes say "Give," trade for a treat, and give him the toy or chewie back again.

Dogs who are eager to pick things up are the easy ones; it's just a matter of shaping the retrieve you want, and if you're going for that formal retrieve, "chaining" or "backchaining" the fetch behavior into the whole show ring retrieve routine (see "The Shape of Things to Come," March 2006, and "Higher Education," April 2004). It's the ones who *don't* want to use their mouths who present the biggest challenge.

If your dog is *not* a natural retriever, don't despair. Designate his most favorite toy as his fetch object. He only gets to play with it when you do the fetch game. Now *set* it on the ground; don't throw it! If he picks it up, click! a clicker (or use another signal or marker, such as the word "Yes!") and give your dog a delicious treat reward. But if he only sniffs the toy, or even just glances in the object's direction, click! and reward. In the beginning, the goal is to reinforce him just for paying attention to the object.

In any series of "attention" trials with the fetch toy, he may sniff or touch it, just look at it, put his mouth on it, or maybe even pick it up. Once he understands the game you can up the ante ("raise the criteria"); you click! and treat only if he touches the toy. Then, later, you click! and treat only if he actually puts his mouth on it, and finally only if he picks it up. Once he is picking up the toy routinely, add your verbal cue of "Fetch!" (or "Take it!" or "Get it!" or whatever you plan to use).

If at any time he "quits" – that is, he stops playing the game – you may have raised the criteria too quickly, or you may have trained for too long. Training sessions should generally be five to 15 minutes in length, several times a day. If you get two or three really good responses in a row, stop the session with lots of praise and a "jackpot" – a whole handful of treats, one at a time. It's always better to stop when you and your dog are having fun and winning, rather than when one or both of you are bored or frustrated.

While certain breeds are genetically programmed to be more oral than others (Golden Retrievers and Labradors, for starters), virtually any dog can learn to fetch. Although Scottish Terriers are not known for their natural retrieving ability, my little black Dubhy surprised the heck out of me one day. I had been reinforcing the young Terrier for bringing things to me rather than chewing them up, but we hadn't really worked on retrieving. I was tossing a ball for Tucker, our Cattle Dog-mix, in the backyard, and overestimated the older dog's endurance. Tucker quit mid-fetch, leaving the tennis ball halfway across the yard. Dubhy, who had been watching from the sidelines, perked up, trotted across the yard, grabbed the ball, trotted back to me, and dropped it neatly at my feet.

"So there!" was the only comment I could interpret from his slightly smug expression. And yes, we've since put his retrieve on cue, and used his "hold" behavior to teach him "Pups in a blanket," where he lies down on a blanket, grabs the corner, and rolls over to wrap himself up. Just one more creative application for a good "fetch" behavior.

Shaping success

Laura Dorfman, owner of Kona's Touch, Inc., in Chicago, is a dedicated and talented "crossover" trainer; early in her career, she used force-based techniques. Laura began her crossover journey several years ago, attending conferences and seminars, and reading a long list of books to enhance her positive training knowledge and skills. She currently has three dogs benefiting from her positive-only pursuits: Collie/Lab-mix Star, Terrier-mix Kaiya, and Beagle Lhotse.

Like many trainers, while Laura skillfully assists other dog owners with their furry family members' training and behavior, she sometimes has doubts about her own dogs' training programs. She brought her pack to me to address several behavior concerns, including Star's retrieve.

"Nothing to be ashamed of," I assured her. "Even world-class professional athletes, equestrians, and yes, dog trainers, work with coaches to improve their performances. None of us are so good we can't benefit from another pair of eyes and another perspective."

Here's how we rehabilitated Star's lost retrieve:

■ **First session; 15 minutes**

We decided our criterion to start would be *any* attention to a stuffed toy. We placed the toy on the floor. When Star sniffed it, Laura clicked a clicker and gave Star a high-value treat.

We kept clicking any time Star looked at or sniffed the toy. After a dozen clicks, Star lifted the toy a few inches off the floor. Laura happily clicked and treated – and then made a common mistake. Because Star lifted the toy *once*, Laura wanted to immediately increase the difficulty of the desired task to "lift the toy."

Instead, I suggested we put "sniff the toy" on an intermittent schedule of reinforcement, meaning that sometimes Laura would click and treat for sniffing, sometimes not – but she would *always* click and treat for mouthing or lifting the toy. An intermittent schedule makes a behavior *durable*, and often elicits a more intense behavior. That is, Star would understand that if she kept trying she would eventually still get clicked, and her frustration at *not* getting clicked might induce her to mouth or lift the toy more frequently.

This is an important step before raising the criteria. If a dog suddenly stops getting clicked for a behavior, she may just quit working, thinking the behavior's no longer paying off.

On the intermittent schedule, Star began putting her mouth on the toy much more frequently. Toward the end of this session we upped the ante again: Laura would click and treat for any mouthing or lifting of the toy, but stopped clicking for just a sniff. We ended the session after several consecutive mouthings, a number of which also included lifts, with some of the lifts to Star's full height. Good progress!

■ **Next morning; 15 minutes**

Laura did not practice with Star between yesterday's session and this morning. When we started working, Star consistently mouthed the toy, and lifted it off the floor a few inches or more at least 75 percent of the time – working above the level that we ended on the prior day. This illustrates the phenomenon known as "latent learning" – where the dog's (or other subject's) brain actually processes information while at rest, and learning can advance as a result. This is why it's helpful to "end on a good note" – as the brain appears to process most what it absorbed last.

We set our initial criterion at "any mouthing," then put that on an intermittent schedule, and soon after expanded the requirement to "opening mouth wide enough to grasp the whole toy." By this time Laura had really grasped the concept of shaping, and stopped trying to raise the criteria too quickly. Her clicks were well-timed, and she was making good judgmentsabout which behaviors to click without my nudging. She and Star were both learning!

Star proceeded quickly to consistent "wide open mouth behavior," which we then put on an intermittent schedule before setting the bar at "lifting toy a few inches off the floor." Of course, as we began to click! and treat Star for "lifting toy a few inches," more and more frequently Star lifted the toy to full height. Although we had planned for several intermediate increases in the criteria, we realized that Star was going to skip several steps for us.

Star's reliable, happy fetch is back!

We started putting "lifting the toy a few inches" on an intermittent schedule, and halted the session after several consecutive full-height lifts. By this time Star had come to love her "fetch" toy, and actively sought it when we put it out of her reach, but still in sight. We used her "All done!" cue and put it out of sight.

■ **Same afternoon; 10 minutes**

Once again, Star and Laura dove right into the "fetch" exercise. Star became quite enthusiastic about this game, and consistently lifted the toy to full height. We raised the criterion to "full height," consistently clicking her repeated successful full lifts.

Next we introduced *time* as a criterion, intermittently reinforcing full lifts, but making sure to click all lifts and holds that lasted one second or longer – as opposed to lift/drops or lift/flings.

As our last step for this third session, we increased our requirement to one-second holds, no longer clicking for lift/drops or lift/flings, ending with several consecutive successes.

Our plan beyond session three was to continue raising the time criterion for the "hold" behavior, and then add movement, as the next criterion. Laura tells me that Star is continuing to make good progress in her fetch rehabilitation program. Both of them are having fun with fetch now, and Laura, more confident with her shaping skills, no longer worries that the clicker ruined Star's retrieve. 🐾

Pat Miller, CPDT, is WDJ's Training Editor. Miller lives in Hagerstown, Maryland, site of her Peaceable Paws training center. For book purchasing or contact information, see "Resources," page 24.

Former Fetcher Forsakes the Game?

Time for a Checkup!

If your dog was once a fanatical fetcher, but has begun to opt-out of games – either declining to go after a thrown toy or failing to bring it back to you – there is a good chance that he's got a bad back, or some other physical ailment. Never forget that not all behavioral issues are due to training problems.

This would be a good time to make an appointment for a thorough examination. Tell your veterinarian about your dog's newly flattened enthusiasm for fetch. She'll want to check your dog's teeth extra carefully; as you can imagine, a cracked or broken tooth can destroy a dog's interest in carrying something in his mouth! A CBC, blood chemistry panel, and urinalysis might detect budding health problems; a full physical exam and evaluation of the dog's gaits and posture may reveal joint problems, sore muscles, or other soft-tissue damage causing a loss of range of motion. A veterinary chiropractor may also provide a useful consultation.

Shots Fired

Veterinary medical associations are calling for fewer vaccinations. Are local veterinarians hearing the ring?

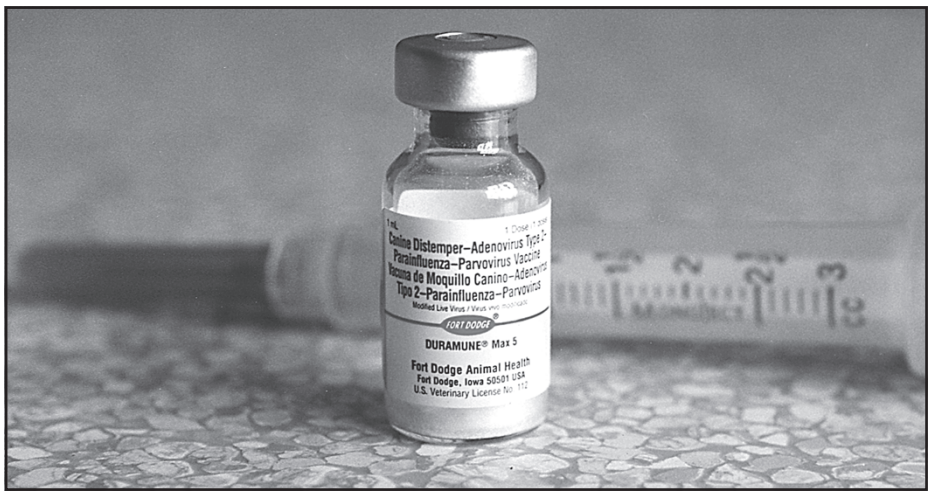
BY DENISE FLAIM

We've come a long way, baby – on paper, at least.

In the past decade, the veterinary profession's overall attitude toward vaccination has evolved to a point that can be tentatively termed progressive.

In 2002, the American Veterinary Medical Association issued a policy statement that urged veterinarians to "customize" vaccine protocols for individual patients, since there is "inadequate data to scientifically determine a single best protocol" for initial or repeat vaccinations.

A year later, the prestigious American Animal Hospital Association (AAHA) released its landmark canine vaccination guidelines, which were updated in 2006. The AAHA guidelines separate vaccines into different categories – core, noncore, and not recommended at all – and suggest that veterinarians revaccinate for core diseases such as parvovirus and distemper no more than every three years.



While the practice of annual vaccination should be as antiquated as the use of wringer washing machines, it is alive and well among many veterinary practices. Also overused are multiple-antigen products that include vaccines that are unnecessary.

Most veterinary universities have followed suit, teaching their graduates that, depending on the disease in question, yearly vaccines are now the exception, not the rule.

But while the idea of "annual shots" should be as antiquated as wringer washing machines, it is alive and well among some veterinarians who either have not taken the time to understand the new paradigm – or have chosen to ignore it.

"We haven't gone anywhere in some cases, and I think there are several reasons," says veterinary immunologist W. Jean Dodds of Santa Monica, California. One of them is simply inertia.

"The veterinary profession has been convinced for so long that vaccines were essential," and that sort of thinking is hard to change, particularly when vaccine labels can be misleading, says Dr. Dodds. "I think veterinarians assume the label [identifying a given vaccine as a one-year product] is a requirement, and interpret it more strongly than the vaccine companies intended," Dodds says. "And the companies don't try to dissuade them because that's what the USDA has told them to say."

Bureaucracy aside, many veterinarians and veterinary practice managers may be concerned that abandoning annual vaccinations will hurt their practices' bottom line. Bob Rogers, a veterinarian and vaccination critic from Spring, Texas, refutes that fear. When he switched to a reduced vaccination schedule, "my vaccine income dropped 7 percent, but my overall income went up 20 percent. When people find out they don't have to spend a whole lot on vaccines, they spend that money on something the dog really needs, like teeth cleaning."

One impetus for reevaluating vaccine protocols has been concern over adverse vaccine reactions, both acute and chronic. All veterinarians recognize signs such as anaphylactic shock (a severe allergic reaction), or flu-like symptoms such as low-grade fever, malaise, diarrhea, and loss of appetite. But they may not make the connection between vaccinations and

What you can do . . .

- Ask your veterinarian for a titer test after your puppy's vaccination series is complete, to ensure his immune system responded appropriately to the vaccines.
- Request monovalent (single antigen) vaccines when you make a veterinary appointment, to ensure your pup or dog receives only those vaccines you approve – and to avoid being backed into a corner at the clinic.
- Watch your dog carefully for reactions to vaccines; consider curtailing future vaccination if reactions are seen.

temperament changes (particularly after the rabies vaccine), seizures, autoimmune diseases such as hemolytic anemia and thrombocytopenia (reduced platelet count), or hypertrophic osteodystrophy (severe lameness in young growing dogs), which may surface weeks or months after vaccination.

And many owners are equally oblivious. "If an owner sees her dog hiding under the table after a vaccination, or the dog doesn't want to be touched, they don't call their vet with that information," Dr. Dodds says, but instead might dismiss it as the dog having an "off" day.

Dr. Dodds notes that some advocates for minimal vaccination have done more harm than good by overstating the issue, implying that virtually everything is caused by what's in that syringe.

"Many environmental challenges can cause problems, and vaccines are just one of them," says Dodds, ticking off other possible suspects, such as topical flea and tick products, and environmental pesticides and insecticides.

Personal experience is a powerful motivator, and some vets insist on vaccinating annually for diseases such as parvo because they remember the widespread fatalities when the disease was prevalent decades ago.

Jean Dodds' Minimal Vaccine Use Vaccination Protocol

Dr. Dodds notes that this protocol is for use in those dogs for whom minimal vaccination is desirable or advisable. She stresses that it is her recommendation only, and does not imply that different protocols recommended by other veterinarians are less satisfactory.

AGE OF PUPPY	VACCINE TYPE
9-10 weeks	Distemper and parvovirus, MLV (e.g., Intervet Progard Puppy DPV)
14 weeks	Same as above
16-18 weeks (optional)	Same as above
20 weeks or older (if allowable by law)	Rabies
1 year	Distemper and parvovirus, MLV
1 year, 3-4 weeks	Rabies, killed 3-year product (give three to four weeks *apart* from distemper/parvovirus booster)

Dr. Ron Schultz, chair and professor of pathobiological science at the University of Wisconsin's School of Veterinary Medicine in Madison, notes that the flip side is true, too: Veterinarians whose own animals experience vaccine reactions are reluctant to reflexively vaccinate.

"Boy, are they ever believers," says Dr. Schultz, who was a member of the AAHA task force that revised the 2006 guidelines. "As I often remind them, 'When it was your animal, you didn't care whether this occurs in one out of 10,000 animals, did you? It was *your* one.'"

Core vaccines

The 2006 AAHA canine vaccination guidelines single out four vaccines that are "musts" for every puppy: canine hepatitis (the adenovirus-2 vaccine), distemper, parvovirus, and rabies.

The guidelines recommend that the first three vaccines in that list be administered in a three-part puppy series, boostered at one year, then readministered no more than every three years.

Schultz notes that "no more than" could also be interpreted to mean "never again." He points to studies that show that dogs properly immunized in puppyhood maintain lifetime immunity to canine hepatitis, distemper, and parvovirus.

"Every three years is probably a completely arbitrary number," Dr. Rogers adds. "I've told my clients that after one year of age they don't need to vaccinate anymore." Rogers estimates that in nine years, he has used this protocol on some 30,000 dogs – "and I haven't had one vaccine 'break' [failure]."

But he *has* seen a welcome decrease in adverse reactions. Dr. Rogers says he used to see at least one animal a week suffering

AAHA 2006 Vaccination Protocol

Core vaccines

The following are vaccinations that should be given to every dog. Recommendations are to vaccinate puppies, booster at one year, and revaccinate *no more than* every three years. Rabies is the notable exception, because revaccination is mandated by state law. Most states have adopted a three-year requirement, but a handful, such as Arkansas, require annual rabies revaccination.

- Canine hepatitis (adenovirus-2)
- Distemper
- Parvovirus
- Rabies

Noncore vaccines

Optional vaccines that should be given only if an individual dog's lifestyle or risk factors warrant it.

- Leptospirosis
- Lyme
- Bordetella (kennel cough)
- Parainfluenza

Not recommended

- Adenovirus-1
- Coronavirus
- Giardia
- Rattlesnake *(Crotalus atrox* Toxoid*)*
- Periodontal disease *(Porphyromonas sp.)*

Adapted from the American Animal Hospital Association's 2006 Canine Vaccine Guidelines. The 28-page report is available at aahanet.org/About_aaha/vaccine_guidelines06.pdf

Rabies Vaccine Is Required for Dogs, for Us

BY NANCY KERNS

Rabies has been known as a threat to the animal kingdom – and human society – for thousands of years. The disease is almost always fatal if it's not diagnosed and treated with a post-exposure vaccine within 14 days; only six cases are known in which a human survived infection without treatment with the vaccine.

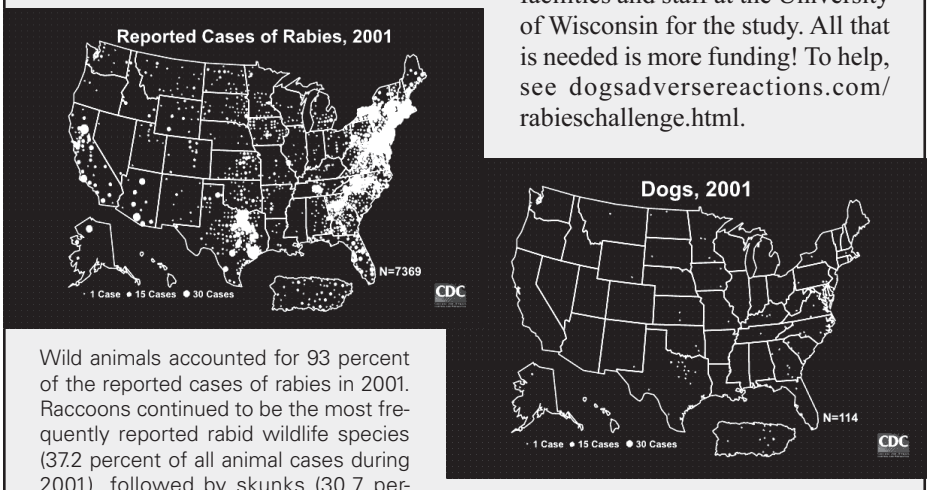
The highest recorded number of annual human deaths in the U.S. from rabies was 143, in 1890. Louis Pasteur developed the first rabies vaccination in 1885. The number of human deaths has dropped ever since.

For several decades, rabies prevention efforts were exclusively focused on vaccinating humans who were suspected of having been exposed to the disease. In the 1920s, the effort shifted to *pre*-exposure vaccination of domestic dogs, then the most frequent vector of the virus from wildlife to humans. In the 1920s, local dog rabies control programs were initiated, and included *pre*-exposure vaccination of dogs, stray animal removal, and leash and muzzle ordinances. In the 1940s and '50s, most states passed rabies control acts to enforce the vaccination of companion animals, and hundreds of thousands were vaccinated. By 1960, rabies was diagnosed more frequently among wildlife than among domestic animals.

According to the Centers for Disease Control, almost all human cases of rabies today occur after an animal exposure that is unrecognized by the patient as carrying a risk for rabies infection. The apparent source of human rabies has also changed: 14 of the 18 cases acquired in the U.S. since 1980 involved rabies variants associated with insectivorous bats.

The price of preventing human rabies deaths is not low. A 1995 report published in *Emerging Infectious Diseases* estimated that the national prevention program costs anywhere from $230 million to $1 billion per year. "This cost is shared by the private sector (primarily the vaccination of companion animals) and by the public (through animal control programs, maintenance of rabies laboratories, and subsidizing of rabies post-exposure treatments)," says the report. This history and investment helps explain why veterinarians and lawmakers alike are a tad unsympathetic to allegations of rabies vaccine side effects in some dogs.

It is hoped that studies like the one planned by the Rabies Challenge Fund overseen by Dr. Dodds will prove that canine rabies vaccines confer immunity for much longer periods than previously thought, resulting in a reduced requirement for repeated rabies vaccine administration. Dr. Schultz has offered the use of the facilities and staff at the University of Wisconsin for the study. All that is needed is more funding! To help, see dogsadversereactions.com/rabieschallenge.html.



Wild animals accounted for 93 percent of the reported cases of rabies in 2001. Raccoons continued to be the most frequently reported rabid wildlife species (37.2 percent of all animal cases during 2001), followed by skunks (30.7 percent), bats (17.2 percent), foxes (5.9 percent), and other wild animals.

Domestic species accounted for 6.8 percent (497 cases) of all rabid animals in the U.S. in 2001. Of these, dogs accounted for 114 cases; cats accounted for 249 cases! There were 83 cattle cases; horses, sheep, goats, and swine combined constituted the 51 remaining cases. ILLUSTRATIONS AND STATISTICS FROM THE CENTERS FOR DISEASE CONTROL

from an adverse reaction to a vaccination. Now he's down to three a year – almost always Dachshunds, a breed that he finds particularly vulnerable to vaccine reactions.

Other at-risks breeds include Akitas, Weimaraners, Standard Poodles, American Eskimo Dogs, Old English Sheepdogs, Irish Setters, Kerry Blue Terriers, and Cavalier King Charles Spaniels.

Even if a veterinarian is reluctant to stop vaccinating for these core diseases after the one-year booster, Schultz says that "every one of the major vaccine manufacturers has demonstrated that their current product, or one they've had for quite some time, has a minimum duration of immunity for three years," regardless of what the label says.

"Only one company actually did it in a way that allows them to put 'three year' on the label according to USDA requirements, but it's meaningless," he says. In other words, parvo, distemper and canine hepatitis vaccines labeled "one year" have been proven to be effective for at least three.

Schultz also reminds that "other than rabies, there is no *requirement* to vaccinate with anything. And there's no legal implication to any vaccine label with regard to duration of immunity, except for rabies."

Why rabies is different

As those caveats suggest, the fourth core vaccine, rabies, offers far less wiggle room, because its administration is dictated by state laws – laws that were put into place to prevent this zoonotic disease from being transmitted to humans (see sidebar, left). An annual rabies "shot" was once the norm; in recent years, most states have changed their laws to allow a three-year vaccine, though there are a few stragglers that stick to annual rabies vaccination requirements.

The one-year and three-year vaccines on the market are actually the same product, capable of conveying the same duration of immune response. But vaccines that are labeled "one year" satisfy the legal requirement for rabies vaccination for only that long. Legally, a dog who receives a one-year vaccine must get vaccinated again a year later, even if he lives in a state with a three-year law, and even if titer tests indicate that he's protected against rabies.

To defend your dog against needless (and in the opinion of holistic veterinarians, potentially harmful) overvaccination against rabies, it's imperative that you know the rabies requirement in your state. If you live in a state with a three-year law, make

Disparate Views on Canine Hepatitis

Dr. W. Jean Dodds and Dr. Ron Schultz both advocate strongly and publicly that revaccination for core diseases such as parvovirus and distemper is unnecessary after a puppy's booster shot at 1 year of age. And both are working together to organize vaccine-challenge studies that would prove that the duration of immunity for rabies is as long as seven – and perhaps more – years. (The independent endeavor requires $177,000 for its first year; to date, the nonprofit Rabies Challenge Fund has raised $65,000. See dogsadversereactions.com/rabies challenge.html for details.)

Dr. W. Jean Dodds doesn't see a current need for the canine hepatitis vaccine in the U.S.

But there is at least one area where the two part ways: the need to vaccinate for canine hepatitis. To prevent canine hepatitis, conventional veterinarians typically use the vaccine for adenovirus-2, a fairly ubiquitous virus that is part of the kennel-cough syndrome.

Dr. Dodds' popular minimal vaccine-use protocol includes parvovirus and distemper as core puppy vaccines, but does not include canine hepatitis. Her reasoning is simple: She does not consider it a big enough threat to warrant its use. "We don't have any signs of clinical canine hepatitis – we never see it anymore today," says Dr. Dodds, adding that a handful of cases that surfaced in San Diego several years ago were in dogs that originated from Mexico.

Dodds notes that she does not take the disease lightly; indeed, she lost a Vizsla puppy to canine hepatitis several decades ago. But she reminds us adenovirus-1 (the cause of infectious canine hepatitis) has been absent from the dog population for so long that epidemiologists no longer know if the feral form is the same version as what the vaccine protects against. And, unlike a neurologically devastating disease such as distemper, canine hepatitis is relatively treatable with early intervention.

Dr. Schultz agrees that "we've seen almost no canine hepatitis in years," but he stresses it is alive and well in wildlife populations. If owners stop vaccinating and herd immunity is weakened, "it'll come back into our pet population, no question about it," he warns.

He adds that the adenovirus-2 vaccine offers bonus protection against contagious cough as well, which if left untreated can progress to pneumonia and incur significant lung damage.

For those who are nervous about omitting canine hepatitis from a puppy vaccination protocol, Dodds suggests including it with the core vaccine booster given at one year, or doing two puppy vaccines separately after the puppy is more than 6 months old.

sure your veterinarian administers a three-year vaccine.

Also be sure to check your records; in an effort to increase client compliance, some veterinarians mail out rabies revaccination reminders after only two years to avoid a lapse in the three-year coverage that a given state law mandates.

Dr. Dodds notes that the rabies vaccine causes the greatest number of adverse reactions. As a result, owners of chronically ill dogs, or those who have had previous vaccine reactions, might want to consider applying for a rabies waiver.

To obtain a rabies waiver, the dog's primary-care veterinarian must write a letter indicating why vaccinating the dog in question would be an unsound medical decision based on his health status. Though a rabies titer is not required – and can be expensive, from $75 to $150, depending on your location – Dodds nonetheless recommends doing one.

"Let's say down the road there is an allegation that your dog bit someone," she says. Even if the owner has obtained a rabies waiver, it does not exempt the dog from the possibility of being euthanized so that his brain can be examined – the only definitive diagnostic test for rabies. "If you've got the titer as proof that the animal has immunity, then the animal won't be automatically impounded or destroyed."

Dodds notes that some municipalities, such as Los Angeles County, have decided not to accept rabies waivers. Others will tell callers that they do not, but on receipt of the vet's letter and titer the responsible public health official will review the case and may issue one anyway.

Because relatively few people request them, rabies waivers are a murky area that municipalities handle on a case-by-case basis. But Dr. Dodds worries about those owners who apply for them even though they do not have a sick dog; instead, they simply believe that the rabies vaccine has a longer duration of immunity than three years, and that the law is requiring them to overvaccinate.

While Dodds might agree in theory (the proposed rabies challenge study she and others are actively pursuing hopes to prove just that), she can't condone the practice. As their numbers grow, such noncompliant owners increase the risk of triggering legislation that might bar the practice of waivers altogether – and in the process force their ill and immunocompromised counterparts to submit to vaccinations that could make them sicker, or worse.

Noncore vaccines

While the AAHA guidelines do not consider core vaccinations negotiable, noncore vaccine are, with their use determined by a dog's risk factors.

One looming consideration is geography: In many parts of the country, leptospirosis and Lyme disease are simply not prevalent. But in areas where these "noncore" diseases are endemic, owners are faced with tough decisions about less-than-perfect vaccines.

For example, leptospirosis, which is most often spread through contact with the urine of an infected animal, has 200 different serovars, or strains. Only four strains *(icterohaemorrhagiae, canicola*, *grippotyphosa,* and *pomona)* are covered by vaccines, which themselves are notoriously

shortlived.

"The antibodies only last a short time in the body; they can be measured only by titers for one to two months, and [the titer levels] are low in the first place," Dodds says. The vaccine manufacturers, in turn, maintain that a vaccinated dog is protected by its cell-mediated immunity, which cannot be measured by titers.

For dogs at high risk for leptospirosis, which has diffuse symptoms and can cause liver and kidney failure if caught too late, Schultz recommends using the four-strain vaccine instead of the two-strain product (which addresses the *icterohaemorrhagiae* and *canicola* serovars), first at 14 to 15 weeks (but not before 12 weeks), repeated two to four weeks later. Subsequent doses are administered at 6 months and one year, and thereafter every six to nine months.

Even so, Schultz notes, "I find there's still a fairly high percentage of dogs that do not respond to the vaccine." Plus, of all the bacterin vaccines, leptospirosis causes the most adverse reactions. (For this reason, many holistic veterinarianss administer it separately and weeks apart from other vaccines, a practice they recommend with the rabies vaccine as well.)

The pros and cons of the Lyme vaccine are not any easier to navigate. In some areas where the disease is endemic, Schultz says practitioners are no longer vaccinating because they believe they are seeing as many vaccinated dogs with clinical disease as unvaccinated ones.

Instead of administering the vaccine, some owners are choosing to treat their dogs prophylactically with antibiotics if they suspect a tick bite. Regardless, good tick preventive is key, whether it's in the form of an insect-repelling herbal spray or a systemic flea and tick product, though the more holistically oriented tend to avoid the latter because it exposes a dog's body to still more chemicals.

If owners choose to vaccinate for Lyme, both Dodds and Schultz recommend using the recombinant vaccine instead of the older bacterin one, which can cause symptoms similar to the disease itself, such as lameness and joint pain.

The recombinant vaccine does not contain the additional antigens that are in the bacterin vaccine, but instead contains only outer surface protein A, the antigen that inactivates the tick when it takes its blood meal, which is the point at which the disease is transmitted.

As a rule of thumb, Schultz does not recommend the vaccine for dogs living in an area where the rate of infection is less than 10 percent. "Greater than 50 or 60 percent, then give it some serious thought."

In the case of both Lyme and leptospirosis, which can be treated with early invention and antibiotic therapy, Dodds says that involved, observant owners who note any early and sometimes vague symptoms can literally save their dogs' lives.

The condition commonly known as "kennel cough" is addressed by other noncore vaccines, including canine parainfluenza virus (notated as CPiV or simply called parainfluenza) and Bordetella.

Unfortunately, few dog owners understand that kennel cough is a complex syndrome rather than an individual disease attributable to one specific pathogen. In addition to a buffet line of various viruses and bacteria (including the two mentioned above), factors that make a dog susceptible to kennel cough include stress, humidity, gasses such as ammonia from unhygienic environments, and nitrous oxide from exhaust fumes. That's why a dog who received a parainfluenza or Bordetella vaccine may well still contract kennel cough.

Dogs who get out a lot, such as those who visit dog parks or dog shows, will be regularly exposed to many factors that can cause kennel cough. These exposures, in essence, will "vaccinate" the dog naturally, as his immune system learns to recognize and mount a defense against the ubiquitous pathogens.

In contrast, dogs who lead highly sheltered, nonsocial lives may become quite ill in the rare event that they are exposed to the kennel-cough pathogens. "If any dog needed a kennel-cough vaccine, it would be one that's never around another animal," says Dr. Schultz. If such a dog had to be kenneled unexpectedly, a dose of the intranasal Bordetella vaccine might not prevent the disease entirely, but it could mitigate its severity, which is better than nothing.

According to Dr. Schultz, when properly immunized dogs are exposed to infectious material of those "core" diseases, he is confident they will not contract the disease. He can't say

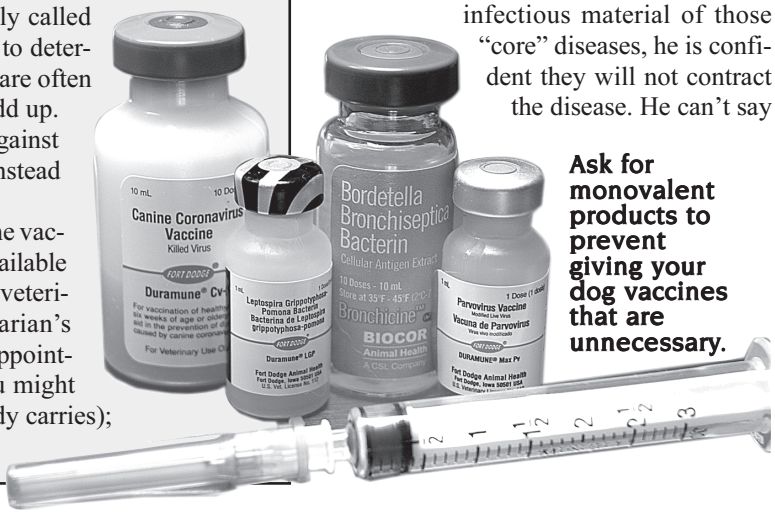
More Is Not Better

Veterinarians often give combination vaccines that Dr. Dodds crisply refers to as "wombo combos." She doesn't recommend the use of these combination (or "multivalent") vaccinations, largely because they typically include vaccines that she considers unnecessary and potentially harmful.

One very common multivalent vaccination, the "DHLPP," contains three "core" vaccines (distemper, hepatitis, and parvovirus), and two more controversial "noncore" vaccines (leptospirosis and parainfluenza).

Sometimes these combination vaccinations are simply called "5 in 1" or "6 in 1" vaccines. Owners who bother to try to determine the identity of the five or six vaccines in the "shot" are often puzzled when they discover that the numbers may not add up. That's because the canine-hepatitis component protects against both adenovirus-1 and -2, and so counts as two diseases instead of one.

Dog owners can insist that their vets administer only the vaccines they approve; vaccines for all the core diseases are available in an individual ("monovalent") form. However, not all veterinarians stock monovalent vaccines. Ask your veterinarian's receptionist if these can be ordered in advance of your appointment. A good vet won't mind this request (although you might have to pay more than you would for vaccines she already carries); a *great* vet will already have them in stock!



the same for leptospirosis, Lyme disease, or kennel cough; the existing vaccines are just not that effective or long-lived.

Dr. Schultz concludes about noncore vaccines, "No matter what you do, there's going to be a risk. And that's what we really have to measure."

Not recommended vaccines

AAHA has various reasons for putting a vaccine in its "not recommended" category. One is simply a "lack of experience and paucity of field validation of efficacy," which is the case with the vaccines for rattlesnake bites and periodontal disease.

The giardia vaccine is on the "no" list because it does not prevent a dog from getting infected – only from shedding the disease. Similarly, the adenovirus-1 vaccine earns the red light because it can cause "blue eye," a clouding of the cornea, and because the core adenovirus-2 vaccine already protects against it.

In the case of coronavirus, the AAHA task force made the point that the disease is simply not prevalent enough to warrant vaccinating for it.

"People don't have a clue that coronavirus doesn't make dogs sick," says Dr. Rogers, noting that puppies less than six weeks old develop a loose orangey stool that resolves on its own within 24 hours. "Puppies over six weeks of age are immune to it whether vaccinated or not."

Indeed, he says, vaccine companies have had difficulty testing the vaccine on sick dogs because none can manage to contract it. But the vaccine can be licensed by the USDA because it does prompt a dog's body to produce coronavirus antibodies.

Managing your veterinarian

Even if your veterinarian continues to recommend annual vaccines, as a client and consumer you have the right to request a different protocol. Depending on your approach, the veterinarian might be more willing to modify his or her suggested vaccine schedule. But some can prove to be stubbornly entrenched in their position on vaccination.

Schultz's own secretary was fortunate when she was unable to get past her veterinarian's insistence on revaccinating her dogs. In frustration, she handed the phone to Dr. Schultz, who has the same sort of name recognition in veterinary circles as Tom Cruise does in most American households. After a brief exchange, Schultz returned the receiver to his secretary, who now found the vet more than willing to accede to her request for a minimal vaccine schedule.

For those who cannot put one of the world's foremost veterinary immunologists on the horn with their vet, Schultz recommends the next best thing: printing out the AAHA canine vaccination guidelines, highlighting the pertinent information, and bringing them along to the appointment.

"It really works; it helps," he says. "AAHA is an esteemed organization that sets the highest standards for small-animal practice. Here's what its expert panel recommends. How do you argue with that?"

The fact that you might have to argue – or at least debate – with your veterinarian to arrive at an appropriate vaccine schedule might be regrettable, but it's hardly unexpected, given the very human resistance to change. "It's an evolutionary process, not a revolutionary one," Schultz concludes. "Nothing is revolutionary in medicine."

Donations to the Rabies Challenge Fund can be sent care of Hemopet, 11330 Markon Drive, Garden Grove, CA 92841; for info, see dogsadversereactions.com/rabieschallenge.html.

Denise Flaim has two raw-fed Rhodesian Ridgebacks. The New Yorker is the author of The Holistic Dog Book: Canine Care for the 21st Century *(Howell, $17). See page 24 for purchasing information.*

When Titer Tests Make the Most Sense

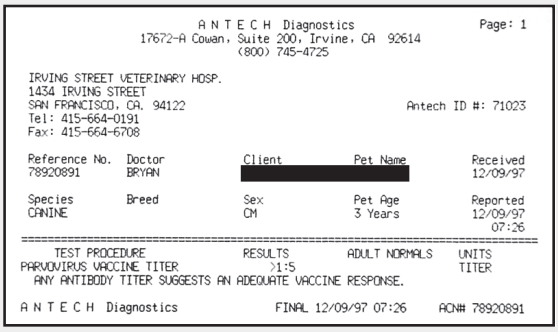
Some veterinarians pooh-pooh the practice of conducting titer tests – blood tests that measure antibody levels – instead of reflexively revaccinating. Titer tests, they argue, cannot effectively measure a dog's level of protection because they only gauge humoral immunity, and not other types, such as cell-mediated or secretory immunity.

Dr. Ron Schultz is inclined to agree. "Titer numbers really often are meaningless; the numbers don't mean much to anyone other than the lab," he says, adding that dogs with low titers could very well have immunity anyway.

But Schultz says there is one instance in which titering is medically indicated, even necessary: after a puppy completes its puppy series of core vaccines.

"Two or more weeks later, perform titer tests for distemper and parvovirus – that's where you want to make sure that your vaccine worked," says Dr. Schultz, who is trying to develop a rapid in-office titer for this very purpose. "If the puppy hasn't responded, revaccinate and retest."

This is particularly important in those breeds with relatively high numbers of dogs that fail to mount an immune response to vaccines, such as Rottweilers.



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Reference No.	Doctor	Client	Pet Name	Received
78920891	BRYAN	[redacted]		12/09/97

Species	Breed	Sex	Pet Age	Reported
CANINE		CM	3 Years	12/09/97 07:26

TEST PROCEDURE	RESULTS	ADULT NORMALS	UNITS
PARVOVIRUS VACCINE TITER	>1:5		TITER

ANY ANTIBODY TITER SUGGESTS AN ADEQUATE VACCINE RESPONSE.

ANTECH Diagnostics FINAL 12/09/97 07:26 ACN# 78920891

Titer test results can be used to confirm a puppy is properly immunized or that an older dog has maintained an adequate immune "memory."

After a puppy's titer test shows that her body has developed antibodies to the vaccine, "I don't recommend further titering (later in the dog's life)," Dr. Schultz says, "because I know these vaccinations are good for a lifetime."

But Schultz acknowledges that veterinarians who are backing away from vaccines might need titers as a sort of security blanket.

"There are still a lot of owners who are uncomfortable" with the idea of not vaccinating every year, "or will not come back if they don't get something," he says. So, to fulfill an owner or veterinarian's very human need to *do something*, "by all means titer rather than vaccinate," says Schultz. He adds that while a small percentage of immunoprotected dogs that show low titers might be vaccinated unnecessarily, it's preferable to *every* dog being reflexively vaccinated.

How to Lead Your Pack

Managing a multi-dog household takes time, commitment, structure.

BY PAT MILLER

More than 30 years ago, I had an "only dog." Marty was a tricolor Collie – the first dog I owned as an adult. We were inseparable. I had the good fortune to work at a stable where Marty could accompany me every day. I took him to obedience classes and started showing in AKC competitions, where my furry boy was a star – earning his Companion Dog degree in three shows with scores of 194, 195.5, and 196 out of a possible perfect score of 200 points.

Then I entered into my first serious adult relationship, with a man who had a St. Bernard/Collie mix. The two dogs quickly became fast friends, and we soon added an Irish Setter pup to our pack.

Since that time I've had as many as five, never fewer than two, and usually at least three or four dogs sharing my home and life. It's hard for me to even imagine having only one canine companion in our home. I'm a confirmed multi-dog person.

But not everyone finds it easy to adjust to having more than just one canine companion in the house – and the bed, the car, the vet's office, and so on! There are definitely things to consider before adding a second dog (or more) to your "pack," and ways to make living in a multi-dog household more manageable.

Things to consider

When asked whether it's a good idea to add a second dog to a family, my answer is always an unequivocal "It depends!" If you're adding a second dog for the right reasons and your first dog gets along with others, it may be a fine idea. Here are some things to consider when you're thinking of adding a second, third, fourth (or more) dog to your pack:

■ **Are you getting the dog because *you* really want another?** Despite the charming concept of "getting a dog for your dog," you really should get another dog only for yourself. Getting a second dog isn't likely to fix your first dog's behavior problems, and may compound them. Besides, if you're just getting a second as a companion for your first, you may not be as committed to keeping him if problems arise. And that's not fair to dog number two!

■ **Are you ready for changes in your relationship with dog number one?** Not that you'll love her any less, but every time you add another dog it decreases the amount of one-on-one time you have to share with each. That inevitably changes the relationship to a greater or lesser degree, depending on the dogs, and depending on you. With five dogs in our home currently, it's impossible for me to have the same relationship with each of them that I had with Marty 30-plus years ago. That doesn't necessarily mean better or worse – just different.

What you can do . . .

- Create structured routines for your dogs so they know what to expect. A daily routine, structure, and training help maintain a peaceful pack.
- Set aside time to spend with each dog every day, even if it's just a few minutes, to strengthen your relationship with each one.
- Identify problem areas with your pack and create management and/or modification plans to address the problems. Seek assistance from a qualified, positive behavior consultant if necessary.

Author Pat Miller's pack: Clockwise from left: geriatric alpha Tucker; alpha wannabe Lucy; low-ranking Bonnie; senior good citizen Katie; and Dubhy, a "tough little guy" who mostly likes to be left alone.

■ **Does your dog enjoy, or at least tolerate, the company of other dogs?** If not, you're in for a serious challenge if you bring another canine into your life. I have clients who have resigned themselves to years of future management because one of their dogs is willing and able to do serious damage to their other(s). In some cases they knew this in advance and wanted the second dog anyway. In others, they found out after the new dog came home that the first dog had no wish to share his home.

If you don't know how your dog will be with another, you might borrow one from a friend for a week or two and see how it goes, before making a lifetime commitment to another canine.

■ **Do you have the resources to properly care for another dog?** Not just money – which is certainly a consideration – but time, energy, willingness, and space? One more dog doesn't seem like much at the time, but sometimes the stars align to throw you several curve balls at once.

This happened to us recently. Our most geriatric pack member (Tucker) was diagnosed with prostate cancer, and shortly afterward, our Corgi, Lucy, took an unwise leap off a stone wall and seriously injured two of her legs. This has added up to thousands of dollars in vet bills, as well as numerous three-hour (round trip) visits to cancer and orthopedic specialists. And this isn't even counting all the annual well-pet checks that total several hundred dollars.

■ **Are you being pressured?** A friend or family member has to rehome their dog and is begging you to take him. You feel bad about leaving your dog home alone while you're at work all day. Your kids are pestering you for a new puppy. A shelter or rescue group has contacted you about a dog who faces euthanasia if you don't take her.

Only let yourself be pressured into adopting another dog if all the other factors are right: you really want another dog, and it's the right thing to do for all your family members and circumstances.

When you *do* decide that another dog is in the cards, make a wise choice. It's important to evaluate your own dog's temperament and select a new family member who's a good match for her personality as well as your own. This will make the transition much less stressful – and ultimately much more successful – for all concerned.

When the deed is done

Congratulations! As the proud owner of two or more dogs, you're an official member of the "Multi-Dog Household" Club. You now have a pack to manage.

Pack management is as much an art as a skill. If you've always had multiple dogs, never had problems, and never thought twice about it, then good for you! You are one of the lucky ones – a natural. You've probably instinctively done all the right things to help your pack be well-adjusted. Many dog owners aren't so fortunate.

Pack problems run the continuum from simple delinquent behaviors and poor manners to serious intra-pack aggression. While many owners tolerate the former, group bad manners can be the precursor to aggression. This is far more easily addressed *before* scuffles escalate to bloodletting. The basic tenet for a successful multi-dog household is simple: The more dogs in the home, the more "in charge" the human pack member(s) must be.

By the way, this does *not* mean you need to be demanding, forceful, or "dominant" in any way. You don't need to eat first, go through doors first, roll your dogs on the ground, or any of the other ridiculous exercises that get carried out in the name of "dog training."

A good leader doesn't need to be violent; she simply needs to create an environment where it is easy and rewarding for her followers to comply with her wishes, and difficult for them to make mistakes. A successful leader/owner also controls valuable resources, and shares them with her dogs generously and judiciously. Appropriate behaviors earn rewards. Inappropriate behaviors do not. If resources are consistently awarded on the basis of desirable behaviors, and withheld in the presence of undesirable behaviors, desirable behaviors will increase, and the undesirable ones will slowly disappear. (See "Be a Benevolent Leader," WDJ August 2003, for more information about leading your pack.)

The basic "in charge" tenet for pack management is closely followed by this corollary: The more dogs in your household, the better-trained and better-behaved the canine members of your pack must be.

If you have more than one dog, you'll want to take each one through a complete, positive good manners training program, working with each dog individually. As they learn their lessons, train in twos, threes, and more, until they respond reliably to your cues in the presence of all pack members.

KidCo's Safeway Gate, mounted with hardware, is the most secure gate we've found. Neither a German Shepherd with separation anxiety could unhinge it, nor could a Chihuahua slip through its bars.

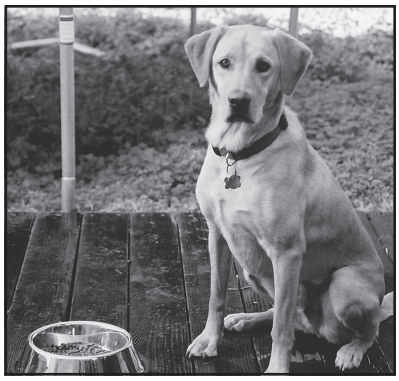
The other key to peaceful pack life is management. If you put good management programs in place early, you can sidestep potential pack problems. If you're already facing pack behavior challenges, start by identifying the key areas of conflict, so you can figure out how to put a management plan in place to keep peace in the pack while you work on long-term training and modification solutions. Modification of serious intra-pack behaviors will probably require the assistance of a qualified, positive dog behavior professional.

Some of the skills and tools you'll need for pack-management success include:

■ **Baby gates.** Gates are a super-valuable tool for managing housetraining (keeping pups and young dogs in areas where they can't ruin a rug if they have an "accident"), puppy teething (ditto), doggie dinnertime (especially if meals are a guarding trigger for your dog), and for keeping dogs separate (if necessary) during the social adjustment period after you bring your new dog home. (For more information on choosing and using gates in your home, see "A Gated Community," July 2002.)

■ **Crates.** Bedtime can be a perilous time when your dog feels he has to compete for the comfiest sleeping spot closest to you. Having the dogs sleep in your room, but in appropriately sized, well-cushioned crates, complete with a food-stuffed Kong or other appropriate chew toys, can help you keep the peace – and a piece of the mattress real estate! (See "Crate Difficulties," May 2005, for more information on introducing your dog to sleeping in a crate.)

■ **An elaborately managed feeding time.** Properly planned and executed, mealtimes can be an ideal place to work on your dog's (or dogs') good manners and self-control; deference to you, the "pack" leader; and modifying resource-guarding behavior. The expectation is that each dog waits quietly (sitting, ideally) in his regular supper spot for you to prepare and serve his food, finishes it without guarding it from others, and is dismissed from the area without trying to eat anyone else's meal. Again, routine and structure are your allies here. (See "The Bowl Game," July 2005, for detailed information on teaching your dog/s good manners at mealtime.)



"Wait training" at mealtime is a good technique for teaching your dog that *you* control the good stuff in life.

■ **Knowledge about stress signals.** Contrary to what the newspaper headlines often say, dogs rarely "attack without warning." Experienced observers of canine body language can identify dozens of ways that dogs will telegraph their fear, anxiety, or discomfort with other dogs (or people).

When you've added a new dog to your household, be alert to physical cues such as diminished appetite, gastrointestinal distress, decreased responsiveness to training cues, intolerance to being handled or groomed, or any displays of aggression, including "whale eye," showing teeth, growling, snapping, or increased resource-guarding behavior. These may be indicators that your dog is stressed and feeling backed into a corner.

Before your dog "loses it" and bites somebody, take appropriate steps now to defuse the situation, and give your stressed dog a little more physical space or a break from whatever is bothering him. (See "Stress Signals," June 2006, for more information about recognizing signs of stress in your dog.)

■ **Knowledge about resource-guarding.** It's common for dogs to defend their food from other dogs, but edible items are not the only things that dogs will keep from all potential rivals. Some dogs will defend their "ownership" of toys, a favored place to sleep, or the water bowl. Behaviorists and dog trainers call these protective behaviors "resource-guarding."

A dog who defends his food from other dogs is exhibiting a perfectly normal and appropriate canine behavior. Resource-guarding is far less acceptable, of course, whenever it's directed toward *us,* or when the dog starts World War III over any of his coveted possessions. For our own safety, we want dogs to understand that everything they have is really ours, to use ourselves or to parcel out to whatever dog we choose.

Fortunately, mild resource-guarding behavior can be managed, and dogs can be desensitized to the presence of other dogs or people around his food bowl. (A thorough description of how to accomplish this can be seen in "Thanks for Sharing," September 2001.) If your dog exhibits severe resource-guarding, you would be wise to consult a qualified, positive dog behavior professional.

Putting it all into practice

Here's a description of how my husband and I live with our current five-pack, using all the tools and principles of positive training and management described above. The cast of characters includes:

• **Katie,** a 14-year-old, 45-pound, Australian Kelpie with arthritis and hearing loss. A typical herding dog control-freak, Katie cheer-leads when Lucy and Bonnie play, lifts lip, snarls, sometimes snaps when others invade her space. She has high-ranking aspirations, but is not an "alpha."

• **Tucker,** a 13-year-old, 70-pound, Cattle Dog-mix with arthritis and prostate cancer. Tucker is our gentle, benevolent alpha. He sometimes plays fun-police role when the youngsters roughhouse indoors.

• **Dubhy,** a 6-year-old, 25-pound, Scottish Terrier. He's quite a tough little guy, and tends to keep to himself. Dubhy is dog-reactive with dogs outside our pack. He will resource-guard things from his packmates; he took a pea-sized notch out of Katie's ear several years ago, but there has been no blood spilled since.

• **Lucy,** a 2-year-old Cardigan Welsh Corgi. Definitely an alpha-wannabe, Lucy tries to control everything and everyone in the pack. She acknowledges Tucker's higher status, but frequently challenges Katie. She also tries to control everyone's movement, and does serious resource-guarding from the other pack members for food, toys, and space. She's strong-willed, yet very sensitive to sounds and body language, exhibits distress when separated from us, and has lots of fear issues. She's still recovering from her wall-jumping episode last winter, and limps slightly.

• **Bonnie,** a 1-year-old Scottie/Corgi mix. Bonnie has a super "soft" personality, and is perfectly content to let others be in charge. She's the lowest-ranking member in the group, and a submissive urinator with other dogs and humans. She will resource-guard valuable objects from the other dogs with body blocking, not with aggression.

All the Miller dogs are moderately to very well trained. All can be off leash outdoors except Dubhy, whose outdoor recall is only about 50 percent reliable.

A day in the Miller pack looks like this:

5:30 am: Alarm goes off. All dogs sleep in our bedroom, upstairs, with us. Lucy, who is prone to chasing cats and snarking with Katie over desirable space, is crated, as is Dubhy, who sometimes urine-marks in the house. Katie and Tucker sleep on magnetic beds (for their arthritis) on the floor; Bonnie sleeps on the bed or on the floor, whichever she prefers. Baby gates at the bottom of the stairs restrict Bonnie (and the rest) from total house freedom, as she still occasionally chews an inappropriate object, and once in a very great while has a housetraining accident. Paul dresses and heads to the barn to feed the horses.

6:00 am: I follow to the barn with the dogs. Going downstairs can be exciting, as Lucy and Katie want to battle over who gets to be first. It's hard to converse with Katie due to her hearing loss, so I focus on Lucy, reinforcing her attention to me, and having her wait while Katie makes her way downstairs. Lucy, Bonnie, and I follow (Bonnie also very focused on Lucy's reinforcers). Tucker and Dubhy, neither of whom feels any urgent need to be first, bring up the rear to the back door.

At the back door I put leashes on Lucy and Dubhy – the latter because his recall

outdoors isn't great and he's easily lured away by resident groundhogs; Lucy to avoid Katie-snarking at the back door, and because her body-language and fear issues sometimes trigger her to avoid the barn.

The three younger dogs "Sit" and "Wait" at the back door in order to get the door to open. The older dogs, out of respect for their arthritic joints, aren't asked to sit, but *are* expected to wait. Sometimes I give a general release and we all exit together; sometimes I use the door as an opportunity to practice individual releases.

Tucker, who was well-schooled in "Wait" as a youngster, and took his lessons to heart, is last again, as he waits for a personal invitation to pass through any doorway beyond our normal living area. So much for the high-ranking member always going first!

6:00 – 7:00 am: This is a significant piece of the exercise portion of our pack management program. While we feed horses and clean stalls, the dogs race up and down the barn aisle and chase each other madly around the indoor arena. Lucy and Bonnie, the youngest and wildest, run the hardest, with geriatric Katie cheerleading along behind. Dubhy rarely engages, preferring to observe. Tucker, with his delicious sense of humor, occasionally grabs Lucy's toy to remind her that he can, then soon gives it back to her, laughing at her temper tantrum.

7:00 – 8:00 am: Breakfast time for the pack, and an important management/training opportunity in a multi-dog household. I gather up bowls and set them on the floor by the feed bin, then broadcast a handful of kibble across the kitchen floor for the young dogs so they can scavenge while I scoop food into bowls. Interestingly, all three of the young dogs resource-guard to some degree, yet share this task without any squabbling over kibble. They would sit and watch quietly while I scoop; this is just a fun activity.

Bowls then go on the counter for add-ins: chicken, canned food, glucosamine for joint health, Omega-3 and -6 fatty acids for coat and skin, a daily vitamin, and various medicines for all their various aliments and conditions. Dogs sit quietly at my feet during preparation. When the food is ready, they're fed in their specific locations:

- Katie first, on the far side of the dining room. She gets hers first to prevent her from herding Tucker as he walks toward his bowl.

- Tucker next, on the near side of the dining room. He gets the most food, and since being diagnosed with cancer his appetite has diminished. He needs the most time to eat, and sometimes needs encouragement.

- Lucy, by the kitchen counter. She's an eager eater, and must sit-and-wait until released when I put her bowl down, part of a good "say please" program, to remind her that *I* control the good stuff.

- Bonnie, about six feet from Lucy, under the kitchen clock. Bonnie also is required to sit-and-wait for her meal.

- Finally Dubhy, across from Bonnie next to the refrigerator. Dubhy enjoys mealtimes, and does an endearing little Scottie dance on the way to his meal spot. He, too, gets to sit-and-wait until released.

I watch as the dogs finish their meals. Tucker, who once protected his bowl without assistance, is less concerned about his food now. As the others finish, I call them to me and reinforce them for good manners behaviors so they don't pester him.

Despite having several dogs willing to resource-guard from each other, our mealtimes are happily nonviolent. Lucy even allows Bonnie to help lick her bowl – probably because Bonnie is *so* low-ranking that Lucy perceives no threat from her. If we had "issues" over meals, we might put one or more dogs in separate rooms with doors closed, or in their crates, to manage mealtime aggression.

8:00 am – Noon: Everyone's tired from the morning's activities, and they all settle in for naps. Bonnie and Lucy crash in their crates in my office, Dubhy on a chair and Katie on a magnetic bed in the living room, Tucker sometimes in his favorite den: the nonworking fireplace in the dining room, sometimes on a bed in my office. Lucy used to fiercely resource-guard my office. Lots of counter-conditioning (other dogs in office make good stuff happen) has modified this behavior. I take time during this period (and/or the afternoon rest stop) to spend some one-on-one time with each dog – brushing, nail-trimming, a training session, or just cuddling.

Noon – 1:00 pm: Time for a potty break and some Frisbee action in the backyard. Sometimes Dubhy, Bonnie, and Katie play together in the yard for a while. Tucker and Lucy prefer being indoors.

1:00 – 5:00 pm: More quiet time in the house. Several times a week I'll take the youngsters for a hike on the farm. Exercise does *wonders* for a peaceful pack. The two old-timers can't handle the rigors of a

Your ability to manage and lead your "pack" will greatly increase as you improve your skills at training each individual dog. If possible, attend at least one positive training class with each of your dogs, and practice with each dog alone.

farm hike; we do occasional gentle strolls around the fields.

Evenings: Dinner is much the same as breakfast. I feed dogs *before* we eat our dinner because A) the high-ranking members (hubby and me) *don't* have to eat first; B) I don't like to eat with hungry dogs staring at me; and C) once I eat dinner, I'm done for the night.

After dinner we all hang out in the living room, watching TV, working on the laptop, reading the newspaper, chewing on bones. This is the most likely time for pack conflict in our household.

If Bonnie and Lucy didn't get enough exercise they'll roughhouse, offending both Katie and Tucker. Katie, Lucy, Bonnie, and sometimes Dubhy may vie for prime space on the sofa, at my feet, or waiting for Paul to toss them some pretzel bits. Bonnie plays nicely with our two cats, but Lucy likes to chase them, and Katie wants to claim them as hers and guard them from the others.

I manage evening activities in various ways. Guarding behavior on or around the sofa earns timeouts for all players. I'll take the two youngsters outside for extra play in the backyard if they need to burn off energy. Counter-conditioning has taught Lucy to look at me when a cat enters the room rather than give chase, and, with time, Katie has learned to share her kitties and now tolerates Bonnie's gentle cat-play.

11:00 pm: Bedtime. I manage the trip upstairs, again reinforcing Lucy's attention to me, to avoid stairway squabbles, and tuck everyone in until morning, when we get up and do it again. Amen.

Variations: Of course, I sometimes have other things to do besides play dog-referee. When I go to town to run errands, or walk out to the training center to teach, the pack usually stays home. This is raw-bone or chicken-wing time, and because our guarders *will* sometimes get uppity about high-value stuff, Bonnie gets hers in her crate (this is also a management step for her, as she's not yet reliably housetrained), Lucy gets shut in my office with the crated Bonnie, and the other three compatibly share the rest of the house.

There are times when I reminisce about the simple days of just one or two dogs in my life. I may be tired in the evening and don't feel like playing doorman for a pack of dogs. I'm sometimes tempted to yell at Lucy for her shrill barking. I have to remind myself that yelling doesn't work, and that reinforcing desired behaviors is much more effective than losing my temper, and keeps *me* peaceful as well. Then I look at those five, wonderful furry faces, and know that I wouldn't give any of them up for anything. It would be much too quiet with only one dog in our home.🐾

Pat Miller, CPDT, is WDJ's Training Editor. Miller lives in Hagerstown, Maryland, site of her Peaceable Paws training center. For book purchasing or contact information, see "Resources," page 24.

A GOOD EXAMPLE

Hera's Housemate

Living with a dog-reactive dog is hard enough . . . Adding another dog to the family is not for the faint-hearted.

BY NANCY KERNS

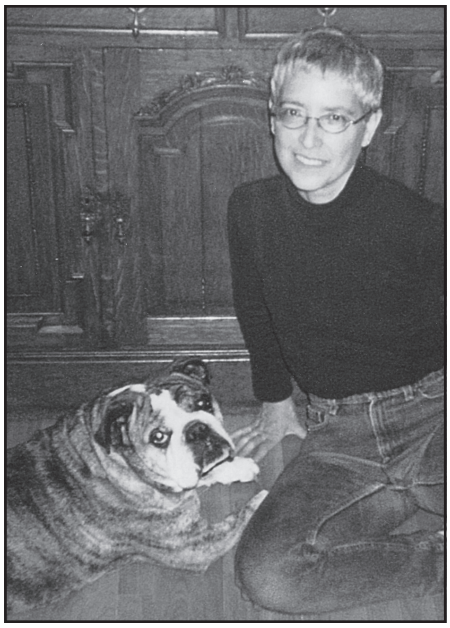
If your dog is reactive to other dogs, but you are thinking about getting another dog anyway, read the following for both a sober warning as well as cautious encouragement. It's a wonderful case of a seriously dog-reactive dog improving enough to be able to live with another dog – but it took *tons* of the kinds of work described by Pat Miller in the previous article to get there, and the dog's training and mangement is ongoing.

In the July 2005 issue of WDJ, we published an article ("Helping Hera Help Herself") about a committed dog owner's long journey to improve the behavior of her reactive Bulldog, Hera. Caryl-Rose Pofcher and her husband, Billy, adopted Hera as a puppy, and had immediately enrolled in a puppy training class, where Hera was quickly labeled as skittish, timid, and stubborn. As she matured, and continued in training classes, Hera developed the frightening habit of lunging at other dogs when she was on-leash. Her owners were strongly encouraged to use strong corrections with a choke chain, and later, a pinch collar, although they seemed to have little effect on the muscular Bulldog.

Hera's off-leash behavior around other dogs grew increasingly reactive as she entered adolescence, as well. She became infamous for spontaneously focusing on some hapless play partner at the dog park, tackling it to the ground, and looking and sounding like she was tearing its throat out – although she had good bite inhibition, and never punctured another dog. Caryl-Rose stopped taking the young Bulldog to the dog park the day she heard someone say "Hera's here!" as she entered the dog park gate, and someone else responded, "Oh well, I was just about ready to leave anyway."

Unlike many owners, Caryl-Rose and Billy were cognizant that they had a "problem dog," and they were absolutely committed to working through the problems. For the first four years of her life, they enrolled in class after class, hired a professional behaviorist for a consultation and private lessons, and dutifully practiced all the exercises that were recommended to them. But Hera's behavior outside their home got worse and worse.

When Hera was four, her owners were fortunate to find an experienced positive trainer, who gave them the first truly effective tools for dealing with Hera's scary behavior around other dogs on leash. Each daily walk was viewed as a training oppor-



Caryl-Rose Pofcher calls Hera a "Wonder-Dog" for her ability to continually learn and improve her behavior.

tunity, and planned and executed thoughtfully. Caryl-Rose and Billy learned to identify and maintain Hera's "launch point," the distance she needed to be from other dogs to keep calm. Armed with a clicker and mountains of high-value treats, they slooowwlly decreased that distance until Hera could pass within a few feet of other dogs on leash without "going off."

They also learned how to approach other dogs at an oblique angle, which seemed to help Hera refrain from feeling challenged by the other dog, and how to cue Hera to look away from – break her gaze and engagement with – another dog.

Another positive trainer took the family even further down the road of improved behavior, and as Hera improved, slowly, Caryl-Rose grew more and more interested in dog behavior and training. She volunteered as an assistant to a positive trainer, got a part-time job at a doggie daycare, read the "classic" books of the positive training genre (including titles by Jean Donaldson, Pat Miller, Dr. Patricia McConnell, and Karen Pryor), joined a number of e-mail discussion lists for both positive training and specifically, positive training for aggressive dogs, and attended the annual conference of the Association of Pet Dog Trainers. And when Hera was seven years old, Caryl-Rose hung out her own shingle as a positive dog trainer.

Recently, we received exciting news from Caryl-Rose. Hera, former dog bully and aggressor, now 10½ years old, recently became a "big sister." Three months ago, Caryl-Rose adopted a French Bulldog puppy, 'Pelli. As she has done with everything else she accomplished with Hera, Caryl-Rose diligently researched what she would need to do to make having a second dog work for everyone in the household, and she prepared her home and, most importantly, Hera for what was to come.

Update from Caryl-Rose

The following is a recent letter we received from Caryl-Rose, updating Hera's story:

"Right now, the girls are lying on the rug behind me as I type. Their 'Bully' butts are touching (one a miniature reflection of the other). Their bodies are curved so their heads are facing in opposite directions – their 'I've got your back' position.

"We've gone from them being on opposite sides of the room under close supervision, or on separate floors of the house, or 'Pelli crated if not supervised or even sometimes when supervised, to now, they sleep on the bed with me at night and cuddle with each other as well as with me.

"The first time 'Pelli touched Hera, Hera gave her an intense snarl, small lunge, and hard stare. I intervened immediately. We've come a long way. But it still takes constant vigilance and management.

"I was away recently from Friday through Sunday. 'Pelli was with me and Hera stayed home with a live-in-dog-sitter. When 'Pelli and I returned, there was great excitement and good spirits and Hera didn't get overexcited and reactive. She stayed in control.

"Two hours later when we all started to go upstairs to bed, Hera, for the first time ever, guarded the stairs and blocked 'Pelli's way. Hera bounded upstairs, glancing warnings back at 'Pelli who remained at the bottom. I intervened by asking Hera for a "sit" at the top of the stairs and giving a steady stream of low level treats for this. As I did this, I called 'Pelli upstairs to us. Hera glanced at her and then back at me and got a high level treat and a mix of high and lower level treats while 'Pelli made her way up the stairs.

"At the top of the stairs, I cued 'Pelli to sit near us. Both got great (but tiny) treats at a fairly high rate. I stepped back, called them to me and repeated. And did this in the bedroom, at the water bowl, and on the bed. I picked up all of 'Pelli's puppy chew toys and put them out of reach.

"Later, when they were drowsily settled for sleep, I brought out only one puppy teething chew toy, reverting to our earlier routine of offering it to Hera, allowing her to refuse it as she always has, giving it to 'Pelli briefly, trading a low level treat for the chew from 'Pelli, offering it again to Hera, she refuses, gets a low level treat. We go back and forth half a dozen times and then it stays with the puppy. Gee, we haven't had to do *that* in a long time! I'm reminded so forcefully how essential it is to always watch the dogs and respond to what they need, when they need it.

"Yes, I have containers of mixed quality treats scattered all over the house. I am rarely more than two steps away from one. And often I have them in my pocket as well. They are mostly dried meat or fish or good quality kibble. I factor this into their daily food ration and whether it is for training (sit/come/down) or behavior (counter-conditioning, desensitizing), they earn this part of their daily ration.

"I hope this gives others realistic hope.

Hera and her new "little sister" 'Pelli (short for for the mythological figure Kokopelli) enjoy each other's company, and even play appropriately.

It wasn't immediate and adolescence will bring its own challenges. I *was* prepared for the possibility that I might end up with two dogs, each living on different floors of my house. I had lots of plans and physical set-ups in place before bringing 'Pelli home.

"Still, Hera has exceeded what I thought she could achieve. She's *relaxed* with the puppy and sometimes they play *appropriately.* Heck, for a normal 10½ year old English Bulldog *playing* at all is an achievement in itself!!

"I love these girls! And what wonderful teachers they are, especially Hera-the-Wonder-Dog." 🐾

Pro Antioxidants

Whole food sources of these powerful chemicals can keep dogs vital.

BY RANDY KIDD, DVM, PHD

Antioxidants are all the rage nowadays, seemingly good for anything that ails you or your dog. Antioxidants, natural and otherwise, are also widely used as preservatives in processed foods for pets and their people.

Antioxidants are, however, another of those things that the more the scientists learn about them, the more they learn they don't know. This paradigm seems to repeat itself in the realm of holistic health!

Antioxidants offer a host of mechanisms that protect the body from a variety of diseases, and these benefits have been supported by thousands of scientific articles.

On the other hand, the mechanisms of action of the antioxidants vary somewhat among species, and not all diseases respond favorably to antioxidant administration all the time; some dosage levels of antioxidants may actually increase the incidence and severity of certain diseases. Also, individual animals within species may have different needs for antioxidants (both due to a differing ability to absorb antioxidants from the gastrointestinal tract and from individual metabolic needs. And the methods used to grow and/or produce the substance that contains the antioxidant has a direct bearing on how much of the antioxidant's bioactivity is available to the animal.

Furthermore, the way antioxidants are supplied to the body greatly affects the amount of good they can do. For example, commercially prepared supplements are much less effective than whole foods that contain the antioxidants.

And finally, there is considerable evidence to support the concept that mixing antioxidants often creates a synergistic effect that is much greater than would be the combined effects of the individual antioxidants.

Determining the best way to deliver the benefits of these marvelous substances to your dog, then, may require some study.

What you can do . . .

- Don't look for or put your faith in a "silver bullet" antioxidant; it doesn't exist. Rather, supplement your dog's diet with a variety of fresh foods that contain antioxidants, such as blueberries, herbs (basil is great), tomatoes, egg yolks, green tea, or spinach.
- Feed these foods especially in times of increased physical stress for your dog, for example, when he's fighting cancer, or after extreme physical exertion.
- Don't overfeed any one antioxidant. Balance and variety are always advised.

Dogs who eat a variety of fresh fruits, herbs, and berries reap all the benefits of antioxidants, which support many characteristics of good health: clear eyes, sharp vision, healthy skin, and improved exercise tolerance, among others.

Antioxidant activity

The term "antioxidant" refers to the activity demonstrated by numerous vitamins, minerals, and other phytochemicals (bioactive chemicals found in plants) to serve as protection against the damaging effects of highly reactive molecules known as free radicals.

During healthy metabolism, carbohydrates and sugars are "burned" in the presence of oxygen to provide the animal with energy. Most of the raw materials involved in metabolism are converted to energy. In all energy reactions in the body, however, there are some molecular fragments that aren't totally used up. Some of these chemically active fragments have an electrical charge due to an excess or deficient number of electrons. These charged molecules are called free radicals.

Because they have one or more unpaired electrons, free radicals are highly unstable. They scavenge the animal's body

to grab or donate electrons, thereby damaging cells, proteins, and DNA itself. Cell membranes of virtually all cells and cellular DNA are particularly susceptible to oxidative damage. Free radical reactions and oxidative damage have been linked to many of the diseases of aging such as arthritis and cancer.

Animal bodies aren't the only victim of oxidation; this same oxidative process causes oils to become rancid, peeled fruits to brown, and iron to rust.

Normal aerobic respiration and food metabolism creates a constant source of free radicals – which the body can normally deal with – but *excessive* free radicals can be produced from a whole host of sources, including extreme exercise, inflammatory diseases such as arthritis, and abnormal cell growth associated with most types of cancer. In addition, free radicals come from many outside factors including pollution, sunlight, tobacco smoke, and X-rays.

The free radical theory of aging and disease promotion holds that through a gradual accumulation of microscopic damage to an animal's cell membranes, DNA, tissue structures, and enzymatic systems, the animal begins to lose organ-system function, and then becomes predisposed to disease.

The healthy dog can process and eliminate free radicals with his body's own antioxidant enzymes (including glutathione peroxidase, catalase, and superoxide dismutase), but *excessive* free radicals can produce disease. In the case of the athletic or working dog, oxidative damage may be elevated due to increased production of free radicals. In addition, animals who are already stressed, or aging animals with weak organ systems and waning immune functions may need some help to eliminate free radicals.

External sources of antioxidants are thought to be a useful antidote for an excess of free radicals. Many holistic vets feel that even the healthy animal can benefit from a balanced, daily dose of antioxidants. The majority of popular antioxidants appear to be extremely safe, at least in humans, where most of the safety studies have been conducted. Holistic vets have been using antioxidants for several decades now, with few or no apparent adverse side effects.

Claims for health and healing

Following are just some of the claims for the benefits of antioxidants:

Antioxidant supplements (or, better yet, fresh antioxidant-rich food) have particular benefits for older dogs – and people!

■ **Arthritis.** Antioxidants, but particularly vitamin C, are vital to any arthritic therapeutic program. Vitamin C is involved in the building and healing of joint and bone structures and it plays an active role in the immune response.

■ **Anti-aging.** As an animal's body ages, it undergoes a gradual accumulation of tiny bits of damage to cell and tissue structures and also to enzymatic systems important in the production of antioxidants. With age, then, the animal's cells and organ systems no longer have the vital capabilities they once did. The result is an inability to deal with free radicals efficiently; antioxidants improve the efficiency of all the animal's aging systems, resulting in a healthier old animal.

■ **Cancer prevention.** Antioxidants protect the body from the damaging effects of free radicals, slow tumor growth, and/or help cellular DNA retain its normal configuration.

■ **Heart disease.** Antioxidants protect the heart and circulatory system from oxidative stress from free radicals.

■ **Vision and eyesight.** The antioxidants leutine and zeanxanthin are particularly helpful for supporting good eye health.

■ **Immune function.** Antioxidants are known to enhance healthy lymphocyte production as well as offering protective factors for other components of the immune system.

■ **Exercise tolerance.** Studies indicate that there may be a protective effect from long-term exercise. When exercising produces an excess of free radicals over time, the body learns how to produce an excess of antioxidants, thus developing the ability to respond better to free radical excess in the future.

How to dose antioxidants

There is considerable evidence to indicate that antioxidants from a natural, dietary food source are much more effective than those taken in a supplement or pill/capsule format.

It's a bit more complicated to try to sort out the controversy involving natural vs. synthetic forms of the vitamins. Often the synthetic form of a vitamin is an isomeric chemical – structured in a mirror image of the natural form of the chemical, but the same in every other way. Thus the natural form of vitamin E is labeled "D" and the synthetic form is labeled "D,L." It is said that the synthetic form is only half as active as the natural form. Some nutrition experts think this isomerism is significant, and that synthetic forms should be avoided; others think it is meaningless and the nutrients are equivalent.

Most antioxidants found in foods are made more readily available after the foods have been pureed and/or naturally heated – the antioxidant lycopene, found in tomatoes and other food sources, is an example here.

The exception to this rule is vitamin C which is destroyed by heating. Drying foods usually diminishes the amount of vitamins and antioxidants available to the animal – the amount of decrease in activity depends on the food source and the method of drying. It is also thought that microwaving destroys many nutrients, including most, if not all, the antioxidants.

Many of the antioxidants work synergistically; the sum of the activities of several different antioxidants is often many times higher than would be obtained by adding the sum of their accumulated effects together. Perhaps the most important thing to appreciate about antioxidants (and actually any other nutrient) is that they often work in a balanced fashion.

Some antioxidants, if given in excess, may disrupt the balancing act of other antioxidants, or one antioxidant may actually interfere with a vital function of another antioxidant. Or, one antioxidant (or other co-factors) may be necessary for the proper functioning of an unrelated antioxidant.

For example, an excess of vitamin C

may cause a general "unbalancing" of the oxidative system resulting in oxidative damage. It is well-known that vitamin E and selenium are virtual "co-factors" and their dosage needs to be balanced to make either one effective. And zinc, considered an antioxidant by itself, is a vital component of several other antioxidants and enzymatic systems.

This all boils down to a few general rules:

■ Whenever possible, use natural food sources known to be high in antioxidants.

■ If it helps make the food more palatable for your dog's taste buds, go ahead and chop up vegetables, fruits, and herbs, heat them naturally, and hide them in some of your dog's favorite foods.

■ Use several sources to provide a mix of antioxidants; herbs, vegetables, fruits, and berries are all excellent sources, and many of these will provide a healthy stew of a variety of antioxidants.

■ Do not overdo any one antioxidant. A healthy balance is the key, again best provided by giving a mixture of many antioxidant sources in the diet.

Popular antioxidants

There are four key antioxidants – vitamins A, C, and E, and selenium – and many others have been recently popularized.

■ **Vitamin A** is a group of compounds that play an important role in vision, bone growth, reproduction, cell division, and cell differentiation. Vitamin A helps regulate the immune system, and it promotes healthy mucosal surface linings of the eyes, and the respiratory, urinary, and intestinal tracts.

Vitamin A found in foods that come from animals, known as preformed vitamin A, is absorbed in the form of retinol which is one of the most usable and active forms of vitamin A. Rich sources of this type of vitamin A include liver and whole milk.

The vitamin A found in colorful fruits, vegetables, and herbs is called provitamin A carotenoid. Common provitamin A carotenoids found in plant-based foods include beta-carotene, alpha-carotene, and beta-cryptoxanthin. Among these, beta-carotene is the one most efficiently converted into retinol, the most active form of vitamin A.

Of the over 600 carotenoids found in nature, about 40 are present in a typical (human) diet; most of these have antioxidant activity, but only 14 of them (or their metabolites) have been identified in human blood and tissues. Of all these, B-carotene is the most studied, since it is the most common carotenoid found in fruits and vegetables.

Berries contain potent antioxidants, and most dogs *love* them. It makes sense; wild dogs eat ripe (and not so ripe!) berries whenever they are available. The succulent berries available today are a convenient source of bioflavonoids and a sweet treat.

Lycopene and lutein are two carotenoids that do not have vitamin A activity, but have other health-promoting properties. More information on lycopene and lutein can be found below.

Carotenoids can promote health when taken at dietary levels, but they may actually have an adverse effect when taken in high doses by certain individuals. (Human subjects who smoke or who have been exposed to asbestos may have negative results from high levels of antioxidants).

The exact mechanism that explains *all* the activities of the carotenoids is not known, but we do know that most have a potent antioxidant activity. Other mechanisms may include: a provitamin A activity (promoting the production and/or activity of vitamin A); activation of the gene responsible for cell-to-cell communication; and modulation of certain enzymes (especially lipoxygenase) that help remove free oxygen radicals.

How much carotenoid is available to the animal depends on: the source of the food and other dietary factors, food particle size, and location of carotenoid within the plant's cells. Mixing carotenoids with other antioxidants in the food (e.g., vitamin E) can increase their activity.

There is a large body of scientific evidence that consistently reveals beneficial effects of taking carotenoids to help prevent cancers of the upper gastrointestinal tract and respiratory system.

■ The term **vitamin C** applies to water-soluble substances that possess activity that protects against scurvy, a disease that results in bleeding gums, poor wound healing, and other symptoms. The terms vitamin C, ascorbic acid, and ascorbate are used interchangeably by most nutritionists. Calcium ascorbate (used in the patented product "Ester-C") and sodium ascorbate are not acidic (and so do not upset the tummies of sensitive dogs) but, being salts, have a salty flavor.

Most animals (but not humans) are able to manufacture their own vitamin C. However, holistic practitioners have long noted that some dogs – especially those undergoing severe or chronic disease states or those exposed to high levels of stress – seem to benefit from supplemental or therapeutic levels of vitamin C.

Many of the symptoms of scurvy are due to vitamin C's role in the formation of healthy collagen, the fibrous substance in skin, tendon, bone, cartilage, and other connective tissues. Vitamin C is also involved in modulating iron absorption, transport and storage, and it is involved in the biosynthesis of corticosteroids and the conversion of cholesterol to bile acids.

Vitamin C is a potent antioxidant that is found naturally in green and red peppers, citrus fruits and juices (and other fruits such as strawberries), and many vegetables and herbs.

Vitamin C is a primary factor in the healing of all wounds, helping tissues repair and regenerate, and it is a potent anti-tumor factor, offering both protection and supplemental help for treatment.

Vitamin C also has been shown to have antiviral activity as well as acting to help modulate the body's allergic response and

immune system. It apparently has specific protective activity for the respiratory system and the eyes, and it is antihypertensive and protects against atherosclerosis. Vitamin C also helps with the detoxification of heavy metals and other toxins.

Vitamin C is absorbed in inverse relation to the amount in the diet. That is (in humans) at a dietary intake of 30 milligrams daily, the vitamin is almost completely absorbed; at 30 to 180 mgs dietary level, about 70-90 percent is absorbed; about 50 percent of a single dose of 1 to 1.5 grams is absorbed; while only 16 percent of a single dose of 12 grams (12,000 mgs) is absorbed.

Vitamin C (as D-ascorbic acid) may be added to food as an antioxidant preservative. Cooking destroys vitamin C activity.

I was taught in vet school that dogs do not need supplemental vitamin C because they are able to manufacture it on their own. This may be true, but holistic vets have long recommended that extra vitamin C be given routinely, and most of us feel it is especially beneficial for the animal with a chronic disease or one undergoing stress.

Additionally, there is growing evidence that vitamin C may be beneficial for preventing and treating hip dysplasia in dogs. One trial of a small number of dogs gave vitamin C to dysplasia-prone dogs – to the dams throughout pregnancy and until weaning, and to the pups from weaning until they were two years old – and none of the dogs developed dysplasia. In addition, several trials have been conducted that show improvement of dysplastic lesions and an apparent lessening of pain when vitamin C is given.

In addition many vets – now including conventional and holistic vets – have found that high levels of vitamin C may help an animal recover from acute diseases such as distemper and parvovirus, and chronic diseases such as cancers may also be helped with additional vitamin C.

When given orally, calcium ascorbate and sodium ascorbate seem to be the preferred forms of vitamin C for dogs, as it is more quickly absorbed, and it doesn't cause acidity of the gastrointestinal tract. Suggested doses vary; check with your holistic vet, keeping in mind that many conventional vets still adhere to the ancient concept that vitamins are not necessary since the commercial foods (that they sell) provide all the nutrients that your dog will ever need.

Many over-the-counter supplements combine vitamin C with **bioflavonoids,** or simply **flavonoids** (sometimes referred to as vitamin P). Bioflavonoids are typically derived from citrus fruits, although many other fruits and herbs are also high in flavonoid content. Studies (in vitro) also show that the flavonoids work synergistically with vitamin C to create an enhanced antioxidant activity. Flavonoids include quercitin, hesperidin, and rutin, along with several others.

■ **Vitamin E** is a fat-soluble vitamin that exists in eight different forms; alpha-tocopherol is the name of the most active form of vitamin E in humans and likely in dogs. The natural form is labeled "D", while the synthetic form is labeled "D,L."

Vitamin E activity and metabolism are directly tied to adequate levels of selenium and zinc, and animals unable to absorb fats (animals with inflammatory bowel disease or persistent diarrhea, for example) may become deficient in vitamin E.

Vitamin E is a potent antioxidant and adequate levels of vitamin E are protective against cancer, cataracts, and heart disease. Healthy levels of vitamin E are also required for reproductive health. Food sources rich in vitamin E include wheat germ oil; almonds; sunflower seed kernels; sunflower, safflower, and corn oils; and many vegetables.

■ **Selenium** is an essential mineral that is required in trace amounts. Selenium functions as an antioxidant, and it is an important component for helping to create healthy heart muscles. The functions of the thyroid and immune system depend on adequate amounts of selenium, and studies indicate that proper levels of selenium help protect against arthritis and several types of cancer.

Plant-source foods are the major dietary sources of selenium, although the amount of selenium in plants depends on the selenium content of the soil where the plants are grown. Selenium is also found in some meats, seafoods, and nuts.

Excessively high levels of selenium in the body can result in a condition called selenosis, a condition that causes intestinal upset, hair loss, garlic breath, fatigue, irritability, and bone abnormalities. For this reason alone, selenium (and other mineral sources of antioxidants) should not be added to the diet without the guidance of your veterinarian. Also, the activity of selenium is closely coupled with that of iodine, vitamin E, and the amino acid methionine, and it is important to have all these substances balanced for healthy, whole-body functioning.

■ **Zinc** is an important mineral found in every cell of the body, and it is a vital constituent of more than two dozen enzymes involved in digestion and metabolism. By itself, zinc is an active antioxidant, and, in addition, it is an essential element in antioxidant enzymes. Zinc also stabilizes cell membranes, provides cofactors for many enzymes involved in visual function, and is necessary for a healthy functioning immune system.

■ In my opinion, the very best and safest sources of antioxidants (for dogs *and* people) are **culinary herbs, spices, fruits, berries,** and **veggies.**

Almost any of the herbs used in herbal remedies have at least some antioxidant activity, and some herbs come loaded with antioxidant capability. For example, oregano, basil, sage, peppermint, thyme, lemon balm, clove, allspice, and cinnamon all contain very high concentrations of antioxidants; many herbs actually have higher antioxidant activity than equivalent amounts of vitamin C. In addition, herbs are typically high in vitamins C and A, and most have additional antioxidant activity from their selenium content.

Fruits, berries, and veggies are likewise rich in antioxidants, vitamins, and minerals. The key is to find the fruits, berries, veggies, and herbs that your dog likes. Be creative: mix the nutrient-rich goodies with your dog's favorite foods, cook or warm them for enhanced palatability, and try several different foods until you discover the ones that your dog enjoys most.

■ **Lycopene** is a carotenoid that makes tomatoes red, and it is actually the most abundant carotenoid found in the U.S. human diet – most coming from tomato sauce and juice, pizza, and ketchup. Lycopene is also found in red or pink-colored fruits and vegetables such as watermelon and pink grapefruit.

Studies have shown that lycopene is a potent antioxidant, and it has the ability to protect against cardiovascular disease and several types of cancer. Lycopene also helps protect the skin from the damaging effects of the sun's rays.

My own dog, Pokey, illustrates that there's more than one way to "skin the dog"

and get him to eat his antioxidants. Pokey will devour with gusto almost anything that has been on a human plate . . . anything, that is, except fresh tomatoes. My wife and I have tried to hide a tomato slice under or in his favorite foods, to no avail. The next day we find that the tomato slice has been nudged out of Pokey's food bowl, and he looks at us with total disdain and disgust for even trying to trick him into eating it.

This is all a bit unusual, because Pokey loves pizza with all its tomato-rich topping, and whenever we bring one home he sits there staring at us in anticipation, with drool running out of his mouth like a faucet. However, I'd rather not feed him too much of the fattening pizza (it's okay for Sue and me, mind you), so I looked for other ways to entice him to eat his tomatoes.

Turns out it was not so difficult. I simply diced up a piece of tomato, added a pinch of oregano (also rich in antioxidants), heated the concoction a bit, and tried it out in Pokey's dish. Eureka! Pokey loves my non-fat pizza, antioxidant-rich, tomato gruel.

■ **Leutine and zeaxanthin** are yellow-pigmented carotenoids found in high concentrations in egg yolks, yellow fruits, and vegetables as well as in dark green, leafy vegetables and herbs. In particular, spinach, kale, and collard greens contain high levels of these two carotenoids.

In the body leutine and zeanxanthin are found in highest concentration in the macular region of the eyes (the back of the eye were the retina is located) where they are believed to help filter out damaging blue light and prevent free radical damage to the eye.

These two antioxidants are especially good for supporting normal eye health; they may help prevent glaucoma and cataracts.

■ Other popular antioxidants include superoxide dismutase (SOD), coenzyme Q-10, pycnogenol (pine bark from the tree, *Pinus maritime*), green tea, mushrooms, raspberries, blueberries, red wine (okay, maybe not for dogs!), and many others.

If you follow the media, you'll note that the popularity of specific antioxidants comes and goes, seemingly with the tides. Look more closely, though, and what usually happens is that some scientist, closeted in an obscure hidey-hole/laboratory, does a trial on some specific nutrient, and what do you know, s/he "discovers" that that fruit or berry or herb has loads of antioxidant activity. So, following the need to publish or perish, the scientist gets the article published, the media latches onto that particular fruit or berry as the savior of mankind, and commercial production (and a vast advertising campaign) is set into motion.

For those of us who don't have our heads in the sand, however, this should be much easier. Simply feed your dog a varied diet that includes more fruits, berries, and veggies, and add some spice to his life by adding a pinch of any of a number of culinary herbs every so often.

The KISS (keep it simple, stupid!) way to add antioxidants to your dog's diet: Start with vitamins A, C, and E, and add small amounts of the most natural form of the vitamin to the diet of all dogs. For a 20 to 40 pound dog, dosages might be in the range of 250 mg daily vitamin C; 100-200 mg vitamin E, and 2,000 I.U. vitamin A a couple times a week.

I still recommend additional vitamins on the theory that *all* critters in this day and age are exposed to more environmental pollution than our ancestors, and because our dog's food sources are usually not as natural as they should be.

If the dog is undergoing excess stress or a disease of any kind, I might increase the antioxidant and/or vitamin dosage for a short period. In all cases, I want to try to balance the nutrient input – making sure there's a balance with selenium and zinc, for example, and this often requires a daily multi-vitamin and mineral product.

And finally, I've learned to doublecheck all medications and supplements that the dog is currently being given, to be sure he isn't receiving a toxic overdose of any one supplement.

So, vitamins may be important, but, to my way of thinking, the real key to providing antioxidants and vitamins is to enhance the dog's diet with a variety of herbs, fruits, berries, and veggies. Mix them up, vary the diet, add some spice to your dog's life, a little pinch at a time – and help him stay healthy in the process. 🐾

Dr. Randy Kidd, a past president of the American Holistic Veterinary Medical Association, lives in Kansas with his wife, Sue, and his dog, Pokey. He's also author of Dr. Kidd's Guide to Herbal Dog Care *and* Dr. Kidd's Guide to Herbal Cat Care *(see "Recources," page 24).*

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Researchers believe the rabies vaccine causes the most and worst adverse reactions in animals. The Rabies Challenge Fund has been founded to improve the safety of rabies vaccines and to determine, by challenge, if they confer immunity for five, six, or seven years.

Donations to the Rabies Challenge Fund can be sent care of Hemopet, 11330 Markon Drive, Garden Grove, CA 92841. For more detailed information, see dogsadversereactions.com/rabieschallenge.html

BOOKS

WDJ Training Editor Pat Miller is author of two books: *The Power of Positive Dog Training* and *Positive Perspectives: Love Your Dog, Train Your Dog.* Both books are available from DogWise, (800) 776-2665 or dogwise.com

Dr. Kidd's Guide to Herbal Dog Care and *Dr. Kidd's Guide to Herbal Cat Care* are published by Storey Books, (800) 441-5700 or storeybooks.com

The Holistic Dog Book: Canine Care for the 21st Century, by Denise Flaim, is available from DogWise, (800) 776-2665 or dogwise.com.

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The Association of Pet Dog Trainers (APDT) has references to member trainers in your area. Call (800) 738-3647 or see apdt.com.

Please note: APDT is dedicated to building better trainers through education, promoting dog-friendly methods, and encouraging their use. APDT's membership is composed of trainers from across the spectrum of training philosophies. Membership does not necessarily ensure all members employ similar training methods, nor does APDT set standards of skill or competence. APDT encourages (but does not require) its members to use training methods that use reinforcement and rewards, not punishment, to achieve desired behavior.

HOLISTIC VETERINARIANS

American Holistic Veterinary Medical Association (AHVMA), 2214 Old Emmorton Road, Bel Air, MD 21015. (410) 569-0795. Send a self-addressed, stamped envelope for a list of holistic veterinarians in your area, or search ahvma.org

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