AUGUST 2019 | VOLUME 22 | NO. 8 $5.95

Your complete guide to natural dog care and training

Whole Dog Journal™

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On page 3. ***So sweet! Or is it?*** – *When dogs are uncomfortable with kids, they usually communicate this in any number of ways – but can you spot them? And take instant action?*

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Your complete guide to natural dog care and training

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WHOLE DOG JOURNAL DOES NOT ACCEPT COMMERCIAL ADVERTISING

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Whole Dog Journal (ISSN #1097-5322) is published monthly by Belvoir Media Group, LLC, 535 Connecticut Avenue, Norwalk, CT 06854. Robert Englander, Chairman and CEO; Timothy H. Cole, Executive Vice President, Editorial Director; Philip L. Penny, Chief Operating Officer; Greg King, Executive Vice President, Marketing Director; Ron Goldberg, Chief Financial Officer; Tom Canfield, Vice President, Circulation. Periodicals postage paid at Norwalk, CT and at additional mailing offices. Printed in U.S.A. Revenue Canada GST Account #128044658. Canada Publishing Agreement Number #40016479.

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Subscriptions: $39 annually (12 issues).
Bulk rate subscriptions for organizations and educational institutions available upon request.

Postmaster: Please send address changes to
Whole Dog Journal,
PO Box 8535, Big Sandy, TX 75755-8535

In Canada, send address changes to
Whole Dog Journal,
PO Box 39, Norwich, ON, N0J 1PO

BY NANCY KERNS

EDITOR'S NOTE

Confidence Lost

After a recent medical issue, and our article about Fear Free veterinary visits, I am making remedial trips to the vet.

When Woody (my three-year-old pit bull-mix) was a tiny puppy, just another one in a litter of nine that I was fostering for my local shelter, he was always happy to receive medical attention (vaccines, deworming, and even neuter surgery!), as it came layered with happy attention from the shelter veterinary staff. He loves people, so it was all good.

Woody's friendly, happy attitude about having a stranger greet and handle him in an intimate way survived all those visits, as well as many more visits to a regular veterinary hospital. Let's see... there were at least one or two vaccine visits; one "dietary indiscretion" incident (he ate all the food I had set out for the 11 Great Dane foster puppies, after I had already fed him his dinner); the time he swallowed a friend's dog's mini-tennis ball; the staples he needed on his rear legs (slashed his wrists on something sharp in the grass, sliding for a ball); the time he tore a toenail (mostly) off; a foxtail visit or two; a weird bump on his face that required minor surgery to remove it... He's been to the vet a *lot!* And until last year, he was always happy to trot into the hospital, hop onto the scale, be examined by anyone, and even go "into the back" for his staples or bandages or injection of "Let's make you vomit!" medication.

And then he got sick with a gastrointestinal bug that left him seriously dehydrated, and I left him to be hospitalized overnight. I am certain they didn't mistreat him in any way! But ever since I left him there that night, when I take him back to the vet now – most recently for a canine influenza vaccine – he is reluctant to enter the hospital, and he shivers and shakes in the waiting and exam rooms.

I've started trying to remediate this anxious response, stopping by the practice to just weigh him and feeding him tons of high-value treats in the minute or two that we are there. And, because scared and/or anxious dogs have the potential to bite, and I wouldn't blame any veterinarian or veterinary staff member if they felt safer working on my big, muscular dog if he were wearing a muzzle, I also am going to start acclimating Woody to wearing one. I want it to be a familiar, reinforcing experience in case we ever need it, rather than an incredibly scary thing suddenly strapped to his face in a medical emergency.

But after working on the article in this issue about Fear Free veterinary practices (see page 6), I'm *also* going to encourage my vets to seek out Fear Free certification – *and* keep my eyes peeled for a Fear Free certified veterinary practice to switch to if need be. Because I think I am going to need a whole *team* of people to get Woody past his newfound apprehension about receiving medical care. And that is just no way to go through life – particularly if you are as accident-prone as my goofy Woody.

NK

BY CATHERINE ASHE, DVM

HEALTH

Know Your CBDs

This hemp-sourced supplement is being touted as a miracle cure for almost anything that ails canines – and denounced as snake oil, too. What's true?

It's everywhere: CBD, the "miracle" drug. Each week, I probably have several clients inform me – their veterinarian – that they are giving this supplement to their dogs. Their intention and hope is that the supplement will cure their dogs of a vast array of disorders, including allergies, seizures, immune-mediated syndromes, and cancer. Despite the fact that the treatment was their idea, and that they found the product on their own – in a health food store, online, or made in a kitchen by someone they know – they often ask me, "What is it, exactly? Do you think it works?"

If you decide to administer products that contain CBD to your dog, you need to be aware that they are untested and unapproved, and that your veterinarian may not have any experience or reliable information about any adverse reactions your dog experiences.

Let's talk about what *is* known about CBD, what is yet unproven, and why I can't make any recommendations to my clients, pro *or* con, about CBD products.

POPULARITY BOOM

The rapidly growing population of CBD fans in the medical community think it may relieve pain, nausea, anxiety, depression, and seizure activity. You may hear even more claims for its purported benefits, but these are the ones that, so far, have the most scientific evidence to support them.

Those claims sound amazing! So why isn't the veterinary community jumping on the use of CBD for pets? Well, it's complicated.

For the most part, the claims of CBD's health benefits for pets are being made on the strength of pharmaceutical company research that has used synthetic analogues of cannabinoids; widespread anecdotal evidence; and very small, very recent studies of CBD on dogs.

The ability to study CBD in research labs was highly compromised until very recently. For many years, pharmaceutical companies that wanted to investigate cannabinoids have had to use synthetic versions. That's because, in the United States, *Cannabis* was officially outlawed for any use (medical included) with the passage of the Controlled Substances Act of 1970.

However, in 2018, plants classified as "hemp" – *Cannabis* species with less than 0.3% dry weight of the psychoactive cannabinoid substance, Delta-9 tetrahydrocannabinol (THC) – were descheduled as controlled substances by the 2018 Farm Bill. This removed significant research barriers for both academic and commercial research into CBD, as well as legal barriers for growing and harvesting these plants, then refining and selling products that contain CBD to the public. In response, the market has been *flooded* with CBD-containing products for humans and – of particular interest to readers of this journal – dogs!

SUPPLEMENTAL PROBLEMS

While this *might* be a good thing, it does introduce new problems. First, these products are not subject to *any* regulatory oversight.

CBD "supplements" for dogs come in many forms; the most common are liquids that are meant to be administered from a syringe or dropper, and liquid that has been mixed into edible treats or chews.

The History of CBD Research and Discoveries

It's hard to believe that a complex chemical signaling system that helps our bodies maintain homeostasis by sending protein messages between cells was only recently discovered – in the late 1980s, in fact – by researchers who were trying to learn why and how marijuana makes humans high. Weird, but true: The first piece of what has been named the endocannabinoid system (ECS) was discovered by researchers who were trying to figure out what part of the brain is affected by marijuana.

Actually, the word "marijuana" is a pejorative name, popularized in the 1920s, for dried parts of *Cannabis* plants. Marijuana became the commonly accepted name for the dried flowers and leaves of *Cannabis* plants, just as tobacco has become the commonly accepted name of the dried leaves of *Nicotiana* plants.

In 1964, scientists first isolated the chemical compound in *Cannabis* that causes psychoactive effects in humans and other mammals; it was named Delta-9 tetrahydrocannabinol (THC). This chemical, in both a version that is derived from *Cannabis* plants and synthetic, chemically reconstructed versions, have been widely studied because of their behavioral effects on humans.

In the late 1980s, still trying to figure out what is responsible for the psychoactive effect that THC has on mammals, researchers found, in the brain of rats, unequivocal evidence for the presence of a specific receptor that "takes up" (responds to) THC. Receptors are chemical structures that receive and transduce signals, and cause some form of cellular/tissue response. The receptor that responded to THC was named CB_1 (cannabinoid 1).

The CB1 receptor was subsequently identified in other mammalian brains, including those of humans.

Once the receptor was identified in mammal brains, researchers began to realize that mammal brains contained a *lot* of these receptors. In fact, once they knew what to look for, they found CB_1 to be present in a similar density to receptors for other critical neurotransmitters, including glutamate, GABA, and dopamine. Why on earth do mammals have such a wealth of receptors for chemicals found in *Cannabis?*

A second cannabinoid receptor, CB_2, was discovered in 1993, in a surprising place: a rat spleen. In a very short time, researchers looking specifically for these receptors in humans found a wealth of them – and in a variety of places in the body! CB_1 receptors are most plentiful in the brain and central nervous system; CB_2 receptors are found widely in the immune system and peripheral organs. Both receptors are also found in the gut.

Of course, the presence of chemical receptors in the body suggests there are endogenous chemicals (chemicals produced *in* the body – "endo" means inside) that are interacting with those receptors. Molecules that bind to receptors are called ligands, and soon enough, scientists discovered the endogenous ligands for those receptors.

Research into the *function* of this signaling/responding system – what has been named the endocannabinoid system (ECS) – is current and ongoing. In recent years, scientists have learned that the ECS plays a role in regulating a number and variety of physiological functions, including appetite, temperature, motor control, fertility, mood, and pain, to name a few.

When activated by a loss of homeostasis, the body produces and releases endocannabinoid ligands (cannabinoids made inside the dog's body), which bring the affected system back into normal balance. Once they are finished with their job, there are also enzymes that help break down the endocannabinoids.

According to "Review of the neurological benefits of phytocannabinoids," published in *Surgical Neurology International* in 2018, "Manipulations of endocannabinoid degradative enzymes, CB_1 and CB_2 receptors, and their endogenous ligands have shown promise in modulating numerous processes associated with neurodegenerative diseases, cancer, epilepsy, and traumatic brain injury."

WE'RE GETTING TO CBD . . .

The ingestion of derivatives of *Cannabis* plants affect humans and other mammals (like our dogs) because they contain ligands that just happen to interact with CB_1 and CB_2 receptors in our bodies. These chemicals may be referred to as exogenous cannabinoids ("exo" means outside; exogenous means they were made outside the body) or phytocannabinoids ("phyto" means "of a plant").

Here is a fact that might surprise you: There are more than 100 different cannabinoids found in *Cannabis* plants. Again, because of its significant psychoactive effects on mammals, THC is the best-known. But the *first* cannabinoid compound that was identified in *Cannabis* was dubbed cannabidiol (CBD). Though it is quickly rising in the *Cannabis*-sourced cannabinoid popularity contest, when it was first identified (in 1940!), it was more or less dismissed by the chemists who mapped its chemical structure as having "no marihuana activity."

They were correct: CBD does *not* have psychoactive effects. But its growing population of fans in the medical community think it may have benefits in relieving pain, nausea, anxiety, depression, and seizure activity, among many other potential benefits in animals that have cannabinoid receptors in their bodies (humans and dogs among them).

Why? Because they have been classified as "supplements," not "drugs."

Any drug that makes therapeutic claims (prevents, cures, or manages disease) must be approved by the U.S. Food and Drug Administration (FDA). This ensures that the drug is safe and effective.

However, this process does not apply to products that are considered to be *supplements,* which is how most CBD products are currently treated. By virtue of the Dietary Supplement Health and Education Act of 1994 (DSHEA), supplements may not be labeled or marketed for the prevention, diagnosis, treatment, mitigation, or cure of disease.

Instead, supplement manufacturers can make only "structure or function" claims: They may only "describe the role of a nutrient or dietary ingredient intended to affect the structure or function in humans" (or pets) or "characterize the documented mechanism by which a nutrient or dietary ingredient acts to maintain such structure or function."

Does that sound like gibberish? A 2018 article entitled "How to Market CBD Products in a Sea of Uncertainty," published in *Cannabis Business Executive* (it's an actual thing) clarified the difference and offered these tips to companies that aspire to produce and sell CBD-containing companies:

What are the Dos for a CBD vendor?

- Do utilize cosmetic claims ("beautifies," "improves").
- Do refer to emotions ("decreases irritability").
- Do use words like "wellness," "supports," "maintains."
- Do refer to general body parts including systems.
- Do use qualifiers like "mild" and "occasional" to differentiate a temporary condition from the symptoms of the disease.
- Do use FDA disclaimer but only with structure/function claims: "These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent disease."

What are the Don'ts for a CBD vendor?

- Don't use words like "treat," "cures," "repairs," "acute," "disease," "chronic."
- Don't mention diseases like cancer, fibromyalgia, osteoarthritis.
- Don't refer to symptoms like fever, coughing, sneezing.
- Don't use disease claims.
- Don't recommend any product to augment another drug.
- Don't recommend a product as a substitution for another drug.

Further, since there is no legally required pre-sale testing or oversight of the production or labeling of supplements, it's quite possible that there is no resemblance between what a label says and what is actually in the product. No tests are required to determine the purity or safety of any of these CBD supplements – or to confirm the reliability of any testing that a manufacturer may claim to have conducted.

It's the wild, wild west out there! A study published in the *Journal of the American Medical Association* in 2015 found that CBD/hemp products were significantly mislabeled and often contained much more *or* less CBD than reported. Other concerns include purity and adulteration with substances possibly toxic to dogs, such as xylitol.

CURRENT STUDIES

Those of us who like our supplements to be served along with a healthy dose of scientific data supporting their use are holding off on trying out these products for a bit longer. Other than a handful of small-scale studies looking at the use of CBD oil in dogs, there is no data on veterinary usage. Most available information is individual case studies and/or anecdotal.

So far, there have been only three studies that have evaluated the use of CBD in dogs.

The earliest was published in January 2018 in *Frontiers in Veterinary Medicine* and evaluated the oral pharmacokinetics, safety, and efficacy of CBD oil. The results showed that CBD in the concentrations used appeared safe, well-tolerated, and to decrease pain associated with osteoarthritis. Serum alkaline phosphatase, a liver value (SAP or ALP) was noted to increase, but this is not uncommon with many drugs, including phenobarbital and prednisone. This is called liver induction and can occur with drugs that rely heavily on liver metabolism. The significance of this finding is not known.

A second study, published in September 2018, evaluated adverse effects when CBD oil was given to a group of 30 healthy research dogs. Several different formulations were

It's big business: *This is just one of more than 40 booths at the 2019 Global Pet Expo pet products trade show for a company that is marketing CBD supplements for dogs.*

used, and despite the differences, all the dogs in the study developed diarrhea. Some also developed elevations in SAP, as in the first study. Overall, the CBD was considered to be well-tolerated but more research is needed on the significance of the associated diarrhea, as well as the liver enzyme increases.

Very recently (June 2019), a study was released evaluating CBD oil used in combination with antiseizure medications in dogs with intractable epilepsy. One group received CBD-infused oil, and the other received a placebo. The seizure frequency did decrease in the CBD oil group, but the results need further study. As in previous studies, SAP was increased in many of the patients.

The American Veterinary Medical Association is actively encouraging well-controlled studies into the uses of cannabinoids at this time. It is also working with the FDA to encourage the development of veterinary-specific products. State veterinary associates are making strides, as well, in addressing the sudden abundance of products and claims.

Veterinarians and "Legal" CBD Products

There is not a single *medication* containing CBD that is approved by the United States Food & Drug Administration (FDA) for animals.

In 1994, the FDA introduced the Animal Medicinal Drug Use Clarification Act (AMDUCA), which allows veterinarians to use medications in patients "off-label" – using the drug in a manner that is not in accordance with the approved label directions. Using a drug in this manner can include using a drug in a dose, frequency, or route of administration that is not on the label or in a species for which it is not labeled. So, for example, we *may* use drugs that are FDA-approved for humans on our animal patients. This must be done within the bounds of a valid veterinary-client-patient relationship.

There is only one *Cannabis*-derived medication containing CBD that is FDA-approved, and so could conceivably be prescribed or recommended legally "off-label" by a veterinarian for a dog. That drug is Epidiolex, and it is used for the management of seizures in humans with specific types of abnormalities. But the estimated annual cost of this medication is $32,500, making it prohibitively expensive for the majority of dog owners.

Manufacturing and Quality Control

CBD is most commonly made commercially available in the form of an oil or tincture. Both forms are extracted from hemp – *Cannabis* plants that contain less than 0.03% (dry weight) THC – using chemical solvents. The most commonly used solvents used for this extraction include carbon dioxide, butane, or ethanol. Once the CBD has been leached out of the plant material, the solvents are extracted by various methods. Due to the potential of adverse health impacts posed by incompletely extracted solvents, CBD products should undergo laboratory analysis to confirm the absence of residual solvents.

Laboratory testing is also recommended for confirming that the product does not contain other potentially dangerous toxins, such as heavy metals, pesticides, or mycotoxins.

Cannabis and help plants readily absorb heavy metals from their environment. Pesticide use is common in the farming of hemp – even though the Environmental Protection Administration (EPA) has not yet given hemp growers any guidelines or limits on what pesticides may be used on hemp, or what residue levels are safe on hemp products intended for consumption. Hemp plants are susceptible to fungi growth, which can lead to the presence of carcinogenic mycotoxins such as ochratoxin A and aflatoxins. And due to the risk of inadvertent adulteration during manufacturing, the FDA recommends that all drug products are tested for cadmium, arsenic, lead, and mercury. Granted – CBD products are considered to be supplements, not drugs. Nevertheless, as they are meant to be consumed, this testing (as well as testing for pesticides and mycotoxins) seems wise.

And finally, any supplement that you are going to consume or give to your dog should have a certificate of analysis attesting to the product's potency or concentration, so you can administer consistent dosages for a predictable effect.

VETERINARY CONSTRAINTS

One more thing you must know: By law, veterinarians are currently prohibited in every state from dispensing or administering cannabis or cannabis products to an animal patient. It doesn't matter if your dog suffers a chronic, painful condition or seizures. It doesn't matter if the product is a supplement (rather than a drug), and you were able to buy it in a pet supply store.

Except for veterinarians licensed in California, Colorado, and Oregon, we can't even legally *discuss* CBD products with our clients. Why are veterinarians in those states allowed to talk about it?

■ In late 2018, **California** became the first state to pass veterinary-specific legislation that amended the state's Business and Professions code to allow veterinarians to discuss *Cannabis* and its derivatives. It also requires that the California Veterinary Medical Board develop guidelines for these discussions by the year 2020. Like every other state, however, California's code also specifically "prohibits a licensed veterinarian from dispensing or administering *Cannabis* or *Cannabis* products to an animal patient."

A random sample: *CBD supplements for dogs come in oils, tinctures, chews, cookies, and more.*

The **Colorado** Veterinary Medical Association's position statement on what it calls "marijuana and marijuana-derived products" says that the state "recognizes the interest of companion animal lovers and veterinarians regarding the potential benefits of marijuana therapies for a variety of animal medical conditions. Similar to human medicine, there is extremely limited data on the medical benefits and side effects of marijuana products in companion animals."

Further, the Colorado position statement clarifies that veterinarians licensed in that state "have an obligation to provide companion animal owners with complete education in regard to the potential risks and benefits of marijuana products in animals. . . . Any discussion regarding a specific marijuana product as part of a companion animal's therapeutic regimen should be consistent with a valid veterinarian-client-patient (VCP) relationship."

Oregon's Veterinary Medical Examining Board emailed its members a memo in August 2016 stating, "Veterinarians may discuss veterinary use of *Cannabis* with clients, and are advised to inform clients about published data on toxicity in animals, as well as lack of scientific data on benefits. Please be aware that a client's written consent is needed for any unorthodox treatment."

The states' legislation and veterinary medical board rulings will likely change quickly, as the landscape of *Cannabis* use is rapidly evolving. But at the moment, with many veterinarians fearing that they could face legal repercussions for violating their state regulations, few pet owners have much recourse for discussion about CBD with veterinarians.

YOU ARE ON YOUR OWN

I'll repeat this: If you decide to administer products that contain CBD to your dog, you need to be aware that they are untested and unapproved, and that your veterinarian may not have any experience or reliable information about any adverse reactions your dog experiences.

If you are taking your dog to a veterinarian for treatment, tests, or advice and your dog is receiving CBD products of any kind, make sure that the veterinarian is aware of this; ideally, she can alert you to the dangers of any potential adverse drug interactions between the CBD and any prescription drugs (or other supplements) that you may be giving your dog.

Your veterinarian also should be alerted to help you be the lookout for side effects – or perhaps, one would hope, to recognize any signs of improvement in your dog's health and/or comfort.

After nine years in emergency medicine, Catherine Ashe, DVM, now works as a relief veterinarian in Asheville, NC.

BY PAT MILLER, CBCC-KA, CPDT-KA

TRAINING

Kids and Dogs

The formula for keeping children and canines safe is simple: Parents need to be attentive, assiduous about management, and quick to separate them at the first sign of the dog's discomfort.

Is the child about to be bitten? Or does the dog adore the kid? We don't know! This is a stock photo! The dog may be trying to avoid the child, or just turning her head . . .

However, we can say that this isn't something that you should allow your child to do with any but the most rock-solid, kid-loving dog – and if this is the only type of dog your child has experience with, you will have to make sure he doesn't have the opportunity to try it with dogs whose kid-tolerance is unknown.

These days, it seems that every time someone posts a picture on social media of a child with a dog it is immediately followed by a spate of posts expressing horror at the anticipated savage attack likely to follow.

Granted, some of those photos do, indeed, show dogs displaying body language signals that suggest a significant amount of discomfort at the proximity of the child, and real potential for injury. But many of them also, in my opinion, depict normal, healthy interactions between dogs and young humans.

Dogs and kids have been happy buddies for centuries. While dog bites to children are nothing new (I was bitten by a stray puppy at age five, in 1956) we seem to be much more reactive to them as a culture than we used to be. When did we become a society so phobic about any dog/kid interaction? And, perhaps more important, how do we help people recognize and create safe, healthy relationships between dogs and children?

A commonly quoted statistic states that some 4.7 million dog bites occur in the U.S. annually, with 42% of the victims age 14 or under.

As staggering as though those numbers may be, and as sensational as the "Dog Mauls Toddler" headlines are, they are also somewhat misleading. A very large percentage of those millions of bites are relatively minor, so the situation isn't nearly as dire as it first appears.

Still, even one preventable child-mauling incident is one too many, and many of them are, in fact, quite preventable.

SUPERVISOR NEEDED

Supervision of interactions between dogs and children is, indeed, critically important, at least until it is crystal clear that the child and dog are safe together. The "You must supervise kids and dogs!" mantra has been repeated so many times I would be surprised if there's even one parent in the Western world who hasn't heard it.

But here's the rub: A significant number of kids suffer from dog bites even when the parent or other caretaker is directly supervising the interaction. If "supervision" is the holy grail of dog-kid interactions, how does this happen?

It seems that, over the years, as we trainers and behaviorists have repeated "Supervise, supervise, supervise!" until we're blue in the face, we have somehow neglected to do a thorough job of helping parents and caretakers understand exactly what they are looking for when they are supervising.

It's not just about being *present,* it's also about watching closely, preventing the child from interacting inappropriately with the dog, and watching the dog for body language signals that communicate some level of discomfort with the child's presence and/or interactions.

UPPER LEVEL MANAGEMENT

Management – controlling your dog's enviroment and access to unsafe or undesirable things or practices – is a vital part of any successful behavior and training program. With kids and dogs, it's even more critical. When you aren't able to *actively* supervise (no TV! no texting!), you must manage. The price for management failure is simply too high.

Even if your dog adores children (and especially if she doesn't!), management and supervision are vitally important elements of successful dog/baby/child-keeping. There are a staggering number of serious child-bite cases (and fatalities) where the adult left the room "just for a minute."

That's why dog training and behavior professionals are well-known for repeating the warning, "Never leave dogs and small children together unattended." This means, not for a *moment*. Not while you take a quick bathroom break, or run to the kitchen to grab a snack. Even if the baby is sleeping! Take the dog with you if you leave the room where the baby is sleeping or the child is watching a video. Put the dog in her crate. Shut her in another room.

TRAINING

Of course, you want to do everything you can to help your dog love children. Even if you don't have small humans of your own, your dog is likely to encounter them at some point in her life, and things will go better for all involved if she already thinks kids are wonderful.

Ideally, every dog should be well socialized with babies and children from puppyhood. Many young adults adopt a pup at a time when children are, if anything, a distant prospect, without thinking about the fact that kids could easily arrive within the 10 to 15 years of their dog's lifespan. Even if there will never be children in the dog's immediate family, chances are she will encounter small humans at some point in her life. By convincing her very early on that children are wonderful, you greatly reduce the risk that she will ever feel compelled to bite one.

If an adult-dog adoption is in the works and there will be (or are) children in your world, remember this critically important caveat: Dogs who are going to be around babies and/or children must adore kids, not just tolerate them. A dog who adores children will forgive many of the inappropriate things young humans will inevitably do to dogs, despite your best efforts at supervision and management. A dog who merely tolerates them will not.

TEACH YOUR CHILDREN

Safe child-dog interactions start with teaching children – even *very* young children – how to respect and interact appropriately with dogs. If a child is too young to grasp the information, then the supervising adult must physically prevent the child from being inappropriate.

Babies and toddlers often flail their hands at new or exciting stimuli – like dogs. Not surprisingly, many dogs are likely to find this quite aversive! When young children are introduced to dogs, the adult needs to hold the child's hand(s) and guide them in appropriately using their hands to touch the dog appropriately (gently and slowly) and without any flailing.

It's equally important to teach children that dogs are not toys to be treated roughly. Even if your family dog tolerates – or even loves – being hugged, allowing your young child to hug your dog can prompt her to hug the next dog she meets – with possibly disastrous results. Until your child is old enough to understand that some things that are okay with your dog are not okay with other dogs, you are far safer not allowing her to do those things with your dog, either.

Ideally, engage your child to assist with your dog's training at the earliest

It's Not Cute, It's Abuse

There is a truly horrendous video on YouTube of parents encouraging their very young child to abuse their Rottweiler. The child runs over to the dog, who is lying on the floor, climbs on his back, hugs him violently – and when the dog gets up to try to move away from the abuse, the adults call him back and make him lie down for more child torture. Meanwhile the child has lost interest and walked away and the parents insist that he come back and interact with the dog more.

This time the dog is lying on his side, and for the remainder of the two-minute clip the child climbs on and violently bounces up and down on the dog's ribcage; grabs his jowls, cheek, and nose; and puts his face directly in the dog's face, all the while with encouragement and laughter from the parents. Through it all, the dog is giving off constant signs of stress and distress – whale eye, panting, tongue flicks, gasping for air, and more. (If you really want to see it, we made a shortcut to a copy of the original video that someone captioned with notes about the dog's warning signs: tinyurl.com/WDJ-abuse.)

This should be prosecutable child endangerment as well as animal abuse. Someday, if the incredibly tolerant Rottweiler has finally had enough and bites the child, the parents will be aghast. "We don't know what happened – he was always so good with little Bobby!" And if the defensive bite is serious enough, the dog is likely to lose his life as a result . Meanwhile, if the child tries this incredibly inappropriate behavior with a less tolerant dog (which would include most dogs on the planet), he's likely to be very badly bitten, and again, the unfortunate dog might easily pay with his life. What were these parents thinking?

possible age using positive reinforcement-based methods that teach your child the importance of cooperation and respect, so your child learns how to interact appropriately with other sentient creatures. At the same time, you will be strengthening the positive association between your dog and your child.

WATCH THAT BODY TALK

Any time your dog shows any sign of being uncomfortable with your child's presence, you must separate the dog and child to protect them both. Of course, in order to do this you must understand dog body language well enough to recognize when a dog is expressing discomfort.

People often say, "If my dog could only talk…" They actually do communicate! But their mode of communcation is body language – and too few humans take the time to learn that language, or "listen" to what the dog is telling us.

In the sidebar below, we share some different ways your dog may be telling you she's uncomfortable. This is an extensive list, albeit not necessarily a complete one. Study it, and then watch your dog for any of these behaviors, both with children present and absent. Any time you observe stress signals from your dog in the presence of children (or elsewhere!) it's wise to take immediate steps to reduce her stress.

If, while you're managing, supervising, and training your dog around kids, you're having trouble determining what your dog is trying to tell you with his body language communications, ask a force-free dog training professional to help you. It could save your dog's life. And your child's.

Author Pat Miller, CBCC-KA, CPDT-KA, is WDJ's Training Editor. She and her husband Paul live in Fairplay, Maryland, site of her Peaceable Paws training center. Miller is also the author of many books on positive training. Her newest is Beware of the Dog: Positive Solutions for Aggressive Behavior in Dogs. *See page 24 for information on her books and classes for dog owners and trainers.*

A DICTIONARY OF CANINE STRESS SIGNALS

Anorexia

Stress causes the appetite to shut down. A dog who won't eat moderate- to high-value treats may just be distracted or simply not hungry, but refusal to eat is a common indicator of stress. If your dog ordinarily likes treats, but won't take them in the presence of children, she is telling you something very important: Kids stress her out!

Appeasement/Deference Signals

Appeasement and deference aren't always an indicator of stress. They are important everyday communication tools for keeping peace in social groups and are often presented in calm, stress-free interactions. They are offered in a social interaction to promote the tranquility of the group and the safety of the group's members. When offered in conjunction with other behaviors, they can be an indicator of stress as well. Appeasement and deference signals include:

- **Lip Licking:** Appeasing/deferent dog licks at the mouth of the more assertive/threatening/intimidating member of the social group.

- **Turning Head Away, Averting Eyes:** Appeasing/deferent dog avoids eye contact, exposes neck.

What we see here:
Lip licking/tongue flicks
Turning head away

- **Slow movement:** Appeasing/deferent dog appears to be moving in slow-motion.
- **Sitting/Lying Down/Exposing Underside:** Appeasing/deferent dog lowers body posture, exposing vulnerable parts.

Avoidance

Dog turns away, shuts down, evades touch, and won't take treats.

Barking

In context, can be a "distance-increasing" stress signal – an attempt to make the stressor go away.

Brow Ridges

Furrows or muscle ridges in the dog's forehead and around the eyes.

Difficulty Learning

Dogs (and other organisms) are unable to learn well or easily when under significant stress.

Digestive Disturbances

Vomiting and diarrhea can be a sign of illness – or of stress; the digestive system reacts strongly to stress. Carsickness is often a stress reaction.

Displacement Behaviors

These are behaviors performed in an effort to resolve an internal stress conflict for the dog. They may be performed in the actual presence of the stressor. They also may be observed in a dog who is stressed and in

isolation – for example a dog left alone in an exam room in a veterinary hospital.

- **Blinking:** Eyes blink at a faster-than normal rate
- **Nose-Licking:** Dog's tongue flicks out once or multiple times
- **Chattering Teeth**
- **Scratching** (as if the dog suddenly is very itchy)
- **Shaking off** (as if wet, but dog is dry)
- **Yawning**

Drooling
May be an indication of stress – or response to the presence of food, an indication of a mouth injury, or digestive distress.

Excessive Grooming
Dog may lick or chew paws, legs, flank, tail, and genital areas, even to the point of self-mutilation.

Hyperactivity
Frantic behavior, pacing, sometimes misinterpreted as ignoring, "fooling around," or "blowing off" owner.

Immune System Disorders
Long-term stress weakens the immune system. Reduce dog's overall stress to improve immune-related problems.

Lack of Attention/Focus
The brain has difficulty processing information when stressed.

Leaning/Clinging
The stressed dog seeks contact with human as reassurance.

Lowered Body Posture
"Slinking," acting "guilty" or "sneaky" (all misinterpretations of dog body language) can be indicators of stress.

Mouthing
Willingness to use mouth on human skin – can be puppy exploration or adult poor manners, but can also be an expression of stress, ranging from gentle nibbling (flea biting) to hard taking of treats to painfully hard mouthing, snapping, or biting.

What we see here:
Avoidance
Brow ridges
Stiffness

What we see here:
Avoidance (leaning away)
Lowered body posture
Whale eye

Obsessive-Compulsive Disorders
These include compulsive imaginary fly-snapping behavior, light and shadow chasing, tail chasing, pica (eating non-food objects), flank-sucking, self-mutilation and more. While OCDs probably have a strong genetic component, the behavior itself is usually triggered by stress.

Panting
Rapid shallow or heavy breathing – normal if the dog is warm or has been exercising, otherwise can be stress-related. Stress may be external (environment) or internal (pain, other medical issues).

Stretching
To relax stress-related tension in muscles. May also occur as a non-stress behavior after sleeping or staying in one place for extended period.

Stiff Movement
Tension can cause a noticeable stiffness in leg, body, and tail movements.

Sweaty Paws
Damp footprints can be seen on floors, exam tables, rubber mats.

Trembling
May be due to stress – or cold.

Whining
High-pitched vocalization, irritating to most humans; an indication of stress. While some may interpret it as excitement, a dog who's excited to the point of whining is also stressed.

Yawning
Your dog may yawn because he's tired – or as an appeasement signal or displacement behavior.

Whale Eye
Dog rolls eyes, flashing the whites of his eyes.

BY CATHERINE ASHE, DVM

HEALTH

Canine Constipation

What can you do for your dog when she can't "go" – and when you need to seek veterinary assistance.

You need to investigate if your dog seems to be straining and/or staying in the "poop posture" for a long time. Constipation becomes more serious over time, so start home treatment ASAP, and don't wait too long to seek veterinary attention if your dog hasn't produced stool within a few days.

Constipation seems like it should be a straightforward medical problem, but this is far from the case! Constipation occurs when there is difficulty or inability to empty the bowels. Stools may be extremely firm. A dog will strain and remain in the "poop posture" for quite some time before producing a bowel movement. In some cases, only mucus will pass.

There are many possible causes, including:

- Eating indigestible material or very dry material such as pork bones
- Arthritis pain that makes "assuming the posture" difficult
- Dehydration
- Malformations of the pelvic canal (congenital or acquired)
- Drugs such as opioids
- Behavioral
- Neurological disease leading to weakness

ARE YOU SURE IT'S CONSTIPATION?

Diarrhea may be mistaken for constipation, especially if a dog usually is unsupervised at potty time. Persistent diarrhea causes inflammation of the intestines and leads to discomfort and straining, even when there is no stool in the colon. Monitoring your dog's bathroom habits is important and should be done at least daily.

The normal frequency of bowel movements (BMs) can vary hugely among individual dogs. In general, one to two BMs per day is the minimum, with some dogs going much more frequently. Because the large intestine is such a stretchy organ, a dog *can* go several days between bowel movements without significant issue. If a dog goes an exceptionally long time without defecating (a week or longer), though, obstipation – a severe form of constipation – can result. This is when the colon is packed with extremely hard, dry feces and passing them is not possible without assistance.

One easy thing to consider any time you are worried about constipation is a fecalith. Sometimes, especially in small dogs with very long hair, a firm fecal ball can become stuck to the hair around the anus and obstruct the outside. In dogs with dark hair, this is easy to miss! This is a quick and simple fix with a pair of scissors and gloves. Anytime you see your dog straining at home, a quick look at the perianal area can identify the cause in some cases.

Symptoms of constipation you might see at home include posturing without producing any feces, straining but producing only small amounts of stool or no stool at all, bright red blood on the outside of the stool (due to inflammation and colon trauma), and in severe cases, decreased appetite and vomiting.

If you suspect constipation, check in with your veterinarian. The symptoms of straining and frequent trips outside might indicate constipation or a urinary problem, which *also* can be life-threatening.

PRELIMINARY HOME TREATMENT

Home remedies that can help with constipation are numerous and varied in their success. Do *not* administer over-the-counter laxatives. Instead, you can add plain canned pumpkin to your dog's food, anywhere from one to two tablespoons per meal. This adds fiber and bulk while increasing colon motility.

If you think dehydration is playing a role, increase your dog's water intake by adding some canned food to his meals (mix in a little more water for greater effect), dropping a few ice cubes to his water to encourage drinking, and using a recirculating water fountain. A gentle increase in exercise can also improve bowel motility, so take your canine companion for a walk! If this doesn't accelerate your pet's gastrointestinal (GI) motility, it's time to visit a veterinarian.

SEE YOUR VET!

During the examination, your veterinarian will start with a complete history. Questions will include the diet your dog is currently eating including any treats, any medications and supplements that you give, normal frequency of BMs, and what changes you've noticed.

Then your veterinarian will assess every system from head to toe. Once the basic system exam is completed, your veterinarian should focus on abdominal palpation and a rectal exam. While it's not pleasant for your dog (or for you to see!), this is very important. This digital exam can detect many abnormalities and possible causes. It allows the veterinarian to palpate the urethra where it runs underneath the colon, the sublumbar lymph nodes, the prostate (in male dogs), the anal glands, and the mucosal surface of the rectum and colon. The pelvic canal can also be felt.

As with most diseases in dogs, common causes can be ruled in or out based on the signalment (the age and breed).

Very young puppies (less than 6 weeks) with constipation should be evaluated for a congenital abnormality of the rectum and/or colon. Some breeds that may be predisposed include any with short "screw tails" like Pugs and English Bulldogs. When the tail is exceptionally short, there can be underlying spinal abnormalities that cause nerve dysfunction.

Another abnormality is atresia ani, when the anus doesn't form, and there is nowhere for feces to exit. Puppies who are being bottle raised may also deal with constipation from the puppy milk replacer.

OTHER POSSIBLE CAUSES

In older puppies who are chewing and eating food, checking for ingestion of foreign material that might lead to fecal impaction is important. This can include sand, rocks, and bone.

Trauma to young dogs that free roam is also a possibility. It isn't uncommon for a stray pup to be adopted from a shelter situation only to discover old, healed injuries. Pelvic fractures can be one of these types of injuries, leading to a narrow pelvic inlet, and difficulty passing feces.

As dogs age the causes of constipation often become more systemic in nature and may include organ disease such as kidney failure and diabetes mellitus leading to dehydration, neurological disease like degenerative myelopathy, and arthritis pain can all contribute. This is why a head-to-tail-tip examination is so important!

Reproductive status can also play a role. Intact male dogs develop two particular problems as they age: benign prostatic hypertrophy (BPH) and perineal hernia. Both can lead to difficulty defecating (and urinating).

In the case of BPH, the influence of testosterone causes the prostate to enlarge symmetrically. The condition is not cancerous and non-painful, but if the prostate becomes large enough, it can make defecating and urinating difficult. Treatment is removal of the testosterone source via neutering.

Perineal hernia is also caused by the influence of testosterone. The muscles surrounding the rectum (the perineal muscles) become weak with age and can separate. Abdominal organs, particularly the bladder and colon, can herniate through and lead to difficulty with urinating and defecating. The symptoms are straining and a soft, reducible bulge on one or both sides of the rectum. Again, neutering and surgical repair are the treatments of choice.

TREATMENT

General constipation treatment depends on the underlying cause. If the constipation is fairly recent in onset, in a young dog, the initial diagnostic testing may just include a physical exam, history, and x-rays to rule out a foreign object. Therapy can then be directed at relieving the discomfort.

Several ways to do this exist including administration of enemas with warm water (sometimes including soap or lubrication), increasing fiber in the diet by adding canned pumpkin or switching to a high fiber diet, increasing water intake, and administration of medications such as lactulose, a stool softener.

If the constipation has been ongoing for a while, and the dog is older, other tests will likely be recommended. These include bloodwork to evaluate for systemic diseases as mentioned above, and possibly an abdominal ultrasound to look for a cause of obstruction.

In severe cases, it might be necessary to manually disimpact. This should be done under heavy sedation and/or general anesthesia. It is painful and invasive, and a dog must be fully relaxed for the best outcome. Prior to disimpaction, the veterinarian may treat with intravenous (IV) fluids to rehydrate first, as well as administer an enema to allow the feces to soften as much as possible. Lactulose may also be added prior to surgery to help with removing the feces. Bloodwork will be reviewed for any electrolyte abnormalities that need correction.

It is not common in dogs, but a condition called megacolon can develop. This describes a syndrome in which there is persistent dilation and slow to no motility. It can happen as a result of long-term, unresolved constipation causing stretching and damage of the nerves. Unfortunately, this can be difficult to resolve. In some cases, the megacolon is reversible if there is a definite underlying cause (such as a pelvic fracture) that can be surgically repaired. The earlier this is done, the better the chances for a good outcome.

After nine years in emergency medicine, Catherine Ashe, DVM, now works as a relief veterinarian in Asheville, NC.

BY SASSAFRAS LOWREY

CONSUMER ALERT

Fear Free Veterinary Care

A gentle revolution is prompting veterinary hospital renovations and transforming the way your dog is handled at the vet. Is your veterinary practice on board?

Too frequently, this is what our dogs look like while waiting for or during a veterinary examination. Can you imagine being terrified or full of dread during every doctor visit? (Maybe some of you are!) Fortunately for our dogs, there is a movement afoot to change how our pets are handled and treated in veterinary hospitals.

Does your dog know when you are approaching the veterinary clinic? Sadly, many dogs are nervous, anxious, or just uncomfortable at the vet's office.

Thankfully there is a movement of veterinary professionals who are working hard to create positive, low-stress experiences for dogs entering veterinary hospitals, reducing stress for dogs (and owners!). And the organization that is providing formal training to veterinarians and their staff members also teaches dog owners how to help their dogs feel more comfortable at the vet.

VISIONARY VETERINARY VISITS

Fear Free is the brainchild of Marty Becker, DVM, whose veterinary practice is the North Idaho Animal Hospital in Sandpoint, Idaho. Dr. Becker is better known for his weekly nationally syndicated newspaper feature "Pet Connection" and his 17-year stint as the resident veterinary contributor on "Good Morning America." He is also the author of some 25 books on pets and pet health.

"The idea for Fear Free and the slogan 'Taking the pet out of petrified,' came out of a lecture by a boarded veterinary behaviorist, Dr. Karen Overall," says Dr. Becker. "Previously, I, like the vast majority of my colleagues, thought of pet's distress at the veterinary office as unavoidable collateral damage. Through her lecture, I knew that we – all of us who deal with animals including veterinarians, veterinary nurses, trainers, groomers, boarding personnel – were causing repeat, severe, irreversible psychological damage to the animals we care for. Nobody gets into a career of working with animals to make life worse for them."

Dr. Becker began envisioning an organization that could educate pet professionals of all kinds about how to recognize the signs of fear, anxiety, and stress, and how to handle pets in ways that at least reduce, and at best, eliminate these emotions and the negative behavioral fallout that often results from handling that does not consider or prioritize the animal's experience.

"Once we realized the damage we were doing to pets, and the potential physical and emotional benefit we left unrealized, hundreds of top veterinary professionals and others involved in animal care committed to bringing a science-based, compassionate approach to pet care," Dr. Becker says. He collaborated with veterinarians, veterinary behaviorists, and force-free trainers to create a curriculum, and offered the first Fear Free certification course in 2016.

Today, Fear Free provides education and certification to veterinary professionals in methodologies developed by board-certified veterinary behaviorists, anesthesiologists, pain experts, and more. According to the organization, more than 48,000 veterinary and pet professionals (including groomers, trainers, and more) have been certified in Fear Free dog-handling techniques.

Ultimately, the Fear Free approach to handling dogs in any situation is beneficial to

the dog population as a whole, but its most potent gifts may lie in improving our pets' veterinary visit experience.

"Fear Free veterinary visits make taking the dog to the hospital fun for the dog and fun for the dog's guardian, for the veterinarian and for veterinary personnel, too," says Kenneth Martin, DVM, DACVB, a co-owner of Veterinary Behavior Consultations, in Austin, Texas.

Dr. Martin explains that the Fear Free practices "take the fear, anxiety, and/or stress out of waiting to be seen by the veterinarian. Dogs are provided with non-slip surfaces, calming pheromones, aromatherapy, and soothing music. Greetings include a considerate approach to interactions with the dog, who is touched and handled in ways that reduce stress. Treats, toys, and various distraction techniques are used to keep the dog comfortable and make the visit enjoyable."

This is not business as usual in a vet clinic! Every interaction between the dog, owner, and clinic staff is intentional, and "the dog's emotional response to the veterinary visit is noted to make each and every veterinary visit a more enjoyable experience, from the trip to the hospital until arriving back home," Dr. Martin says.

FEAR FREE CERTIFICATION

Fear Free offers courses for veterinary professionals and staff on how to improve animal hospital encounters for their patients. Fear Free has considered every aspect of the patients' veterinary hospital experience and has suggestions for changes that result in a drastic drop in the patients' stress and discomfort.

Veterinary staff members who take the courses learn how to recognize the signs of stress and fear in their patients, understand how a patient's perception affects its behavior in the veterinary hospital setting, assess their own hospitals for stress-provoking infrastructure and practices, and employ dozens of new tactics to improve the vet-hospital experience for their clients' pets. There are currently eight modules in the course, with an examination at the end of each module. A veterinary provider must pass each exam with a score of 80% or more in order to continue. Upon successful completion of all the modules, a Fear Free certificate is awarded. The certification is valid for one year; continuing education units and examinations must be completed annually for the practitioner's certification to remain current.

HOSPITAL CERTIFICATION

A veterinarian working in a group practice can become certified individually, but if there are other staff members with an interest in Fear Free precepts, they might want to pursue a Fear Free practice certification, described on FearFreePets.com:

> "Practice Certification takes Fear Free implementation to the next level – from an individual to a joint effort that requires the entire practice team to work together to safeguard the emotional wellbeing of their patients, clients, and team members."

In order for a practice to become certified, more than 25% of the staff must be Fear Free Certified with active memberships; this must include 100% of the practice's leadership and/or management team and 50% + 1 of the practice's full-time veterinarians.

Once a practice has achieved this and completed an online self-assessment of the standards, Fear Free will send a Fear Free Practice Certification Veterinarian to conduct an on-site visit and evaluation of the practice. The results will be submitted to Fear Free for review and final determination of pass or fail.

The basic Fear Free certification course costs $279 for an individual; the price per person for the certification decreases when the number of people working in the same veterinary practice who also seek certification increases.

Maintaining an active membership requires an annual fee of $99 per person and completion of four continuing education units each year from Fear Free's large library of educational offerings. All of this adds up to a significant investment of money, time, and interest in providing a stress- and fear-free veterinary experience to the practice's patients.

FEAR FREE VETERINARY VISITS ARE DIFFERENT

In many ways a Fear Free approach to veterinary care is about prioritizing the needs of your dog above all else and ensuring that he is comfortable in any veterinary setting. "We have made huge advancements that have allowed us to help dogs live longer and healthier lives by looking after their physical well-being," says Jonathan Bloom, DVM, a Fear Free certified practitioner at the Willowdale Animal Hospital in Toronto, Ontario. "Now it's time for us to help dogs live

Fear Free's founder, Dr. Marty Becker, says "Fear Free is where state-of-the-art veterinary medicine meets state-of-the-heart veterinary medicine."

happier lives, by looking after their emotional well-being."

Employing a Fear Free approach to veterinary care gives our dogs agency at the vet office, instead of being forced to comply. Dr. Bloom explains how Fear Free protocols put the needs of the pet first – and how this requires veterinary practitioners to shift their approach to ensure the dog is comfortable.

"If pets don't like being up on exam room tables, we examine them on the floor. If they don't like liver treats, then we offer them chicken treats. If they feel more secure being near their owners, then we do their entire exam, vaccine, blood sample collection, etc., beside their owners," he says.

Dr. Patricia Slanga, a Fear Free certified veterinarian, recently opened this beautiful practice she designed and built according to Fear Free precepts: Noah's Glen Animal Hospital in Morgantown, Pennsylvania.

Fear Free practitioners generally book longer appointments times and require their technicians to use Fear Free restraint and handling methods so their patients are not rushed or intimidated into compliance during examination procedures. Because more time is taken with the animals, the practitioner may charge more for visits than vets who spend just a few minutes with the patient, leaving the collection of vital signs and biological samples (blood, urine, feces) to the technicians.

When an entire practice is Fear Free-certified, the client should notice even more departures from conventional veterinary clinics. Waiting rooms are arranged in a manner that gives dog and cat clients plenty of room so they feel safe and not overstimulated, and provisions are on hand to make any wait comfortable for the patients, with soft beds or mats and non-slip paths that facilitate a smooth flow of patient traffic. Species-specific appeasing pheromone diffusers and/or aromatherapeutic diffusers will likely be in use in waiting and exam rooms.

When the visit is complete, a technician may invite you and your dog to relax and enjoy some treats in the exam room while your bill is being prepared; you can make a payment, receive medications and instructions, and make a follow up appointment (if needed) in the same room, so when all of this business is complete, you and your dog can make a smooth exit to your car, instead of having to stand in line back in the waiting room to do these things.

Even the disinfectants in a Fear Free certified practice are likely to be different from those used in veterinary hospitals that don't adhere to Fear Free protocols.

"When you embrace Fear Free certification, you begin to realize that our patients can suffer sensory overload during their veterinary visit. Overwhelming sights, sounds, and smells need to be eliminated when you make a commitment to Fear Free," says Julie Reck, DVM, owner of the Veterinary Medical Center of Fort Mill (South Carolina).

Dr. Reck switched all the cleaning products in her hospital to an accelerated hydrogen peroxide-based disinfectant that kills pathogens but does not leave a lingering chemical smell, and pheromone diffusers are used throughout the facility. The disinfectant is not only less overwhelming for the patients, she says, it's safer for the clients *and* staff.

Dr. Reck is also a huge proponent of Fear Free practice certification; not only is her practice Fear Free certified, she joined the Fear Free Executive Council and is on the organization's speaker's bureau.

EMOTIONAL HEALTH COMPLEMENTS PHYSICAL HEALTH

It's scary to think about how one negative experience at a vet clinic, or even just a couple uncomfortable ones, can adversely affect how your dog regards vet visits for the rest of his life. I witnessed this with my youngest dog, who needed major surgery before her second birthday. She went from a puppy who loved going to the vet to a dog who became wary of vet visits after several stressful and painful diagnostic visits and consultations before bilateral TPLO surgery.

Dr. Martin says that this type of negative experience isn't necessary. "In the past, the veterinarian and dog owner alike have justified the stress of the veterinary visit and/or procedure as being in the best interest of the dog – but the dog doesn't know that!" says Dr. Martin. In contrast, he describes the Fear Free protocols for a vet visit as "a feel-good sensory experience, incorporating pleasant sights, sounds, smells, taste, and touch."

But Fear Free veterinary visits aren't just about making dog feel better emotionally; they also can have measurable impacts on your dog's physiological health – and your veterinarian's ability to accurately diagnose or monitor your dog's health.

"Stress negatively influences physical parameters such as heart rate, respiratory rate, and temperature," says Dr. Martin. "In the stressed individual, these parameters, routinely checked with most veterinary visits, are not an accurate representation of the dog's overall health. And stress suppresses the immune response."

Sassafras Lowrey is an award-winning author and Certified Trick Dog Instructor. New dog books from Sassafras in 2019 include: Healing/Heeling; Bedtime Stories for Rescue Dogs: William To The Rescue *(with Lili Chin), and* Tricks in the City: For Daring Dogs and the Humans That Love Them *(forthcoming from Mango Press).* *See page 24 for book purchasing information.*

Things *You* Can Do to Reduce Your Dog's Anxiety

If your dog is anywhere from mildly anxious to downright terrified of going to the veterinarian, we'd strongly suggest looking for a Fear Free certified veterinarian or, better yet, a Fear Free certified veterinary practice. You can search for these at fearfreepets.com.

But there are many more ways you can incorporate stress-reduction techniques into your dog's veterinary visits or trips to the groomer, even if there are no Fear Free certified practitioners nearby.

"Simple things, like teaching a dog to allow someone to touch and massage her all over helps her accept and enjoy being touched,"says Ken Ramirez, executive vice president and chief training officer of the Karen Pryor Academy for Animal Training & Behavior, based in Waltham, Massachusetts. "It is also helpful to teach your dog to enjoy wearing a muzzle and going into a kennel; make it fun!" Ramirez suggests. (See "Nuzzle Up to Muzzles," WDJ February 2019.)

"A positive reinforcement training program is the best place to start," Ramirez says. "When animals enjoy playing and interacting with their owners, there is a foundation for building trust and teaching fun games that can be transferred to a visit to the veterinarian."

The Karn Pryor Academy developed its own course, "Better Veterinary Visits," a $139 online course for teaching vets and veterinary technicians to implement low-stress, cooperative care with all their patients, and to teach the principles to their clients. Currently, the course has expanded to embrace dog trainers and pet owners; anyone with an interest in low-stress animal handling can take the course and benefit from the material.

Unless you know in advance that your vet hospital supplies its patients with comfy mats for the waiting and exam rooms, bring one from home!

"The course focuses on methods of management and techniques for training animals to prepare them for a veterinary visit as well as deal with behavior while in the veterinary office. We focus on the foundation behaviors needed for better veterinary care and teach students techniques for changing an animal's emotional responses when visiting a veterinarian." You can learn more about the class and how to register online at karenpryoracademy.com/courses/better-vet/.

Today, most zoo animal trainers and handlers use positive-reinforcement-based methodologies to teach their exotic-animal wards to willingly participate in exams, instead of using physical force or manipulation to control the animals. Happily, there are a number of other places where a motivated dog owner can learn the same techniques. I attended one such course on force-free husbandry training at Karen Pryor's Clicker Expo.

CHANGING ASSOCIATIONS

We know that veterinarians are there to help our dogs, but our dogs don't always understand that! To help them, we should prioritize improving our dogs' associations with vet clinics and procedures. Heather B. Loenser, DVM, the Veterinary Advisor for Professional and Public Affairs for the American Animal Hospital Association, offers advice that can help your dog feel more comfortable about going to a veterinary clinics:

✓ If a dog has neutral or positive feelings about the vet, support those positive associations by stopping by the hospital just to get weighed or to get treats from the team at the front desk.

✓ Always bring lots of treats and deliver them generously to your dog when you are waiting, and when allowed to do so, during the exam.

✓ Be calm yourself.

Consistency is key. If your dog already has a negative or anxious association with the vet, you won't be able to change it overnight; it requires strategic work from you.

For my youngest dog, who is anxious and apt to be fearful during vet visits, I intentionally sought out a veterinary clinic that, while not certified as Fear Free, thoughtfully incorporates strategies to reduce the anxiety and stress of dogs in the clinic environment and takes my dog's needs seriously. The fact that the hospital is within walking distance of my house means that my dog and I can visit regularly to work on desensitizing her to the clinic space.

ADVOCATE AND PROTECT!

If, in the middle of a veterinary appointment, things start getting too tense for your dog (or you!), don't be afraid to advocate for your dog (or yourself!) and insist on a time out. Depending on your dog's medical needs that day, you might cut the visit short and make arrangements to come back another day; your dog's emotional health is worth the cost of another visit! If the care needed is urgent, at a minimum, ask your veterinarian about administering an anxiety-relieving medication to your dog.

As Dr. Martin says, "Fear Free Certified veterinarians know when to stop! This may mean needing to reschedule a veterinary visit or take other steps in order to set the dog up for success." It's all about meeting your dog's physical needs – but not at the expense of emotional needs.

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BY BARBARA DOBBINS

HEALTH

Osteosarcoma

OSA is just one type of bone cancer, but it's the most common – and has a poor prognosis.

Osteosarcoma (OSA) has been found in every vertebrate class and has even been identified in dinosaur fossils, but it appears to be more prevalent in dogs than in any other species. While there are different types of bone cancer, more than 85% of the bone malignancies diagnosed in dogs are OSA.

When compared to other types of cancers found in dogs, the incidence rate of primary OSA is low, with an estimated 10,000 dogs newly diagnosed each year. Its survival rate varies considerably depending on which treatments are used, but, unfortunately, none of the current treatments have high rates of success. Many promising new treatments are in the works, however.

The most common clinical signs associated with OSA are pain, swelling, and lameness in the affected leg. Lameness occurs due to pain, inflammation, microfractures, or pathologic fractures (fractures caused by normal movements due to bone deterioration caused by disease). If swelling is present, it is likely due to the spread of the tumor into the surrounding soft tissues.

WHERE OSA IS FOUND

OSA can develop in any bone, but the most common form – the appendicular (limb) form – occurs in the long bones of the legs and accounts for 75 to 85% of cases. Within this subtype, the rate of occurrence in the forelimbs is twice that of the hindlimbs, often located at the top of the humerus (shoulder) hindlimbs, knee and ankle areas are common locations. These locations are at the ends of bones, at or near the growth plates where cell turnover is high during growth.

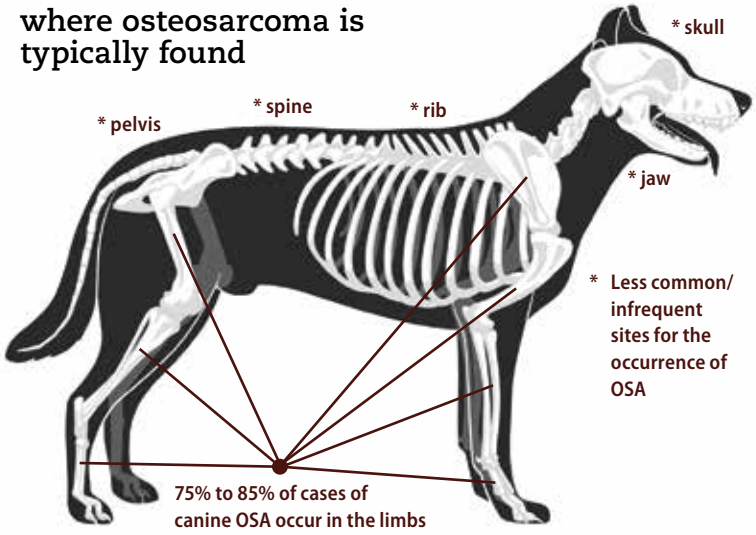
While the majority of the remaining cases occur in the axial skeleton (the bones of the head and trunk), there have been cases of OSA documented in extraskeletal sites including the skin and subcutaneous tissues, as well as the lungs, liver, mammary glands, and other organs and glands.

Osteosarcoma affects mostly middle-aged and older dogs; 80% of cases occur in dogs over 7 years of age, with 50% of cases occurring in dogs over 9 years old. Younger dogs are not immune; approximately 6 to 8% of OSA cases develop in dogs who are just 1 to 2 years of age. OSA of the rib bones also tends to occur in more often in younger dogs with a median age of 4.5 to 5.4 years.

CAUSE

As with most canine cancers, the cause is unknown. There has been

Locations on the canine skeleton where osteosarcoma is typically found



Don't wait to investigate if your dog develops a chronic or intermittent limp, especially in large-breed dog, and especially if it's in a front leg. Too often, this is a sign of osteosarcoma.

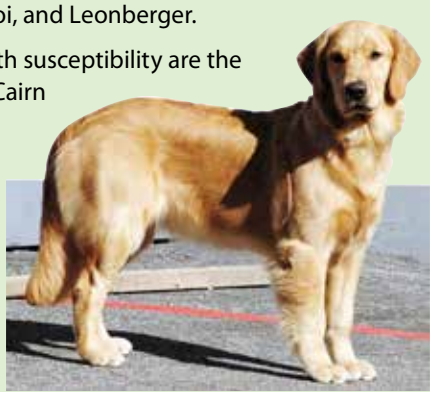
CANCER TERMINOLOGY

Sarcomas are a group of malignant tumors that form in the connective tissues of the body. They are usually further defined by the type of cell, tissue, or structure involved, such as with osteosarcoma. The prefix *osteo* derives from the Greek word *osteon,* meaning bone – hence bone cancer.

Breed Predisposition

OSA is overrepresented in large and giant breeds. The most commonly afflicted include the Rottweiler, German Shepherd, Boxer, Doberman Pinscher, Irish Setter, Saint Bernard, Great Dane, Golden Retriever, Labrador Retriever, Greyhound, Wolfhound, Deerhound, Borzoi, and Leonberger.

Small dog breeds (less than 33 pounds) with susceptibility are the Miniature Schnauzer, Cocker Spaniel, and Cairn Terrier. Overall size (height and weight), however, is more important than breed for developing OSA. Dogs weighing 55 to 99 pounds are more likely to develop OSA than those that weigh less than 55 pounds; there is an even greater susceptibility in dogs weighing more than 99 pounds.



no gender predisposition documented. There does appear to be a genetic component as OSA predominates in long-limbed breeds. Large and giant breeds have an increased risk of OSA because of their size and weight. Small dogs can develop OSA as well, but it is far less common.

Notably, the forelimbs support about 60% of total body weight of the dog and are the most common limbs to develop OSA. It is theorized that in addition to body size, the fast growth rate to create the longer bones in large breeds might contribute directly to OSA risk. Rapid bone growth results in increased bone remodeling and increased cell turnover; high cell division and turnover occurs naturally at and near the growth plates, which are also the most common sites for tumor development.

A dog's risk also appears to increase if he has had surgery for a fracture repair or an orthopedic implant. These conditions spur the proliferation of bone-forming cells. OSA also has been associated with fractures in which no internal repair was performed. Other possible causes include chronic bone and bone marrow infections, microscopic injury in the weight-bearing bones of young growing dogs, ionizing radiation, phenotypical variations in interleukin-6 (a protein produced by various cells), abnormalities in the p53 tumor-suppressor gene, viral infections, and chemical carcinogens.

Hormonal risk factors are being actively explored in an effort to determine if there is an increased risk for OSA based on the age of spay or neuter (gonadectomy). In May 2019 Makielski et al. authored a comparative review of OSA risk factors and included this commentary on trending current hormonal studies (*Veterinary Sciences* Vet Sci 2019, 6, 48):

> "Similarly, associations between reproductive status and development of osteosarcoma have been inconsistent. Although several reports suggest that spayed and/or neutered dogs have higher incidence of certain cancers, including osteosarcoma, the relationship between reproductive status and cancer risk may be confounded by other variables, such as the documented tendency toward increased adiposity and body condition in gonadectomized dogs. Increased load combined with delayed physeal (growth plate) closure, a result of gonadectomy prior to skeletal maturity, could theoretically contribute to increased osteosarcoma risk in dogs."

DIAGNOSIS AND STAGING

Clinical presentation of canine OSA typically appears as lameness of the affected limb, with or without visible swelling or mass at the affected area.

Diagnostic exams usually include a physical exam, an orthopedic and neurological examination (to eliminate other causes of lameness), and radiographs (x-rays). Radiographs may allow for a presumptive diagnosis as OSA frequently has a characteristic appearance in the bones: patterns of bone destruction, abnormal bone growth, and sometimes fractures.

If a tentative diagnosis of OSA has been made, additional screening tests are recommended to ensure your dog is otherwise healthy; these may include a blood panel, thoracic radiographs, and CT scan. Ultrasounds are often performed but early metastasis to the abdomen is very rare. A bone aspirate for cytology with alkaline phosphate stain is common and recommended. This may occur as part of the screening process or obtained during surgery.

OSA is extremely aggressive and typically metastatic. While only 10 to 15% of dogs will have measurable metastasis, it is believed that up to 95% of dogs have undetectable metastasis at the time of diagnosis. Because of this high metastatic risk, additional assessment is recommended. Most metastatic spread appears in the lungs so thoracic radiographs are warranted. Survey radiographs also may be recommended due to an 8% risk of metastasis to other bones. Metastasis may also be seen in lymph nodes (5%) and internal organs.

If available, PET scans or nuclear scintigraphy (sometimes referred to as a "bone scan" or "Gamma scan") are even more sensitive diagnostic tools that can identify diseases not visible with other imaging methods. It can be useful for the detection of metastasis in dogs as it can distinguish any region of osteoblastic activity, including osteoarthritis and infection.

While there are several published histologic grading systems for OSA, there is no universally accepted system, making the predictive value of routine grading of OSA questionable.

Staging of OSA utilizes the TNM

(Tumor-Node-Metastasis) System, the standard system used for most tumor staging in veterinary medicine. Three stages of OSA can be differentiated:

- Stage I indicates a low-grade tumor (G1) with no evidence of metastasis (M0)
- Stage II indicates a high-grade tumor (G2) without metastasis.
- Stages I and II are further divided into two subgroups: Group A indicates that the tumor has stayed within the bone (T1). Group B indicates that the tumor has spread beyond the bone into other nearby structures (T2). Most dogs are diagnosed with Stage IIB OSA.
- Stage III is a tumor with metastatic disease (M1).

TREATMENT

The primary considerations for treatment of OSA should include an understanding of how far the disease has metastasized, how to treat the bone tumor itself, and how to curb, delay, or prevent recurrence or spread of the disease. The disease develops deep in the bone and destroys it from the inside; as a result, it can be extremely painful and treating that pain can be a challenge. Above all, any approach should ensure that the dog maintains excellent quality of life.

Surgical

Wide-margin surgery, by either limb amputation or limb-sparing surgery, is indicated as the standard initial treatment of canine appendicular OSA. While biopsies are typically recommended prior to surgery for most types of cancer, it is not a necessity with OSA when there are other diagnostic indicators.

Amputation

Removal of the limb extracts the local cancer immediately and is the quickest and most effective way of alleviating pain and most of the destructive processes of OSA. It also removes the risk of a painful pathological fracture, which often occurs as the disease progresses.

Because pain inhibits quality of life, amputation is considered a quality of life choice. The majority of dogs recover quickly and resume a normal life on three legs. Amputation completely removes the primary tumor, is not a complicated surgery and requires less anesthesia time, offers a decreased risk of postoperative complications, and is a less expensive procedure than limb-sparing surgery (discussed next).

Limb-Sparing Surgery

Limb sparing can be preferable to amputation for dogs who suffer from existing severe orthopedic or neurological diseases; candidates for limb-sparing surgery should be in otherwise good health with a primary tumor confined to the bone. This surgical procedure replaces the diseased bone with a metal implant or bone graft or combination of the two to reconstruct a functional limb.

Limb sparing surgery temporarily improves the overall condition of the leg, but eventually the cancer will progress and the bone will deteriorate. Limb function is preserved in more than 80% of dogs. However, complications are fairly common with this procedure. Infections occur in 30 to 50% of cases, implant failure in 20 to 40%, and 15 to 25% of dogs will experience tumor recurrence. Subsequent chemotherapy and radiation treatments also may be recommended.

Stereotactic Radiosurgery (aka SRS, Stereotactic Radiotherapy/ SRT, Cyberknife)

Stereotactic radiosurgery is an alternative to amputation or limb-sparing surgery; it also may be used as an adjunct therapy following amputation. It is a nonsurgical procedure (but does require anesthesia) that delivers radiation directly to the tumor site. Radiation acts by making cancer cells unable to reproduce.

SRS precisely transmits several beams of radiation aimed from various angles to deliver a high dose of radiation to a designated tumor target. The delivery system is effective and efficient and therefore reduces the chance of damage to surrounding normal structures and tissues. Potential downsides to SRS include fracture from radiation-induced bone degradation and possible tumor regrowth. Early reports suggest that the outcomes of SRS followed by chemotherapy may be comparable to those achieved with amputation and chemotherapy.

Chemotherapy

The best outcomes for dogs with OSA to date have been for those un-

Two "tripod dogs" meet at the dog park: What are the odds? Amputation of a limb affected by OSA is the quickest way to relieve the dog's pain and most of the destructive processes of the disease.

dergoing amputation followed by chemotherapy. Since tumor removal does not address metastasis, systemic treatment via chemotherapy can be vital to a treatment plan. Several studies have reported prolonged survival rates using cytostatic drug protocols, with carboplatin, cisplatin, and doxorubicin the most commonly used.

Side effects from chemotherapy tend to occur infrequently; when they do, they are usually predictable, minor, and manageable. A dog undergoing chemotherapy can expect to have excellent quality of life.

Immunotherapy

For the latest in immunotherapy treatment for OSA, see WDJ March 2019 "A New Bone Cancer Vaccine for Dogs."

OTHER TREATMENTS

Palliative Radiation

The primary goal of palliative radiation is to maintain good quality of life for cancer patients, whether human or canine. It is used to control clinical signs and pain associated with tumors that either cannot be treated by other techniques or where more aggressive treatments have been declined.

As an added benefit, palliative radiation may slow the rate of progression and reduce the size of the tumor, thereby further contributing to the well-being of the patient. Dogs with OSA initially undergo two to five treatment sessions (requiring anesthetic) and are typically administered in lower dosages than that used for stereotactic radiosurgery.

Most dogs will achieve some degree of pain relief within the first one to two weeks following treatment, with the potential for it to be effective for a couple of months. When pain returns, radiation can be re-administered for if deemed appropriate.

Bisphosonate Drugs

Bisphosphonates, such as pamidronate and zoledronate, are easily administered through intravenous (IV) infusions and are aimed at preventing or slowing bone destruction and reducing pain and risk of fracture, therefore prolonging the dog's life. This treatment is relatively inexpensive, has a wide safety margin, and can even be used on dogs with renal or liver insufficiency.

These drugs are usually used in combination with chemotherapy and/or radiation therapy but may be used alone. Additionally, bisphononates appear to have potential cancer-suppression effects by impeding proliferation and inducing apoptosis (programmed cell death); as a result, they have become a targeted area for new research.

Pain Management

Again, because OSA can be extremely painful, recognition and alleviation of pain is essential for maintaining quality of life. Dogs with OSA may experience pain due to a number of causes: the cancer itself, a treatment modality, or a concurrent disease such as osteoarthritis. To preemptively and adequately control pain, more than one medication is often required.

Nonsteroidal anti-inflammatory drugs (NSAIDS) are typically a mainstay for controlling pain – but aren't the best choice for the type of pain associated with OSA. However, they may be used to address other forms of pain being experienced concurrently. Gabapentin, amitriptyline, duloxetine, and amantadine are better suited to alleviating OSA-related pain.

Weight control can help by relieving the extra pressure on joints; supplements also may be recommended to help support the unaffected joints. Physical therapy and massage can be beneficial, especially for the compensating joints and muscles. Acupuncture, having been shown to increase endorphins (which inhibit pain perception), also can provide an avenue for pain management.

PALLIATIVE CARE

Palliative care is an approach that prioritizes measures to relieve symptoms (without curative intent) and improve comfort. It is a valid and respected choice for care; only owners can decide what is best their dogs. Palliative care also can be provided to dogs who are at the end stage of their disease.

PROGNOSIS

The heartbreaking reality is that the vast majority of dogs affected by OSA will succumb to the disease or be released through euthanasia due to disease progression. Dogs who do not receive any form of cancer-specific treatment are usually euthanized within one to two months of diagnosis due to uncontrolled pain.

Those treated with surgery alone (amputation) have an average survival period of about four to five months; almost all die within a year and only 2% live past two years.

Dogs receiving surgery and chemotherapy have average survival times of approximately 10 months, with up to 28% alive after two years.

The median survival time for dogs receiving radiation therapy and chemotherapy is about seven months.

In general, dogs between 7 and 10 years old tend to have longer survival times than younger and older dogs.

The prognosis is very poor for dogs with Stage III OSA; the average survival time is 2.5 months. Dogs less than 7 years old with a large tumor located at the top of the humerus also have a very poor prognosis. Dogs with axial OSA have an average survival time of four to five months as complete surgery is usually prohibitive due to tumor location and likely recurrence. If regional lymph node metastasis has been found, survival time is only about 1.5 months.

THIS IS A TOUGH ONE

With the increasing amount of research being conducted on OSA, there is hope for new therapies, increased survival times, and improved outcomes. But for many, it won't be soon enough. Bear, my friend Keri's dog, succumbed to OSA while I was writing this. He lived 16 months after diagnosis with palliative care and lots of love. He is very much missed.

Having lost two dogs to cancer, longtime WDJ contributor Barbara Dobbins follows cancer research news closely.

On the Horizon: OSA Treatments in Development

Numerous drugs, nanoparticles, and antibody-drug conjugates (ADCs) have shown significant promise in targeting and treating OSA. Early results of studies using nanoparticles suggest that they may offer potent new therapeutic agents to treat primary tumors as well as to minimize or prevent the recurrence of OSA. There is emerging evidence that bone-targeted therapeutics using bisphosphonates have the potential to significantly improve treatments. ADCs are biopharmaceuticals designed to target and destroy tumor cells while sparing healthy cells. As of 2019, more than 50 pharmaceutical companies are researching the possibilities of ADCs.

- PetCure Oncology, in collaboration with Varian Medical Systems, is currently accepting patients into a clinical trial to evaluate dogs that receive SRS/SRT to treat OSA of the appendicular skeleton. Early data suggests that SRS/SRT can lead to longer median survival time; the study will analyze whether SRS/SRT increases the circulation of immune cells that are responsible for attacking cancer.

- The Blue Buffalo Veterinary Clinical Trials Office at The Ohio State University Veterinary Medical Center is researching a novel anti-cancer drug for dogs with OSA that has metastasized to the lungs. The drug is a chemically synthesized compound (PAC-1) that selectively induces cell death in cancerous cells. The study will evaluate the ability of the drug to decrease the size and growth of lung metastases in dogs when administered in combination with doxorubicin.

- Because the presence of tumor-associated macrophages (TAMs) in bone tumors has been shown to be potentially associated with survival time, the Flint Animal Cancer Center at Colorado State University is conducting a study to develop a noninvasive way to determine how many TAMs are present in bone tumors through the use of an Ultra-Small Paramagnetic Iron Oxide Particle MRI for Imaging.

- Auburn University in Alabama is evaluating zoledronate for treatment of pulmonary nodules associated with OSA metastasis. Bisphosphonates have documented efficacy for control of cancer-associated bone pain and recently have been investigated for its ability to induce cancer cell death as well interfere with metastasis.

- Colorado State University Animal Cancer Center is conducting a study to predict which of the standard chemotherapy protocols will be most effective against an individual dog's tumor and determine if this will provide for longer survival rates.

- A ganglioside-targeted cancer vaccine for OSA is being studied in a Phase 1 trial at the University of Florida College of Veterinary College. A previous study of ganglioside (GD3) showed the vaccine caused a measurable immune response and prolonged survival in dogs with melanoma. (Gangliosides are glycosphingolipids that contribute a substantial presence to the outer leaflet of the cell plasma membrane.)

- The University of Minnesota's College of Veterinary Medicine is researching the genetically modified Vesicular Stomatitis Virus (VSV-IFNß-NIS, called VSV for short) for development of a novel oncolytic immunotherapy for OSA. A pilot study of eight dogs with cancer demonstrated VSV to be safe. Two additional separate studies (12 additional dogs with cancer) found similar results.

- Veterinary Oncology Services in Middletown, NY, is conducting clinical trials to evaluate the benefit of treating OSA (as well as mammary cancer and transitional cell carcinoma) with a genetic DNA telomerase cancer vaccine along with a genetic HER2 cancer vaccine. The goal is to combine these two treatments as a synergistic attack against two different paths of cancer development. Because telomerase is not expressed in most differentiated cells, it is an ideal target for cancer therapeutics.

- Veterinary Oncology Services is also testing whether an adenovirus-based vaccine followed by a DNA plasmid administered via electrogene transfer can elicit anti-tumor immunity and increase survival times for dogs with OSA. The vaccine targets the Her2/neu pathway of tumorigenesis allowing the body's immune system to battle the cancer.

- Aratana Therapeutics has developed an immunotherapy vaccine that uses a lyophilized formulation of a modified-live, attenuated, recombinant HER2/neu-expressing strain of Listeria (AT-014) that activates cytotoxic T cells. It received its conditional license from the USDA in December 2017 for the treatment of dogs 1 year or older diagnosed with appendicular OSA.

The vaccine is administered in a series of three doses given three weeks apart, with boosters every six months. The nonlyophilized (liquid) form of this therapeutic was administered to dogs with appendicular osteosarcoma following amputation or limb salvage surgery and chemotherapy consisting of four doses of carboplatin. The median disease-free interval was 615 days and median survival time was 956 days for the 18 dogs in the study (who had no evidence of metastatic disease at enrollment). Adverse events were mild to moderate and primarily consisted of fever, lethargy, and nausea/vomiting.

Aratana is progressing toward full licensure by conducting an extended clinical field study as required by the USDA. About 24 veterinary oncology practices throughout the U.S. are participating in the extended field study and have the vaccine available.

ADXS31-164, the nonlyophilized, frozen form of the USDA conditionally licensed therapeutic AT-014, has not been licensed by the USDA and is available only through clinical trial. This form of the vaccine is being employed in a separate clinical trial at 11 participating sites to evaluate the safety and efficacy in dogs with OSA (target enrollment is 100). This study is funded by Morris Animal Foundation and coordinated by the Comparative Oncology Trials Consortium (part of the National Institutes of Health).

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Sassafras Lowrey, CTDI, is the author of *Healing/Heeling*; *Bedtime Stories For Rescue Dogs: William to the Rescue* with illustrator Lili Chin, and *Tricks in the City: For Daring Dogs and the Humans That Love Them,* due this month from Mango Press. You can find her books at Amazon.com and her website SassafrasLowrey.com

WDJ Training Editor Pat Miller is author of many books on force-free, pain-free, fear-free training, including:

- *Do Over Dogs: Give Your Dog a Second Chance at a First Class Life*
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