



DOG Watch

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

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IN THE NEWS ...

Salmonella Outbreak Reported in People

Twenty-two people in the U.S. and Canada have become infected with Salmonella Infantis linked to dry pet food at Diamond Pet Foods plant in Gaston, S.C. The FDA and Centers for Disease Control and Prevention are investigating due to possible human exposure to the food.

Diamond Pet Foods has already recalled more than a dozen brands of dry dog and cat food because of potential contamination. Other companies with products manufactured at the Gaston facility issued their own recalls, including Dick Van Patten's Natural Balance, Apex Pet Foods, Canidae, Wellpet LLC and Solid Gold Health Products for Pets.

Symptoms in people who develop the infection include diarrhea, fever and cramps. Hospitalization may be required in cases of severe diarrhea in which infection spreads and can cause death unless antibiotics are prescribed. Infected pets may have diarrhea, fever and vomiting. Healthy pets can be carriers and infect other animals or humans, the FDA says.

Plan a Diet Based on Genetic Testing

The pioneering science of nutrigenomics may result in food targeted to prevent and heal illness

Nutritionist Joseph Wakshlag, DVM, Associate Professor of Clinical Nutrition at Cornell University College of Veterinary Medicine, poses a question for owners: "If you knew that your dog would develop cognitive dysfunction at age 9, and if feeding him an antioxidant-enhanced diet would delay that development, wouldn't you do it?"

That scenario may be possible in the not-too-distant future. If scientists identify a gene for canine cognitive dysfunction —



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and a host of other diseases with genetic risk factors — individualized nutrition and lifestyle plans could be developed for dogs based on their genetic tests. It has long been known that nutrition plays an important role in preventing and healing disease in both humans and dogs. But its role may be greater than we

thought. Researchers in the pioneering science of nutrigenomics stand squarely at the intersection of genetics and nutrition.

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Novel Help for a Fast-growing Cancer

Oncologists use a vaccine derived from human DNA to treat melanoma and lengthen their patients' lives

Veterinary oncologists are using a novel tool to fight malignant melanoma in dogs — a canine vaccine derived from human DNA that activates a dog's immune system to destroy cancer cells. Researchers are also investigating how to stimulate the immune system to fight melanoma in people by combining other melanoma vaccines with other FDA-approved therapies.

Canine malignant melanoma (CMM) is the most common oral tumor and the second most common digit tumor in dogs. The tumors develop fast, usually in the mouth, on toes or in the nailbed — paw pad tumors are rare. Skin melanomas in dogs are usually benign, but the malignant form is locally aggressive and can sometimes metastasize (spread) to organs.

Traditional treatments — surgery and radiation — are most successful when CMM is small, detected early and removed with surrounding tissue.

A Poor Prognosis. Tumor size, location and metastasis affect prognosis, which is often poor. "Canine oral melanoma is devastating and something we all see and have to deal with," says oncologist Kelly Hume, DVM, at Cornell University's College of Veterinary Medicine. "This vaccine is a welcome tool, one of the first cancer treatments we've had approved for veterinary medicine."

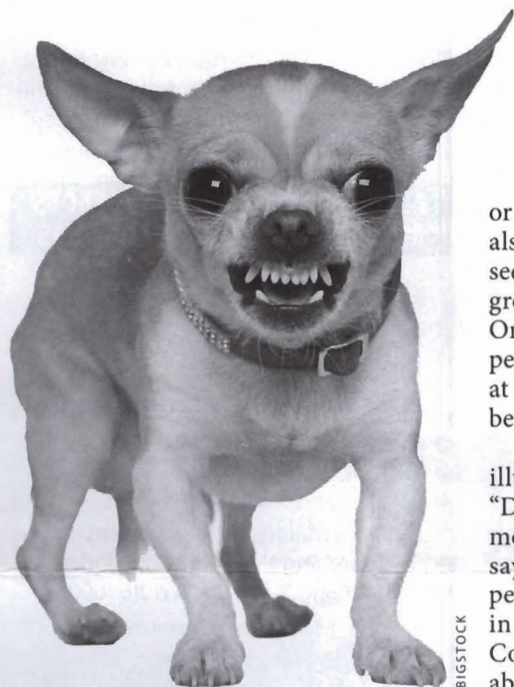
Melanoma is the fifth or sixth most common canine cancer, says oncologist Philip Bergman, DVM, Ph.D., who participated

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FIVE SIMPLE STEPS TO STOP EXCESSIVE BARKING

If your dog vocalizes excessively or compulsively, don't yell at him. That borders on cruelty, and he doesn't understand what you want anyway. Say "Quiet" or "Shhh" in a level voice and reward him if he stops. If he continues to bark, schedule a veterinary visit for a thorough examination. He may have a treatable illness. You can also tend to some practical matters, Dr. Katherine A. Houpt says:

- 1) **Eliminate the stimuli** causing barking. Close the curtains if your dog barks at passersby. Move the sofa if he sits there to look out the window at them.
- 2) **Install window wallpaper** to prevent his looking outdoors. It obscures the view but still allows light inside.
- 3) **Play background music.**
- 4) **Try a buzzer** that emits a loud sound automatically when the dog barks. Ultrasound collars for the same purpose discourage barking, but as Dr. Houpt says, "Dogs habituate to them."
- 5) **Shock collars** can be effective but only if used properly. "I have seen dogs who have had tissue damage from them," Dr. Houpt says. "I would use them only as a last resort, for example, if owners had to move out of an apartment because of a barking dog. I do not approve of that kind of shock collars that let the owner initiate the shock."



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Growls are low and menacing when a sign of aggression and subdued when at play, as in a rousing game of tug.

Bark, Whine, Yelp, Growl and Howl!

Learning how to interpret his vocalizations can help you understand and meet his needs

While their wolf ancestors may have barked only to hunt and alert the pack to danger, domesticated dogs, after close association with humans, have developed a repertoire of barks. It's the most versatile of their vocalizations, ranging from a warning to fear to delight at an owner's arrival home.

Some breeds excel at it to the consternation of owners and neighbors. The big barkers: "toy breeds and Shelties," says Katherine A. Houpt, VMD, Ph.D., diplomate of the American College of Veterinary Behaviorists and emeritus James Law Professor of Animal Behavior at Cornell University College of Veterinary Medicine. "Shelties can bark at the sound of a leaf dropping three blocks away."

Go Out, Eat, Play? "Learning how to interpret your dog's barks and other vocalizations can help you understand and meet his needs, whether it's to go out, eat

or play," Dr. Houpt says. Vocalizations also are clues to a dog's moods. It would seem obvious, she says, "But if a dog growls, it's not a good idea to pet him." One client in her behavior practice repeatedly ignores her rescue dog's growls at being hugged and pays the price by being bitten.

The wolf-dog comparison in barking illustrates the impact of socialization. "Dogs' captive environment provides more stimuli that warrant barking," says Sophia Yin, DVM, MS, in her paper on "A New Perspective on Barking in Dogs," published in the *Journal of Comparative Psychology*. Wolves range about large, open areas while many dogs live in confined spaces, with frequent intruders like mail carriers, she says. At the same time, dogs must rely on humans to fulfill their needs. They bark to get attention, and owners reinforce the behavior with their response.

In her study, Dr. Yin recorded the barks of 10 purebred and mixed-breed adult dogs in three situations: a disturbance in which a stranger rang the doorbell, an isolation situation in which the dog was locked outside or in a room away from his owner and a play situation in which two dogs or a human and a dog played together.

The result of nearly 5,000 barks: Disturbance barks were significantly lower in pitch and longer in duration than isolation and play barks. In fact, they often were repeated rapidly into "superbarks" of two to four fused barks, Dr. Yin says.

Here, then, an overview of barks and other canine vocalizations and their likely interpretation:

◆ **The demand bark, sharp and insistent:** Want that now!

◆ **The alert bark, loud and vigorous:** It's often in response to a stranger, increasing with his approach. "We selected (bred) for that," Dr. Houpt says.

◆ **The fear-aggressive bark:** Small dogs, often dismissively called yipper dogs, execute these when they feel threatened.

◆ **The aggressive bark, frequently accompanied by snarling:** Biting may be imminent.

◆ **The repetitive bark:** The hallmark of dogs suffering separation anxiety.

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MELANOMA ... (from cover)

in the vaccine research. (He's also director of clinical studies for VCA Antech, formerly BrightHeart Veterinary Centers.)

Up to 70 percent of oral melanoma tumors spread to the lungs, eventually causing illness prompting euthanasia. The breakthrough melanoma vaccine, Oncept from Merial, received full licensure from the U.S. Department of Agriculture in 2009 after a trial study in canine oral melanoma in which about 70 percent of 58 vaccinated dogs survived three years or more. The dogs received a series of vaccine treatments after their tumors were removed. In



After removal of their tumors and vaccination with Oncept, 40 of 58 dogs with malignant melanoma — about 70 percent — survived three years or more.

the study, only about 20 percent of 53 unvaccinated historical control dogs, who received surgery alone, survived that long.

Mobilizing T-cells. Immunotherapy — using vaccines to treat cancer — mobilizes specialized cells (T-cells) to recognize and attack cancer cells, which ordinarily evade detection. The Merial vaccine uses human DNA to trigger a dog's immune system to detect one antigen (protein) found in melanoma cells — the protein tyrosinase, which contributes to dark pigmentation.

"I recommend Oncept in any melanoma patient where I believe the tumor has a propensity for metastasis," Dr. Bergman says. In dogs with advanced oral melanoma, the median survival time is one to eight months with standard treatments, he says, but "We're seeing many (treated) dogs live two-plus years and that's great. The more advanced the melanoma, the bigger the wall in front of us, but even in dogs with evidence of spread, some do survive when given the vaccine."

Chow Chows are susceptible to oral melanoma, as are other breeds with dark mouths.



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WHAT YOU SHOULD KNOW

The causes of canine malignant melanoma are unknown, but sun exposure is not thought to be a factor as it is in human melanomas. Older dogs and breeds with dark skin and mouths may be more prone, such as Chow Chows. The signs of CMM oral tumors include: lumps or bumps in the mouth; facial or jaw swelling; facial pain; difficulty eating or swallowing; drooling, refusal to eat with accompanying weight loss; bad breath and oral or nasal bleeding.

Among the signs of nailbed and digit melanoma: a dark, raised bump on or between toes; swelling or ulceration under the nail; sensitivity, pain and limping.

The vaccine is used as an adjunct treatment for 50 to 75 percent of Cornell's canine melanoma patients, Dr. Hume says. "The majority of owners of dogs with malignant melanoma — whether of the mouth, digit or skin — elect to proceed with Oncept vaccination."

Prescribed 'Off-label.' The vaccine is labeled for narrowly-defined melanoma cases — dogs with oral melanoma of moderate severity who appear to have no cancer remaining after surgery. However, many oncologists use the vaccine "off-label," Dr. Bergman says, sometimes for tumors that are not entirely removed or are more advanced and melanoma in different locations or species.

About 500 dogs received different variants of the canine vaccine from 2000 to 2007, Dr. Bergman says, and some survived more than four years. One study used a mouse-derived vaccine to successfully treat digit melanoma. The mouse-DNA vaccine isn't commercially available because the human-derived vaccine was approved, but the study proved that cross-species DNA vaccines elicit successful immune responses to tumors in various locations, he says.

The study's lead investigator, Christina Manley, DVM, of Leesburg, Va., says 63 percent of those vaccinated dogs survived one year, versus a one-year survival rate of about 50 percent for dogs treated by digit amputation. After two years, 36 percent of the vaccinated dogs were alive, triple the 11 to 13 percent survival rate of dogs with traditional treatments.

A drawback of immunotherapy is that it takes three to four months to generate an immune defense, Dr. Bergman says. "A dog with advanced melanoma may have only one or two months to live, so we're in a footrace that we're afraid of losing." He is now studying ways to better apply Oncept to metastasized melanoma and hopes to work on similar vaccines for canine lymphoma, breast and bone cancers.

Says Dr. Hume at Cornell: "I'm happy to see some dogs with melanoma living longer than expected, and I am pleased to have a well-tolerated alternative to traditional chemotherapy to offer clients and patients." ♦

DOES YOUR DOG NEED SUPPLEMENTS?

Given an alphabet soup of nutritional supplements, ranging from antioxidants to zinc, it can be difficult to know the ones most beneficial for our dogs. The choices can be even more daunting because the supplements lack stringent oversight.

Under the Dietary Supplement Health and Education Act of 1994, manufacturers are responsible for marketing safe products. "FDA does not review these products for safety or effectiveness prior to marketing," says press officer Tamara Ward in its Office of Public Affairs.

Fortunately, today's high-quality dog foods make nutritional supplements unnecessary, but in general, says Dr. Joseph Wakshlag, if owners are seeking certain nutrients, pet supplements will deliver far more of those nutrients than fruit- and vegetable-enhanced pet foods.

Canine nutrition is an evolving field, says Kathryn Michel, DVM, professor of nutrition at the University of Pennsylvania. "In addition to essential nutrients, we now recognize that there are conditionally essential nutrients — nutrients required by certain dogs under certain conditions. Because there is individual variation, some dogs may have nutrient requirements different than those provided in the average commercial diet."

For example, supplementary enzymes are needed for exocrine pancreatic insufficiency, in which the pancreas does not secrete the digestive enzymes necessary for digestion, Dr. Michel says.

Glucosamine and chondroitin may benefit certain dogs with joint pain and arthritis. And preliminary evidence indicates green tea extract can help reduce the glycemic index in diabetic dogs, Dr. Wakshlag says.

But other supplements can pose risks. While the body breaks down and eliminates water-soluble vitamins B and C each day, it stores fat-soluble vitamins A, D, E and K, and that's when they can become a health risk. "People often give their dogs the same supplements they use in the same dosages," says Dr. Michel. "They may not realize ... a normal dose for a person may be an enormous dose for a dog."

In fact, excessive amounts of certain nutrients can be toxic, Dr. Michel says. "They may also interfere with the assimilation of other essential nutrients." Excessive calcium, for example, can interfere with zinc and copper absorption. It can also have detrimental effects upon joint formation and cartilage maturation in growing, large-breed puppies.

The best-selling supplements are general purpose vitamin-mineral formulations for overall health and disease prevention in dogs. Other commonly used supplements, which have not been documented for effectiveness, include milk thistle for liver ailments and essential fatty acids for healthy skin and coat.

Experts reiterate that more studies are needed to prove these supplements and others will indeed improve health. "Meanwhile," Dr. Michel says, "The only harm they will likely do is to your pocketbook."

of salmonella contamination at a South Carolina pet food manufacturing plant this year affected 40 different brands of pet food," Dr. Wakshlag says. (If you're considering an entirely homemade diet for your dog, consult a veterinary nutritionist to make sure it's nutritionally balanced.)

Dr. Wakshlag's recommendations for owners wanting to take a simpler route: "Read dog food labels to be sure there are quality ingredients and that the diet meets AAFCO [American Animal Food Control Officials] standards. Then if you'd like to add more beta-carotene as an antioxidant to your average 40-pound dog's commercial diet, add a cup of cooked carrots to his food. The next day, add a cup of chopped apples to add isoflavones, another type of antioxidant, and the next day add a cup of cooked broccoli for a variety of carotenoids. Just be sure to avoid grapes, raisins, avocados, onions, and garlic — all of these foods can have detrimental effects on your dog."

In the end, as the body of research grows, nutritional therapy may provide dogs with a better chance of both preventing and surviving illness. ♦

BARK, WHINE, YELP, GROWL ...

(continued from page 3)

♦ *The howl or bay:* Hunters trained hounds to make the distinctive sound when they spotted prey. Today, hounds and other breeds also howl in reaction to sirens. New Guinea Singing Dogs, a rare breed, howl a single note, and when several "sing" together in different pitches, it's said they sound like a barbershop quartet.

♦ *The yelp:* I'm in pain.

♦ *The whine:* Puppies whine for food or attention from their mothers. Some adults try it today, often successfully training their owners to respond.

♦ *The growl, low and menacing when aggressive, more subdued when at play, as in a rousing game of tug:* "Huskies and Malamutes have a whole repertoire of growls," Dr. Houpt says. Her own Cairn terrier growls when he wants something. "It seems to mean, 'I sort of would like attention,' she says, "but the growl may escalate to a demand bark: 'I want attention.'" ♦